Improving Game Design through Responsive Configuration and Procedural Generation

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This thesis titled
Improving Game Design through Responsive Configuration and Procedural Generation

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ABSTRACT

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Improving Game Design through Responsive Configuration and Procedural Generation

Director of Thesis: Chang Liu

One difficulty in game design is that the criteria that determine whether a certain game feature (e.g., ability to jump, theme type, inclusion of certain types of weapons) would improve enjoyment of a game are often unclear, and can differ greatly for different players. This thesis investigates a method by which game configuration and creation might be automated in such a way that a numerical rating could be assigned to any given game feature, thereby allowing the enjoyability of a game feature to be gauged in a more objective way. This automated game design method involves:

- Creation of a series of candidate games
- A player playing the games
- The player rating the games
- A “best” and a “worst” game for each player being made based on this feedback

A tool using this method is used in an experiment to determine if game features can successfully be rated in this way by having subjects use the tool and then checking if the games the tool produces are rated, on average, significantly more highly than the candidate games. By allowing the aspects of a game to vary and by rating user enjoyment of games created using those aspects, it may be numerically determined what sorts of game will most appeal to certain users or groups of users, and better games can
be created. By including in this process a tool that can automatically generate a game based on these aspects, this process can be automated and expedited, which would be beneficial for game prototyping or for making games whose configuration automatically responds to the user. The results showed support for the usefulness of the proposed method; the average rating difference between the “worst” and “best” game was 23%, with the “worst” game being rated on average worse than randomly selected games, and the “best” game being rated on average better than randomly selected games.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>3</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>5</td>
</tr>
<tr>
<td>List of Tables</td>
<td>9</td>
</tr>
<tr>
<td>List of Figures</td>
<td>10</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>11</td>
</tr>
<tr>
<td>2. Hypothesis</td>
<td>14</td>
</tr>
<tr>
<td>3. Literature Review</td>
<td>15</td>
</tr>
<tr>
<td>3.1. The Study of Game Design Elements</td>
<td>15</td>
</tr>
<tr>
<td>3.2. Educational Game Design</td>
<td>16</td>
</tr>
<tr>
<td>3.3. Examining the Process Behind Game Design</td>
<td>19</td>
</tr>
<tr>
<td>3.4. Examining the Details of Game Design</td>
<td>20</td>
</tr>
<tr>
<td>3.5. Using User Feedback to Fuel Game Design</td>
<td>20</td>
</tr>
<tr>
<td>3.6. Procedural Game Creation Tools and Studies in Automatic Game Design</td>
<td>23</td>
</tr>
<tr>
<td>4. Contributions</td>
<td>27</td>
</tr>
<tr>
<td>5. Methods</td>
<td>28</td>
</tr>
<tr>
<td>5.1. Procedural Game Generation</td>
<td>32</td>
</tr>
<tr>
<td>5.2. Playing the Games</td>
<td>36</td>
</tr>
<tr>
<td>5.3. Game Feature Rating and Blame Weights</td>
<td>37</td>
</tr>
<tr>
<td>5.4. Guidelines for Choosing Blame Weights</td>
<td>38</td>
</tr>
<tr>
<td>5.5. Aspect Selection</td>
<td>40</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Studies Similar to this Thesis</td>
<td>26</td>
</tr>
<tr>
<td>Table 2</td>
<td>Blame Weights for this Study</td>
<td>60</td>
</tr>
<tr>
<td>Table 3</td>
<td>Example Ratings and Distributions</td>
<td>60</td>
</tr>
<tr>
<td>Table 4</td>
<td>Average Ratings for Best, Worst, and Random Games</td>
<td>65</td>
</tr>
<tr>
<td>Table 5</td>
<td>Statistical Significance of Experiment Results</td>
<td>65</td>
</tr>
<tr>
<td>Table 6</td>
<td>Average Rating for each Game Aspect Choice</td>
<td>67</td>
</tr>
<tr>
<td>Table 7</td>
<td>Standard Deviation of Ratings by Aspect</td>
<td>68</td>
</tr>
<tr>
<td>Table 8</td>
<td>Average Ratings for each Game Type</td>
<td>71</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>Figure 1</td>
<td>Different game design aspects lead to a variety of games</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2</td>
<td>The classic game Tetris in one of its many incarnations</td>
<td>28</td>
</tr>
<tr>
<td>Figure 3</td>
<td>The game Super Mario World is broken up into levels, chosen from a map</td>
<td>33</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Dark Souls is a game that is famed for its high level of difficulty</td>
<td>34</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Gameplay in Final Fantasy games is based on turn based combat</td>
<td>35</td>
</tr>
<tr>
<td>Figure 6</td>
<td>A typical screen from the experiment game</td>
<td>48</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Fantasy theme vs. space theme</td>
<td>52</td>
</tr>
<tr>
<td>Figure 8</td>
<td>The four game area progression types</td>
<td>53</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Sample weapon sets</td>
<td>55</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Some enemies from the experiment game</td>
<td>57</td>
</tr>
<tr>
<td>Figure 11</td>
<td>The player examines nearby treasure</td>
<td>58</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

The fields of computer and video games have sprung to life and flourished over the past 30 years ("History of Video Games", 2009). A vast number of games are developed every year with the intent to entertain an audience, and the market grows very quickly, with the global industry set to be worth 101 billion dollars in 2014 (van der Meulen, 2013). However, some games fare much better than others, which in many cases has to do with the design of the game, though there are other factors that play into this such as visual polish, recognizable characters, or the company behind the game. Why is this? What about the design of a game causes it to be liked more or less than another game? What would be gained by the study of game design?

First, it would be wise to define game design. Game design, as far as this study will use the term, is the process of choosing the set of features or aspects that make up a game. Figure 1 depicts three examples of what different choices of these aspects can lead to in a game.
Figure 1: Different game design aspects lead to a variety of games. Pictured are Final Fantasy VIII, Pac-Man, and Link's Awakening.

Some simple examples of these game design aspects are:

- Should the character that the player controls use a sword or a gun?
- Is the goal of the game to collect things? Defeat foes? Get to a certain location within a specified amount of time?
- How is the game world divided up? One large world? Several small areas?
In general, the goal when choosing these game aspects is to maximize user enjoyment of the resulting game. Given this, the goal of the study of game design would be to determine how to better choose game aspects so as to increase user enjoyment. Inherent in this study would be a way to measure how much a user enjoys a game, which will be discussed later.

So long as such study is possible, then, it stands to reason that it would aid in the development of superior games. It would also, in defining a measure for game enjoyment, allow a game to be targeted to a specific audience by way of determining what that group of users would enjoy most in a game. This thesis will present a method by which such a study may be conducted and a method to measure user enjoyment of a game.

This method calls for the development of an procedural game creation tool, which, given a set of game aspects, can produce a full, playable game. Furthermore, it calls for a service through which these games can be played. This service will collect play statistics from the user and give them a survey regarding each game in an attempt to determine overall enjoyment. Based then on the feedback received from users, the service will feed a new set of game aspects to the procedural game creation tool in an effort to make a more enjoyable game. In this manner, it will cause the games it provides to improve in response to user feedback in an attempt to better please users.
2. HYPOTHESIS

The hypothesis is that by allowing the aspects of a game to vary and by having users rate their enjoyment of games created using those aspects, it may be numerically determined what sorts of games will most appeal to certain users or groups of users, and better games can be created based on this feedback. By including in this process a tool that can procedurally generate a game based on these aspects, this process can be automated and expedited, which would be beneficial for game prototyping or for making games whose configuration automatically adapts to the user.
3. LITERATURE REVIEW

As the field of video games grows, many studies are performed that look into different aspects of the design of games. This section will provide an overview of some recent research that examined the topic of game design. It will also note how this study differs from those that were conducted before and adds to the field of game design. This section starts with an overview of research that examines specific aspects of game design, moving on to research that examines the process of game design as a whole, and finally zeroing in on research that leverages user feedback in order to improve game design. In this way, the literature reviewed is organized from being least like this study to being most like this study. This section will conclude with studies that examine research which used methods that are similar to the tools that will be used in this thesis.

3.1. The Study of Game Design Elements

Game design is a wide topic, and several papers have been written examining specific aspects of the game design process. Bizzocchi and Tanenbaum (2012) examined the process of designing narrative for a game. They looked specifically at Mass Effect 2, which heavily relied on narrative to drive its gameplay. Habel and Kooyman (2014) investigated gameplay mechanics in the specific case of survival horror games, which rely on frightening enemies and limited resources to keep the game tense. Byun (2013) examined how voice-overs influence player engagement in role-playing games. These often focus on presenting a convincing world to a play in order to immerse them, so drawing the player into the world can be crucial. Fernandez Vara (2010) examined how to tie gameplay and story together in an adventure game by breaking down elements that
can be used to do this. Baron (2013) looked at how pressures placed on players of certain games influenced their behavior in the game and their interactions with other players. Sweetser (2013), instead of looking at the overall rules of the game, looked at the design of the levels that make up a game by way of the Starcraft 2 level editor. Hsu, Wen, and Wu (2007) looked at how the choice of game elements could affect the challenge a user experienced in a strategy game. Caroux, Le Bigot, and Vibert (2011) examined the best ways to place video game user interfaces in order to allow players easy access to game statistics while still allowing them to pay attention to the game world itself. Righi Riva and Pillan (2012) compared game design to toy design in an effort to create more open ended games that players could play in their own way. Jeffries (2011) examined the skills that lead to the creativity needed for game design so that higher education could focus on those skills and train better game designers. Juho and Lehdonvirta (2010) looked at which game mechanics helped to sell virtual goods in online role playing games, comparing game design to marketing.

All of these studies focus on designing specific parts of specific types of games, rather than on the process of game design as a whole, whereas this thesis aims to develop a more generic method that can be applied to many different aspects of a variety of types of games.

3.2. Educational Game Design

A number of researchers focused on game design specifically for educational games. Each of the following studies presented a different take on how to examine the design of a game, often focusing on how better, more fun games were more effective for
learning. Since a goal of this thesis is to determine what game elements would be better and more fun when used in a game, these studies' methods were informative. Martin (2013) examined how game design affected learning by comparing learning in games with certain elements to games without them. Blakesley (2013) looked at how narrative fit into the design of an educational game by looking at how narrative was used within a particular game during its development. Masek, Murcia, Morrison, Newhouse, and Hackling (2012) investigated elements that would work best for a proposed game to help students learn about nanotechnology. Dozier (2012) examined a series of game designs in order to find one which was best at efficiently teaching students about the complex effects which can arise from simple economic systems. Koenig (2008) investigated how educational games could use narrative to give the user context and an understanding of the presented material. Dickey (2011) also examined narrative in educational games, gauging how narrative affected a user's level of stimulation and interest. Carmody (2013) performed a study that looked at the design heuristics used by experienced game designers in order to strike a good balance between game elements and instructional elements. Becker (2008) examined how commercial games used design elements to teach players about game mechanics so that this knowledge could be applied to the design of educational games. Bjoerners and Søgaard (2010) looked at the design of an educational game by considering the design of the game as being a part of a greater whole, and examining how to design a game to take those factors into account. Dalal (2012) looked at using rapid game prototyping to help students learn about the process of developing and improving software. Thomas, Xun, and Greene (2011) also examined
using game design projects to educate students in computer skills. Hofstede, Leon, and Peters (2011) looked at simulation games and why they tend to be more engaging for players than other learning methods, and therefore why they are better learning tools. Whitton (2012) noted that developing games for education can often be too expensive or time consuming, and looked at game learning options that were not as time or cost prohibitive. Wernbacher, Pfeiffer, Wagner, Hofstätter (2012) focused on fun in educational games, arguing that many educational games fall short of commercial games in terms of fun, and examined the creation of a more fun sort of educational game. Beatty (2014) broke down the elements that make up a video game and examined how each fit into a learning framework. Altamirano and Juarez (2013) looked at the effects of having economics students create their own games featuring concepts from an economics course. Dickey (2007) examined how the game mechanics of online role playing games spurred player motivation, and how these could be applied to educational games. Anton and Barany (2013) examined the use of games in order to teach students about the capabilities of computers and about what tasks they might solve through programming.

Of particular interest amongst these studies is the parallel drawn between educational and commercial games in that commercial games must also educate their users about their own mechanics, and so in a sense all games are educational. Most commercial games are just not focused on teaching real world information. These studies fall in to the same category as the last group, in that they are focused on a specific sub-set of features of games.
3.3. Examining the Process Behind Game Design

The previously mentioned studies all examined game design in specific situations such as educational games or other specific game genres, but there are also studies that examined game design itself and the thought that goes into it. Lake (2000) examined game design in terms of the context in which the design happened, such as the effect the development team, audience, and hardware manufacturers had on the design process. Warden (2005) looked at similarities between architecture and video games in order to design a school that would facilitate video game design. Robinson (2006) looked at the process of game design by drawing parallels between the process of designing a game and the process of writing a book, and used this analogy to examine what makes games fun. van der Graaf (2012) examined the organizational structure of Valve in order to see how it influenced the game design process that went on there. Patton (2013) examined the game design process that a number of students went through in the making of games with a certain set of criteria, and looked at the effect this process had on the designers.

All of these studies took a higher level view of game design and focused on the process that gives rise to the design of a game, which can give helpful insight into the best environment for game design or a better heuristic for deciding on what elements to use to improve a game. Of particular interest is comparing game design to the writing of a book, as this gives an additional way to examine game design. The major way this thesis deviates from these is that it seeks a more automated way to examine and rate the aspects of a game. This thesis starts from game aspects and tries to work its way up to
the human level, whereas these studies start at the level of a human designer and work their way down into the game design process.

3.4. Examining the Details of Game Design

Christopher (2011) applied game theory to game design by examining how it can be used to model systems within a game world in a way that can be understood and enjoyed by players. He does this by analyzing two of his past projects through the lens of game theory, breaking down games into aspects such as whether or not they are zero-sum (one player must win and one must lose, or they must tie), or whether player actions may be taken at any time, or whether they are taken in turns. The study's focus was on helping designers pick the best aspect choices for their game at a lower level so that players could enjoy the game, which is similar to the aim of this thesis, though with a different approach; that study took game theory and applied it to examine game aspects, whereas this thesis uses an approach that has more in common with data mining to find good game aspect choices.

3.5. Using User Feedback to Fuel Game Design

Fricke (2013) focused on different methods by which feedback from players could be collected so it could be used in the process of improving the game. It mostly examined social methods of information collection, such as presentations, blog posts, and conversations. Desurvire & El-Nasr (2013) also looked at different player feedback methods, but focused on think-aloud and heuristic methods. Rodrigues & Ansari (2012) examined using data mining on a collection of user's preferences and feedback in order to improve the design of a game. They apply the Apriori algorithm to a large collection of
user feedback data in order to determine player trends in that data for the improvement of
game designs. That study broke down game aspects similar to the way proposed in this
thesis, examining game aspects such as enemy type or variety of weapons. This study
looked at a small list of just 5 game aspects, but it seems as though it could be extended
to work on larger data sets. Shu-Yu (2010) looked at the process of improving online
role-playing games through user feedback. Through the use of trained interviewers, data
was gathered from players at cybercafes, and broke the data down into ratings for each of
a number of features, coming to a conclusion that features such as character
customization and story were important in these games. Sherry, Lucas, Greenberg, and
Holmstrom (2013) focused on game aspect preferences among children in order to make
games that would be more engaging for them, finding that game preferences among
children were strongly tied to their age. Eladhari and Ollila (2012) looked at the overall
process of iteratively designing game prototypes, with one of the components they look at
being gathering and use of user feedback in improving the prototypes. Peoffitt and Lange
(2012) used an iterative game design process that incorporated user feedback in order to
develop an exercise game for older people, including focus groups that analyzed
perceptions of health and technology. This study looked at features such as how scoring
in a game might help to engage players, or how simple interfaces would encourage older
people to play, as it could help to overcome trepidation regarding technology. Biles
(2012) took a study which looked at a single user's experiences and applied the lessons
learned to the field of game design. This paper mostly focused on the social experiences
of this player had based on playing a game, and focused on how game design applied to
these. Moreno-Ger, Torrente, Hseih, and Lester (2012) looked at how to apply a large body of data recorded from play sessions of an educational game in order to improve the game. The focus of this study was specifically on the usability of the game, seeking to eliminate user error caused by bad interface design in order to allow them to experience the trial and error experience of the game unhindered. The study used video footage of gameplay sessions which researchers would then examine, looking for events which indicated that the interface could be improved. Kohler, Fueller, Matzler, and Stieger (2011) studied user experience in the context of a game in which users could collaborate to create new things in order to design a better creation system. They used data from interviews with those involved with existing systems as well as observation of users within those systems in order to form a hypothesis of what would be best to change to improve the creation system. The focus of the data collected about the systems and users was on level of engagement with the systems. In order to improve this, the study decided that factors such as ease of use and sociability, as well as ways to inspire users to create through challenges, were important to make these systems enjoyable.

These studies all have methodologies which are very similar to that of this thesis, in that the main goal of this study is to collect user feedback and create a better game based on it. The major difference is that this thesis means to use an automated game configuration process to gather feedback from players and to make a better game for each player.
3.6. Procedural Game Creation Tools and Studies in Automatic Game Design

Automatically creating a game can be a difficult process, but there have been a few researchers that have looked at the process behind it, and a few even looked at designing the rules for a game from scratch. Fisher (2012) created an automatic level generator for the game Cloudberry Kingdom which could scale its difficulty based on a player's skill level. Hom (2007) did a study in which they automatically developed balanced board games, i.e. board games that are fair for all players involved. The Flow study performed by Chen (2006) looked into an automatic way of adjusting the difficulty of a game in order to maximize user enjoyment. The study by Nelson (2008) looked at the creation of a system which could reason about the design of a game and warn the designer about any design mistakes. Two studies by Browne(2008, 2010) studied the generation of rules of a board game from scratch by implementing a game system called Ludi that could examine combinatorial game designs in order to find higher quality designs. Cook, Colton, and Gow(2012) designed 2d platform games by breaking them into several sub-pieces and using a co-evolution algorithm to design new games. Smith and Mateas(2011) created a symbolic system to represent the rulesets behind a set of mini-games that were then used in a game called Variations Forever which allowed players to explore the different options for these mini-games. Finally, the study which is most similar to this one is the study performed by Togelius (2008), in which they look at the automatic selection of rules for a graphical game comparable to Pac-Man.
While all these papers are related to automatic game design, this thesis differs from each in significant ways. Togelius’ study is, like this one, concerned with spanning the set of commercial games:

Game rules determine when the game begins and when it ends. They determine what the player can and can’t do, and (together with the actions of other players) what happens as a result of the player’s actions. The complexity of rules vary from something as simple as checkers, which can be expressed in a paragraph of text, to something as complex Starcraft, Counter-strike or other modern video games, where the rules cannot be expressed in its entirety without describing the whole game engine. (Togelius, 2008)

However, his study focuses on designing games by varying the rules which go into making them, whereas this thesis focuses on all the aspects that go into a game, rules being a consequence of these. The study by Hom (2007) is based on board games as opposed to commercial video games. These types of games, such as real time strategy games and first person shooters, can differ greatly board games, and do not lend themselves to the sort of simple analysis board games undergo. The vast range of game environments, objects, and rules that these games present offer a unique procedural game generation challenge. Second, unlike the Flow study (Chen, 2006), this thesis is not looking in depth at a particular aspect of a game, but is looking at the configuration of the overall game based on a set of premade game aspect choices. Lastly, the study by Nelson (2008) looks at a tool to aid in game design, as opposed to a tool to design games on its own. It does cover some territory that this thesis’ area design tool does, though:
Systems that provide automated game-design support—whether fully automated game generators, or tools to assist human designers—must be able to maintain a representation of a game design and add or remove game mechanics to support incrementally modifying the game. The system should then be able to reason about the design to support the designer. For example, it might point out that the set of mechanics makes the game unwinnable; or that there’s only one complex possible way to beat the game; or that some room is impossible to get to. In addition, the same representation should be actually playable as a game. (Nelson, 2008)

However, while this study’s tool and the area designer have similar functionality, they are being used in different ways. This study differs from the Browne study in that the Browne study was entirely focused on combinatorial game rule generation, whereas this thesis takes a higher level look at game design from the standpoint of commercial games, and selects from a set of pre-built components rather than designing rules on its own. The Smith study was similar to this thesis in that it selected from a set of premade components, but the focus of this study was on the generation of games itself rather on using the game generator for another purpose like this thesis does. The Cook study breaks its game design down into aspects like this thesis does, but it breaks it down into a specific three aspects and discusses those, rather than making a generic method meant to work with a wide variety of aspects.

Table 1 summarizes the studies that had the most significant similarities to this one.
Table 1: Studies Similar to this Thesis

<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Fricke(2013)</td>
<td>Examined social methods of collection of player game aspect preferences</td>
</tr>
<tr>
<td>Sherry, Lucas, Greenberg, and Holmstrom(2013)</td>
<td>Studied game aspect preferences among children in order to make engaging games for children</td>
</tr>
<tr>
<td>Peoffitt and Lange(2012)</td>
<td>Incorporated user feedback into an iterative design process for a game for elderly people</td>
</tr>
<tr>
<td>Chen(2006)</td>
<td>Designed a system for automatically adjusting the difficulty of a game to match player skill level</td>
</tr>
<tr>
<td>Nelson(2008)</td>
<td>Discussed a system which could aid a game designer by automatically detecting design faults</td>
</tr>
<tr>
<td>Togelius(2008)</td>
<td>Automatically generated a Pac-Man like game with varying rules</td>
</tr>
<tr>
<td>Fisher(2012)</td>
<td>Automatically generated platformer game levels</td>
</tr>
<tr>
<td>Browne(2008)</td>
<td>Automatically generated rules for combinatorial board games based on a variety of criteria</td>
</tr>
<tr>
<td>Smith and Mateas(2011)</td>
<td>Automatically generated games based on a selection of game aspects</td>
</tr>
<tr>
<td>Cook, Colton, and Gow(2012)</td>
<td>Automatically designed 2d platform games based on a co-evolutionary method</td>
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</table>
4. CONTRIBUTIONS

While there have been studies that touch on topics and methods which are similar to those that will be discussed here, none of the literature reviewed used an procedural game generation system in combination with a user rating/game design feedback loop. This combination is the unique contribution that this thesis will offer to the field of game design, as this combination can offer new ways to apply user feedback to the creation of a game, and if the proposed system is used in real time, it could offer new ways to play games.
5. METHODS

The purpose of the methods presented here is to be able to assign a numerical rating to the individual parts (from a game design standpoint) that make up a game. This rating represents a user's enjoyment of a part of a game, and can be used to compare game parts and determine which is better in terms of user enjoyment. From a game design standpoint, the parts of the game are not individual portions of a game that a player may experience as he/she plays through the game, but those global aspects of the game that determine what sort of a game it is. As an example of these aspects, we will briefly break down the classic game Tetris.

![Figure 2: The classic game Tetris in one of its many incarnations.](image)

In Tetris, shapes made of squares fall into a two-dimensional grid playing field of limited size. The player can control their left to right movement. The player may also rotate the shape 90 degrees in either direction as many times as they like before it hits
another shape. Once the shape hits one of the shapes that has already been added to the field, that one becomes immobile and the player is given a new shape at the top of the screen. The game ends when these shapes stack up to the top of the playing field. The player may remove some of the squares from shapes, though, by using multiple shapes to fill the board's grid cells horizontally. All those squares used to fill the grid horizontally will disappear from the board when this occurs. When this occurs, points are given to the player, with more points being awarded for clearing more lines at once. When a certain number of lines have been cleared, the shapes start falling faster. The goal of the game is to get as many points as possible before the field fills up. Figure 2 depicts a typical Tetris play field.

Some examples of "aspects" of Tetris are:

- The core gameplay idea of making horizontal lines out of falling blocks
- Scoring points for line clearing
- Scoring more points for clearing multiple lines at once
- Losing when the blocks reach the top
- Player being able to move the shapes left and right
- Player being able to rotate the shapes 90 degrees

A question could be asked at this point: what is the point of breaking a game down into these aspects when many of them seem integral to the game? For example, removing the aspect which causes the game to be over when the blocks reach the top would mean the game cannot be lost, and would also become dull because the field would remain full and no progress could be made. There are a few reasons to consider
every aspect of a game. First, this aspect could be replaced with another aspect, such as "When the blocks reach the top, the board clears and the player loses half their points", and a game over condition could be added such as "The game ends after a half an hour". Second, games such as this which would be seen as degenerate or pointless should still work in the following method, as if such a game is indeed pointless, it will be given an extremely low rating. Even if the core gameplay aspect was taken out, leaving the player with nothing but a blank play field with a score display that will always read 0, the game would still be valid under this method, it would just be considered very poor. However, it may be that changing aspects that seem integral to a game can lead to new kinds of games entirely, so it may be worth it to consider these aspects to be modifiable as well. If there really is an aspect that is not optional, it can be left fixed, and the method can just be used to examine the aspects that are modifiable.

Using this method, we will take a game concept which has aspects which we would like to rate several alternatives to, and allow these aspects to vary freely. In our Tetris example, it may be the case that we want the rated aspect to be "Game end method", with our choices being "When blocks fill the field" and "When a half an hour has elapsed". The second option leaves out a condition regarding when blocks fill the field which could render part of the game unplayable, but this will be discussed later. A game could have any number of aspects associated with it.

We consider a game $g$ to have associated with it a set of aspects, $a$. Each aspect in $a$ has a name and a set of aspect choices associated with it. Each aspect choice also has a name associated with it, as well as a calculated rating and a count for the number of
times the aspect choice has been rated. This rating will start at 0 on a scale from 0 to 1, and further calculation of it will be discussed later. A rating of 0 is the worst rating a game can receive, and a rating of 1 is the best. The rating count will start at 0. So, to formalize our example from the previous paragraph, $g$ is the game Tetris. It has associated with it a set of aspects $a$.

$$a = \{("Game end method", c)\}$$

where $c$ is the set of aspect choices associated with $a$.

$$c=\{("When blocks fill the field",0,0), ("When a half an hour has elapsed",0,0)\}$$

Once the set of aspects is selected, this method requires there to potentially be a version of the game in question which has every possible permutation of aspects. There are 2 major ways to do this:

1) Manually create every possible version of the game.

2) Create a tool which can, given a choice for each aspect in the given set of aspects, apply them to a game and design whichever parts of the game need to be designed based on these aspects automatically.

As the first way would only be viable for a very small number of aspects, we will focus on the second.
5.1. Procedural Game Generation

This method will work best when used with a tool which can automatically generate a game based on a set of game aspect choices. We call this process procedural game generation. This process involves the automatic generation of a game or portion of a game based on a set of design rules (these are our aspects). This can involve generating game worlds, choosing between player control schemes, balancing game values in order to preserve difficulty, and choosing opponent AI behavior. The methods used for procedural game generation will differ wildly depending on the type of game and the sort of aspects which are allowed to vary, and some aspect choices are much easier to design for automatically than others. In the example given before of the game end method for Tetris, "designing" a new game based on choice of game end method would be as simple as setting a flag in a piece of code which will use one game over method or the other. No other aspect of the game needs to be affected. For many game aspects, procedural game generation is no more complicated than this. However, more complicated games such as role-playing games which rely on carefully balanced systems of numbers could have the systems ruined by the sudden changing of a game aspect. Worse still, in a platforming game like Mario, the placement of an opponent character in the wrong location can mean the difference between finishing part of the game and being unable to finish it. An procedural game generation system may very well need to design these sorts of things in order to make a game based on a set of aspects, and so this design process could be very complicated in certain cases. However, there are some common elements in the procedural game generation process which bear discussing.
First, many games, such as any given Mario game, have significant portions of the game broken up into "levels". Finishing a level is meant to act as a milestone within the game, often letting the player restart from the beginning of each level if they fail some challenge within it as opposed to making them start the entire game over. These levels are also sometimes arranged in such a way that a player may freely choose from a set of them to play after having completed a previous level. Figure 3 depicts how this is done in the classic game Super Mario World. The number, difficulty, and arrangement of these levels is an aspect which comes into play in many games, and a level can often be
treated as a unit of design by the game designer, in the sense that they often are self-contained in many ways, so their contents need not be taken into consideration when designing the rest of the game or other levels.

Figure 4: Dark Souls is a game that is famed for its high level of difficulty.

Second, a common feature of nearly all games is that they are supposed to challenge the player in some way, and as such, the procedural game generator must consider the difficulty of a game. Figure 4 shows an example of a game that is well known specifically because of its high level of difficulty, Dark Souls. The source of challenge in a game varies greatly from game to game, but the designer must still have a method of estimating the difficulty and ensuring it remains within the range required by the game. This range can itself be a game aspect, as some players enjoy games which are
more challenging, while others enjoy easier games or become too frustrated by games with a certain difficulty level. Still, the difficulty of a game usually does not change randomly, it is usually governed by some sort of difficulty curve which gradually makes a game harder, as in the increasing shape fall speed in our Tetris example. It is important to estimate the difficulty and ensure that it stays near the desired curve.

Figure 5: Gameplay in Final Fantasy games is based on turn based combat.

Third, many games have a most basic aspect which is the core of the game, the part that produces challenge, and the rest of the game aspects are built on top of this aspect. In some games, gameplay consists solely of repeated applications of this most basic aspect. For example, in role-playing games such as Final Fantasy, the most basic aspect is a battle against a set of monsters which can occur at any time while the player moves his character around the game world. Figure 5 depicts one of these battles from
Final Fantasy 5. These battles have no affect on the player moving through the game world, and so the world can be designed separately from the battles, and another basic gameplay aspect choice could be substituted entirely without affecting the rest of the game.

5.2. Playing the Games

Once a procedural game generation system is set up that can generate the range of games we want to investigate, we then want players to play the games so they can rate them. There is a problem in this, though; even for a relatively simple set of game aspects and choices, there will be more combinations of game aspect choices available to play than a player will have time to play, and there are likely more than even the entire sample set of players will have time to play. In other words, we have to deal with the fact that there is a limited amount of user feedback that we will be able to collect.

In order to deal with this, we have each player play a representative set of the games that make up our sample space. We select this set of games by making sure each of the different game aspect choices appears a roughly equal number of times among the set of games that player plays. This has a drawback in that some game aspect choices might work particularly well together or may not work well together at all, and those may not ever appear together to be rated; because of this, this method works best when the aspects that are being rated are mostly independent. Because this is not always possible, it should be made clear that this thesis aims to find a game that will be more highly rated than the representative set, but not necessarily the best game from the entire sample space. To put the size of the search space in numerical terms, the number of elements in
the search space is equal to the product of the number of choices for each game aspect. Let us consider an example that has 5 aspects, each with 4 choices that can be made. The number of elements in the search space is 1024, which is too many games to expect any given person to play. If the user has time to play 8 games, each choice will be able to appear twice during the experiment. Though the user only has a chance to see 8/1024 games, or .78% of the total search space, we take this small sample of those games to be a microcosm of the full sample set, since the aspects that comprise the full set of games all appear in equal quantities in the smaller set.

While there are algorithms that search a space iteratively by using prior ratings to influence future search choices, we elect not to use one of these in this case for two reasons. First, because players can get bored when playing one game for an extended period of time, presenting players with a similar game that is being incrementally improved could lead players to form a more negative opinion of the game than they would normally form. Second, because each of the choices for each aspect of the game may have a very different effect on the user, it is important to give the user as much exposure to each of the choices as possible so each can be properly assessed.

5.3. Game Feature Rating and Blame Weights

Once a game with the desired aspects has been generated, it must be rated. The rating of a game or game aspect is meant to indicate how enjoyable it is to a given player. The average of a collected set of ratings is meant to indicate how enjoyable that game or aspect would be to the group of players to which the ratings refer. While we can generate some games automatically, it would be much more difficult to rate them automatically.
We therefore have players play these games and then assign a numerical rating, from 0 to 1, to the game afterward. In a simple version of this method, we add this rating on to the rating for each aspect choice that was chosen for this particular version of the game, and add one to the rating count for each of those aspect choices. Then, to get a final rating for each one of these aspect choices, we divide the rating by the rating count. It may be possible for some games to get more detailed information out of the player by breaking the rating of the game up into parts. For example, there could be separate ratings, from 0 to 1, for game controls, fun, graphics, and re-playability. Each of these parts would have a "blame weight", from 0 to 1, associated with them for each aspect which would indicate how much that aspect is related to this rating part. For example, if "art style" was an aspect of a game, it would have a high blame weight associated with the "graphics" rating part. This can help to offset the tendency of many game players to dislike an entire game when a single aspect of the game is responsible for the issues they have with it.

We have a set of rating parts, \( r \), each of which has a name and a list of blame weights, one weight for each aspect. When a rating is given by the player to that rating part, the rating is, for each aspect, multiplied by the appropriate blame weight. This multiplied rating is added on to each selected aspect choice's rating, and the blame weight itself is added on to the rating count.

5.4. Guidelines for Choosing Blame Weights

Though there are many ways the rating parts and blame weights could be set up, here are a list of steps to be used when setting up a list of rating parts and an associated list of blame weights to go along with the chosen game aspects:
1) Include an “Overall” rating part, and give it an equal blame weight of 1 with every game aspect. This can be one of the best tools to use in determining how good a game as, as it is the easiest kind of rating for a user to understand. With enough data, it would be possible to execute a method like this using only a single “Overall” rating part.

2) Difficulty can be a key aspect of games that can turn users away or draw them in, so include a “Difficulty Enjoyment” category. Give this one blame weights that link to aspects which affect difficulty, such as aspects which raise or lower the player's number of lives or amount of health, or the number of enemies. For aspects that directly affect difficulty, it is recommended to give a blame weight of 1, whereas lower weights of .5 or .25 are recommended for aspects for which it is suspected that they may influence difficulty, but which don't directly do so. For example, anything that changes the genre or the goal of the game may make the game seem harder, but not in as clear of a way as changing a number of lives would. We choose lower weights like this because the given aspect may have only a small effect on difficulty, or because the perceived effect may differ from person to person. .5 and .25 are just examples of values to give for the weight for such an aspect, and it may be useful in future work to determine more ideal values for these weights.

3) Include other rating parts that are important to the particular type of game or for portions of the game it is suspected there may be a strong reaction to. For example, how your characters get stronger is often a critical aspect of role playing
games, so including a “Level Up System” category would be a good idea for these kinds of games. Be careful that these rating parts are mentioned in a way players will understand, however, as no good information will be gathered if players don't understand what they're rating. To assign blame weights to these, examine the game aspects and add a weight for each to the given rating part if it is influenced by that game aspect. Give it a weight of 1 if it directly influences that rating part, and .5 or .25 if the influence is weak or unclear.

While this method will work with just a single rating part saying how good the game is overall, it can be advantageous to have users rate several categories in order to hone in on good results more quickly. How much additional categories will help depends on how well the blame weights between the rating parts and game aspects were set up, so if the link between rating parts and game aspects is unclear, it may be best to just use an overall rating. While having these blame weights set up properly ahead of time would be critical for an automatic version of this method, as otherwise it would not be able to produce better games than the representative set, in a manual version the blame weights could be tweaked after the fact, and the data itself could be examined retroactively in order to determine what people thought each rating part meant.

5.5. Aspect Selection

Procedural game generation will be easiest when there are fewer aspects, and when these aspects have few connections to each other, e.g. when they do not need to be considered when designing game portions based on other aspects. In our Tetris example, suppose the choice of which shapes could fall was an aspect. Some combinations of
shapes may make it impossible for more than one line to be removed at once, or even impossible to remove a single line. This would affect the overall difficulty of the game significantly, and as such much be considered when designing for difficulty. It may also make the game impossible to design entirely. A game where no progress can ever be made could be considered infinitely difficult, and if the game is being designed to meet a finite target difficulty, this game could not be designed. Furthermore, the degenerate games that were mentioned earlier may be designable, but would certainly receive a low rating, and so it would be best to avoid designing these types of games in the first place. Because of this, it is best to choose a set of aspects for which the procedural game generator can, for any combination of the aspects, create a game which is designable and which is likely to receive a non-poor rating. Determining what will receive a non-poor rating is, of course, a very subjective process, but if a game seems broken or unchallenging, it will be likely to receive a poor rating from players. It may be best in some cases to limit certain aspect choices based on other aspect choices that have been made. In our Tetris example, if the choice has been made not to end the game when the blocks get to the top of the screen, some other aspect needs to be chosen that will clear the field when a certain condition is met, as otherwise the field would fill up and continued play would be impossible.

5.6. Choosing Aspects and Improving Game Designs

This method will involve having the player play a set of automatically designed games and rating each one, with the end goal being to produce a game the player will rate more highly than a game with randomly chosen aspects. The player is first given a set of
games with randomly chosen aspects, and ratings are gathered for each of these games. Next, we take these ratings and generate both the best and worst possible game for that user based on their aspect ratings. The player then plays both of these, and if the method succeeded, the best game will be rated much more highly than the worst game, and also more highly than the randomly chosen games.

In another version of this thesis, instead of generating a new best game using each of the best rated aspect choices, we could simply choose the best rated of the games and present this as our best game. However, it is highly unlikely that this game is the ideal game for that player, as it would have had been made using a semi-random set of aspect choices, whereas making a new game using the best rated set of aspect choices could yield the ideal game for that player, since it could contain each of the aspect choices that player liked best.

5.7. A Note on Timing

Players can have very different opinions of a game depending on how far into the game they are. They may be enthralled by a game at the beginning and sick of it by the end. That is why it is important in this thesis that all of the games be of about the same length, and that the ratings be taken at about the same time during the game. It may be that the game is meant to be finished in 5 minutes, or that the game can last for 10 hours but the rating is taken 5 minutes in. Note that in the latter case where the rating is taken before the game is over, the game should be similar in overall time anyway so that the players can experience about the same amount of the game in the given time.
It should also be noted that this sort of method will probably not work well for aspects whose novelty wears off quickly. For example, using this method to compare two game stories may not work well, as stories tend to not be as entertaining when experienced several times. This method is better geared for more time insensitive aspects like combat and world layout. Tetris is an excellent example of the sort of game this method was made for, as it was designed to be played many times, while some games are only really meant to be experienced once.
6. EXPERIMENT DESIGN

For this thesis, our goal is to set up an experiment that will show that by gathering user ratings from games with randomly chosen game aspects, we can determine which game aspects users liked best and can produce a game for each user based on these ratings that will, on average, be more highly rated than the randomly chosen representative games. In doing so, we will also show that we can successfully determine what game aspect choices each user liked best.

When designing this experiment, one important thing to consider is that we want to minimize the time the experiment takes for a user to participate in. It is important to reduce this time for several reasons:

- A long experiment may start to take a toll on the ratings given to the games, as the player may begin to get bored, or their level of attention may drop, causing the different game aspects to seem very similar and uninteresting.
- Players may have busy schedules, and a shorter experiment means more subjects will want to participate.

6.1. Criteria

In order to meet these goals, we set our test game up to meet the following criteria (note that while these are important criteria for this experiment, these are not necessarily limitations of the method itself, and have more to do with the limited scope of this experiment):

- **The game itself must be relatively short.**

  The total time taken for this experiment is going to be the number of game ratings
that must be performed times the length of each game. Keeping the game itself short will be key to making the overall experiment shorter. We will aim to make each game in this experiment take about 5 minutes to win or lose.

- **The games must be simple.**

  The games should all follow the same major gameplay style, and the style should belong to an easy to understand game genre with gameplay aspects with little depth so they may be comprehended quickly. Games like Tetris style games, platformers, shooters, and racing games fit this description, while strategy games and role playing games do not. The method itself could be used for complex games, but due to the limited scope of this experiment, we will use a simple game.

- **Our game aspects must make a difference.**

  Because we don't want our players to have to spend a long time with each game in this experiment, we want game aspects which will have an obvious affect on the game, and which make the resulting game easily distinguishable from a game which made a different choice for that aspect. It could be very useful in some implementations of this method to have more subtle game aspects such as intricate scoring details or complex level systems which can take hours to fully explore, but for this experiment we want simple, obvious game aspects. A good example of this is graphical theme (e.g. is it a space themed game? A western?). This has an immediate effect on everything a player sees, and can directly impact how much they enjoy the game.
• **Our game aspects must not change the game too much.**

If there is too much variation in the game aspects, such as if there were a game aspect to choose the genre itself, the experiment arrives at a state in which players will be heavily polarized by the aspect which modifies the game to this extent. While a decent amount of aspect polarization is to be expected, as some players have very specific taste in what they like in their games, we would like to be able to a certain extent to be able to compare what one user rated highly to that of another. This requires a certain level of focus in the gameplay aspects, where all the aspects revolve around a central game concept which is constant through all the games this experiment generates. This method would still be able to point designers towards those less noticeable aspects with enough user data, but since this particular experiment is being set up to work with a small amount of user data, we will avoid game changing aspects. This constant element allows for comparison between ratings given by different players, and makes interpretation of these results easier. Also, if this method were used in a commercial situation, chances are decent that the game designers would already have some idea of the general sort of game they would like to make, and would want to use this method in order to help determine the specifics of the game. If this experiment follows a similar model, it represents a more useful version of this method than it would otherwise.

• **Our game must have aspects with a variety of effects.**

If the set of game aspect choices is simple enough (say, if there were only a single
aspect with two choices), it may be easier to just make some kind of mathematical model of the game which can determine which choice is better, or to ask players directly. For example, if the only aspect were "Graphical theme" and the choices were "Fantasy" and "Space", it may be easier than using this method to just take a poll of potential players, asking which type of theme they enjoy more. This method is at its best when the effects of a certain aspect, while having a noticeable impact on the game, would be difficult for a user to characterize without having actually experienced them by playing a game.

- **Each aspect must have a small number of options.**

In order to be to some extent exhaustive, we would like each aspect choice to be presented to the player at least once. This means that the shortest the experiment could ever be is the maximum number of choices any one aspect has times the length of each game, plus that many games again after that to try to mix up the aspect choices once each one has been rated once. Therefore, we want to keep the maximum number of choices each aspect has low. Each aspect should have no more than 4 choices associated with it.
6.2. Experiment Game Setup

Figure 6: A typical screen from the experiment game.

For this experiment, we will use a top down shooter as our central game concept. This type of game generally features a ship or a character that can aim at enemy characters and shoot projectiles at them, while the enemies will try to either collide with the player or shoot projectiles back at them. The player can also move their character in order to dodge enemies and advance in a game area. The player's character has a health meter which determines how many times they can be hit before they die. This appears above their character's head. Furthermore, we will look at the sub-genre of the top down shooter, the "dual stick shooter". In this type of shooter, aiming and movement are
performed separately, so a player can, for example, move upward while shooting to the left. Examples of well-known games in this genre are Gauntlet, Geometry Wars, and Smash TV. This game will be implemented on PC. A keyboard will be used for movement (using the W, A, S, and D keys, allowing 4 directions of movement) and the mouse will be used for aiming, with left clicking causing the player to shoot in the direction the mouse cursor is from their character. Figure 6 shows what the finished experiment game looked like to players.

This game meets the criteria specified earlier, as it is a simple game type in which gameplay can be noticeably affected by simple changes. It is fast paced, and game rounds can be designed to last for a short time. Also, there are many game aspects that can be changed, such as weapon types or graphical theme. The effects of changing the goal of the game or the layout of game areas is the kind of thing that would need to be experienced to be understood as well, and this is easy to do in this type of game, making it well suited to our criteria.

6.2.1. Weapons

The player will at any given time have a set of weapons they can choose from (by using the mouse wheel). Which weapons they have will depend on what game aspects choices are being used, but they will be drawn from the following set of weapons:

- **Sword:** A short range weapon that will damage things in an arc in front of the player.
- **Pistol:** A projectile weapon with no auto-fire, so the player must mash the fire button for sustained fire from this weapon.
- **Plasma Gun**: A projectile weapon with auto-fire, that fires a stream of projectiles.

- **Machine Gun**: A projectile weapon with auto-fire, but each shot will instantly hit the first thing in its line of fire, rather than having a projectile travel along the line and cause damage when it hits something.

- **Spray Gun**: A projectile with auto-fire, that fires several streams of projectiles side by side.

- **Rocket**: A projectile with no auto-fire, that will explode on contact and damage things in the area.

- **Mine**: An object that stays where it is dropped, and will damage the first enemy that comes into contact with it and then disappear.

- **Turret**: An object that stays where it is dropped, and will face nearby enemies and fire at them autonomously.

- **Bomb**: A weapon which will damage everything within a certain radius of the player on use.

6.2.2. Enemies

Enemies the player will face will come from spawners, objects on the map which can generate enemies endlessly until they are destroyed. Depending on game aspect choices, they may not be able to be destroyed. The enemies which spawners create are drawn from the following set:

- **Scrub**: A simple enemy which just tries to crash into the player.

- **Brute**: Same as a scrub, but slow moving, larger, and takes more shots to kill.
• **Sniper:** An enemy which will attempt to maintain a certain distance from the player and fire projectiles at them.

• **Rogue:** An enemy which can dodge player projectiles, and will try to crash into them.

• **Outlaw:** An enemy which will move randomly and occasionally fire a projectile at the player.

• **Gemini:** Same as a scrub, but splits into two smaller enemies when killed the first time.

• **Roid:** An asteroid. Has no intelligence and just drifts about. Will split when killed.

6.2.3. **Powerups**

There will also be powerups which the player can pick up if certain game aspect choices are made. These are:

• **Double Attack:** The player's current weapon's auto fire happens at double speed.

• **Score Multiplier Up:** Increase the score multiplier by 1.

• **Invincibility:** Player cannot be hurt for a few seconds.

• **Treasure:** Increases score.

• **Restore Health:** Restores the player's health bar.

• **Restore Ammo:** Restores all ammo on the current weapon set.

• **Weapon Level Up:** Upgrades the current weapon.

• **Weapon Ammo:** Restores some ammo to a particular weapon.
6.2.4. Aspect Choices

Keeping in mind the game aspect selection criteria listed above, we select a set that will fit in well with our chosen genre.

![Fantasy vs. Space Theme](image)

*Figure 7: Fantasy theme vs. space theme.*

6.2.5. Aspect 1: "Graphical Theme"

As given in examples before, the theme of the overall look of the game. Figure 7 depicts the two themes used in this experiment.

- **Choice 1: "Fantasy"**
- **Choice 2: "Space"**
6.2.6. Aspect 2: "Difficulty"

An important aspect in most games, determines how much the player should have to struggle with the obstacles the game presents. In this case, it will have to do with how difficult combat with enemy characters is. This is also an option many games present directly to end-users when they begin playing so they can set the difficulty themselves.

- **Choice 1: "Easy"**
- **Choice 2: "Normal"**
- **Choice 3: "Hard"**

*Figure 8: The four game area progression types.*
6.2.7. Aspect 3: "Game Area Progression"

Determines how many game areas (also called levels) are in the game, how they are arranged, and how the player moves from one to another. Figure 8 has examples of the four options.

- **Choice 1: "Single level, survival"**: With this choice, the entire game consists of a single large open area which enemies will appear in endlessly. The player's goal is to last as long as possible, as their health will eventually be worn down to nothing by the opponents. This is in the style of arcade games where a game cannot be won, the player can only get as high of a score as possible before losing.

- **Choice 2: "Small rooms in sequence, kill everything"**: This game area progression has the player advancing through a series of small rooms, only allowed into the next area each time by killing everything in the previous area. This continues until the player reaches the final area, at which point they beat the game.

- **Choice 3: "Small cave network, find exit"**: All areas are filled with enemies but may be moved between freely. The exit is somewhere unspecified, and the player must search to find it.

- **Choice 4: "Rooms with mazes, find exit to next floor"**: Each area has a small maze in it. Easy to reach exits will take you a single floor down, and are guarded by a small number of enemies. Exits that will take you down multiple floors are
guarded by harder enemies. There are also extra point powerups in optional maze paths.

![Sample weapon sets](image)

*Figure 9: Sample weapon sets.*

6.2.8. Aspect 4: "Player Weapon Style"

Determines what sort of weapons the player has, and how they recharge. Figure 9 shows what weapon sets might look like.

- **Choice 1: "Single weapon, infinite ammo"**: Player only has one weapon available to them (a spray gun), but it has no use restrictions.

- **Choice 2: "Six weapon set, ammo regenerates"**: Player is given a six weapon set. The ammo is limited on the last five weapons, but will regenerate over time.

The weapon set consists of:

- Infinite ammo sword
- Pistol
- Spray Gun
- Machine Gun
• Rocket
• Mine

• **Choice 3: "Six weapon set, ammo must be found"**: Player is given a six weapon set consisting of:
  
  • Infinite ammo Pistol
  • Plasma Gun
  • Spray Gun
  • Rocket
  • Turret
  • Bomb

  The ammo is limited on the last five weapons, and more ammo must be found by picking it up from defeated enemies.

• **Choice 4: "Start with 3 basic weapons, swap for more"**: Player starts with:
  
  • Infinite ammo sword
  • Weak pistol
  • Weak plasma gun

  Enemies drop weapons, which may be swapped for the weapon currently in use (except for the sword, so the player will never be unable to kill anything), similar to weapons in the game Halo. There is no way to restore ammo in a current weapon, so weapons must be swapped periodically.
6.2.9. Aspect 5: "Enemy Style"

Determines what sort of enemies the player will face. Figure 10 shows a few of the foes players may face.

- **Choice 1: "Gauntlet style"**: The only enemies are scrubs and brutes, so there are no enemy projectiles for the player to worry about.
- **Choice 2: "Shooting gallery"**: The enemies are snipers, and outlaws, so the player is concerned mostly with dodging enemy fire and not with enemy collisions.
- **Choice 3: "All enemies"**: All 7 enemy types are present.
6.2.10. Aspect 6: "Powerups"

Determines whether to include powerups which can help the player or not. This applies only to the Double Attack, Score Multiplier Up, Invincibility, Restore Health, and Restore Ammo powerups. The rest are determined by other aspects.

- **Choice 1: "On"**
- **Choice 2: "Off"**

6.2.11. Aspect 7: "Weapon Upgrade Style"

Determines which, if any, upgrade options there are for weapons.

- **Choice 1: "None"**: Weapons stay as they start and never improve.
- **Choice 2: "Improve through use"**: Weapons will improve based on the number of times they are used.
- **Choice 3: "Upgrade through pickups"**: Enemies will drop powerups which can upgrade a weapon permanently.

*Figure 11: The player examines nearby treasure.*

Determines if treasure is scattered about the game areas or not. Figure 11 shows some of this treasure as it appears in-game.

- **Choice 1: "On"
- **Choice 2: "Off"

### 6.3. Blame Weights

Table 2 indicates the blame weights that were used for this experiment. The labels on top are for each of the four rating parts, and the labels on the right are for each of the eight aspects. The rating parts were the categories which were offered directly to the user for rating. These blame weights were arrived at by considering which aspects were most likely to have contributed to each rating part's category. For example, the “Difficulty” aspect would have contributed highly to the ratings a user would give for the “Difficulty” category, as this aspect determined how easily the player would be killed, and the “Game Area Progression” aspect would have also contributed to this category since it set the overall goal of the game, which also could have made the game feel more or less difficult. The “Overall” category was the most critical, as it could take every aspect of a game into account.
Table 2: Blame Weights for this Study

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Difficulty</th>
<th>Weapons</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Difficulty</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Game Area Progression</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Player Weapon Style</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Enemy Style</td>
<td>1</td>
<td>0.25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Powerups</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weapon Upgrade Style</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Treasure on Map</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

To arrive at a rating for each aspect choice based on the ratings the user game for each rating part, these blame weights were used to take a weighted average of the rating parts, and this was assigned to the appropriate aspect choice. For example, if the aspect choice for “Difficulty” was set to “Easy”, and the ratings for the four rating parts were 5 for Overall, 3 for Difficulty, 7 for Weapons, and 8 for Theme, the final rating assigned to the “Easy” aspect choice would be \((5 \times 1 + 3 \times 1 + 7 \times 0 + 8 \times 0) / (1+1)\), so it would be 4.

Figure 14 gives an example of how ratings for these four rating parts would be distributed amongst game aspects. For brevity, the four rating parts have been abbreviated as R1 through R4, and the eight game aspects have been abbreviated as A1 through A8. They appear in the same order they appear in Table 3.

Table 3: Example Ratings and Distributions

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
<th>A7</th>
<th>A8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>8.5</td>
<td>5</td>
<td>6</td>
<td>6.5</td>
<td>6.8</td>
<td>8</td>
<td>6.5</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4.67</td>
<td>5</td>
<td>4.4</td>
<td>4</td>
<td>5.5</td>
<td>4</td>
</tr>
</tbody>
</table>
6.4. Implementation

The program which implements the experiment discussed here, which participants downloaded and used, may be downloaded at this link:


The experiment was implemented using Visual Studio, using DirectX for graphics, Bullet for physics and OpenAL for audio. This program is meant to run on a Windows machine with Windows XP or newer installed. It was implemented on two layered custom engines that have been in development for the past 12 years. The base level engine, V3, provides an abstracted interface to all modules you would need to make a game, including graphics, control, audio, and networking. The upper level engine, GameGen, was built specifically to allow for easy re-use of game components so that procedural game generation would be possible. GameGen can support a variety of games, and a full game based on GameGen, AE Heart, is scheduled to be released soon.

The program itself consists of several modules. First is the menu module, which handles several tasks; it gathers survey information from users, manages their list of created games, shows them their progress through the experiment, and lets them view manuals for the games. The manuals for each game are also automatically generated based on the game aspect choices for that game.

The game module handles the playing of the actual games. It uses a tile-based game world to represent the levels of each game. Each enemy, powerup, treasure, and projectile that appears is all part of a single game object type. This game object type was made flexible enough to be able to encompass any kind of object in a game without
needing a new type of game object to be made. All GUI elements are part of a custom made GUI system which supports all the basic GUI elements (buttons, check boxes, scroll areas, etc.)

The final module is the score module. This module shows the player their score when the game has ended, as well as asking them to rate the game. It is also responsible for emailing these ratings to the appropriate place.

All screenshots in Section 5 were taken directly from the game.
7. RESULTS

Twenty subjects participated in the experiment, which required each of them to play a series of ten games; eight of them were randomly chosen while ensuring each game aspect choice appeared twice, the ninth was meant to be the worst game for that player, and the tenth was meant to be the best. The ratings for the best and the worst games were determined by using the blame weights on each of the ratings players gave for the first eight games in order to obtain a rating for each of the aspect choices that went into those games. The final rating for each aspect choice was the average of the ratings it had received from each game it was a part of. For the worst game, the lowest rated choice for each aspect was used, and for the best game, the highest rated choice for each aspect was used. Each game was brief, with the entire experiment taking about thirty to forty-five minutes for each player. The raw results obtained from the experiment may be found in Appendix A. In order to examine the results, a script was written that did the following:

- Normalized all user ratings by taking the range of numbers they used and mapping them to the range 0 to 1. This served two purposes; first, it made the results more comparable to each other, as some users may have been conservative with their ratings in case better or worse games showed up later, but then may not have wound up using the whole number range for their ratings. Second, this takes away the absolute aspect of whether the user actually liked the games in general, leaving only whether they liked one thing more or less than another, which is a
much more useful metric for the purpose of deciding which aspects to include in a game.

- Broke the rating for each game each user played down into a rating for each of the aspect choices by using the blame weights to map ratings to aspects. This is done by multiplying each rating by the appropriate blame weight for each aspect and adding it to the total weight for that aspect choice. This gave us an idea of what aspect choices each user liked best.

- Gathered all the aspect choice ratings for each user into one global rating set for all aspect choices. This gave us an idea of which choices were more well liked overall.

- Calculated the average rating users gave random games, the game the system intended to be the “worst” game for them, and the game the system intended to be the “best” game for them. Also calculated was the average rating difference each user had between their “worst” game and their “best” game.

This script may be found in Appendix B.

There were several interesting results to find among the data, but first; did the system succeed in choosing a game for each user that they tended to like better than the random games or the worst game?
Table 4: Average Ratings for Best, Worst, and Random Games

<table>
<thead>
<tr>
<th>Rating</th>
<th>Average worst</th>
<th>Average random</th>
<th>Average best</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4603968254</td>
<td>0.5322247024</td>
<td>0.6988304094</td>
<td></td>
</tr>
</tbody>
</table>

As Table 4 shows, the best games were rated higher than random ones on average, and the worst were rated lower on average. But is it by a significant amount? We compared the best and worst average ratings against the cumulative distribution function (CDF) of random ratings, assuming a normal distribution with mean of 0.5322 and a standard deviation of the standard deviation of all random ratings, .29, divided by the square root of the number of results. Note that there is a different standard deviation for best and worst because one participant did not play the best game, meaning there were only 19 results for the best games. Also note that 1 – CDF was used for the “Best” CDF, since we were looking for the chance of values at the best average or greater.

Table 5: Statistical Significance of Experiment Results

<table>
<thead>
<tr>
<th>Rating</th>
<th>Average</th>
<th>Std dev of random ratings</th>
<th>CDF of random ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best</td>
<td>0.6988304094</td>
<td>0.0665929602</td>
<td>0.0061772841</td>
</tr>
<tr>
<td>Worst</td>
<td>0.4603968254</td>
<td>0.0649067887</td>
<td>0.1342267079</td>
</tr>
</tbody>
</table>

Using the standard measure of statistical significance, a p-value of 0.05, the system was able to produce “best” games that were significantly better than random games, as shown by applying the CDF of random ratings to the average best rating, as in Table 5. The worst games, while being rated lower on average than random games were,
did not produce as statistically significant of an effect. However, the data indicates that the system was successful in using the users' ratings for random games in order to predict how well they would like games made with certain aspect choices.

This is a useful result if your intent is to allow game design to be fully automated and to let the system handle game design improvements. However, what if your intent was to use this data to decide what changes should be made to a game manually? The global ratings that each aspect choice received are shown in Table 6.
Table 6: Average Rating for each Game Aspect Choice

<table>
<thead>
<tr>
<th>Global Ratings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme</strong></td>
<td></td>
</tr>
<tr>
<td>Fantasy, Type 1</td>
<td>0.531002886</td>
</tr>
<tr>
<td>Fantasy, Type 2</td>
<td>0.5894319131</td>
</tr>
<tr>
<td>Space, Type 1</td>
<td>0.5719994431</td>
</tr>
<tr>
<td>Space, Type 2</td>
<td>0.5148174603</td>
</tr>
<tr>
<td><strong>Difficulty</strong></td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>0.582462406</td>
</tr>
<tr>
<td>Normal</td>
<td>0.5128934045</td>
</tr>
<tr>
<td>Hard</td>
<td>0.466290885</td>
</tr>
<tr>
<td><strong>Game Area Progression</strong></td>
<td></td>
</tr>
<tr>
<td>Single level, survival</td>
<td>0.3656525573</td>
</tr>
<tr>
<td>Small rooms in sequence, kill everything</td>
<td>0.5196125441</td>
</tr>
<tr>
<td>Small cave network, find exit</td>
<td>0.5864795918</td>
</tr>
<tr>
<td>Rooms with mazes, find exit to next floor</td>
<td>0.6652480638</td>
</tr>
<tr>
<td><strong>Player Weapon Style</strong></td>
<td></td>
</tr>
<tr>
<td>Single weapon, infinite ammo</td>
<td>0.5930445326</td>
</tr>
<tr>
<td>Six weapon set,ammo regenerates</td>
<td>0.4912193362</td>
</tr>
<tr>
<td>Six weapon set, ammo must be found</td>
<td>0.5727296383</td>
</tr>
<tr>
<td>Start with 3 basic weapons, swap for more</td>
<td>0.532563978</td>
</tr>
<tr>
<td><strong>Enemy Style</strong></td>
<td></td>
</tr>
<tr>
<td>Gauntlet style</td>
<td>0.5744316731</td>
</tr>
<tr>
<td>Shooting gallery</td>
<td>0.5024146224</td>
</tr>
<tr>
<td>All enemies</td>
<td>0.5382756133</td>
</tr>
<tr>
<td><strong>Powerups</strong></td>
<td></td>
</tr>
<tr>
<td>On</td>
<td>0.5417857143</td>
</tr>
<tr>
<td>Off</td>
<td>0.5575796985</td>
</tr>
<tr>
<td><strong>Weapon Upgrade Style</strong></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0.478968254</td>
</tr>
<tr>
<td>Improve through use</td>
<td>0.579791071</td>
</tr>
<tr>
<td>Upgrade through pickups</td>
<td>0.5748626374</td>
</tr>
<tr>
<td><strong>Treasure on Map</strong></td>
<td></td>
</tr>
<tr>
<td>On</td>
<td>0.5856660733</td>
</tr>
<tr>
<td>Off</td>
<td>0.5166454082</td>
</tr>
</tbody>
</table>

(Note that the different “Types” for the Theme choices indicate that different songs were used, though the visuals were the same.)
There are two interesting pieces of data that can be suggested from these global ratings. First, note that the highest rated of all of these aspect choices was the “Rooms with mazes” choice for Game Area Progression. It was rated more highly than every other aspect choice. The flip side of that coin is “Single level, survival”, which got the worst rating of any aspect choice by a decent amount. This suggests that a developer going forward with this game would want to use the “Rooms with mazes” option, and avoid the “Single level survival” option. Similar decisions can be made for every other category. If the developer wanted to target a particular demographic, a breakdown like this could be combined with survey results in order to figure out what that group would like most. Unfortunately, the number of responses for each survey category in this thesis was not high enough to achieve statistical significance for each group, but a wider study should be able to get good results for a demographic. Second, it is easy to suggest which game aspects people paid the most attention to by examining the standard deviation of each aspect's ratings, shown in Table 7.

Table 7: Standard Deviation of Ratings by Aspect

<table>
<thead>
<tr>
<th>Global Rating Std Dev</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Game Area Progression</td>
<td>0.110145104</td>
</tr>
<tr>
<td>Difficulty</td>
<td>0.0477347568</td>
</tr>
<tr>
<td>Weapon Upgrade Style</td>
<td>0.0464123576</td>
</tr>
<tr>
<td>Player Weapon Style</td>
<td>0.0390556911</td>
</tr>
<tr>
<td>Treasure on Map</td>
<td>0.0345103326</td>
</tr>
<tr>
<td>Theme</td>
<td>0.0301015195</td>
</tr>
<tr>
<td>Enemy Style</td>
<td>0.0294009201</td>
</tr>
<tr>
<td>Powerups</td>
<td>0.0078969921</td>
</tr>
</tbody>
</table>
Game Area Progression seems to be the most noticeable aspect by a good amount, as it had both the most favorite and least favorite aspect choice. Meanwhile, people did not seem to care or notice whether powerups were in the game or not. It could be that the effect they had was minimal or hard to understand. If a developer wanted to make a certain aspect an important part of their game, results like this could let them know if they had succeeded in that goal. Based on this, a developer could then take steps to make sure players paid more attention to powerups, or they could focus more attention on making more enjoyable types of game area progressions, since they know that those are already very noticeable.

It should be noted that results based on the average global ratings and standard deviation for those ratings should be taken with a grain of salt, as these depend on the breakdown of the blame weights used to assign the rating parts back to the aspects themselves, and these results, unlike ratings of the best and worst games, have not been verified by direct user rating.

When considering these results, there are a few potential threats to validity that should be taken into consideration. The first is the possibility that the playing of experiment games could affect the ratings of future experiment games. It could be that users were either expecting the system to learn from their ratings constantly, and so expected to rate games more and more highly, or it could be that users started getting bored with the entire concept and started rating games more and more lowly. Based on the final average ratings for best and worst games, this doesn't seem to be the case, but it is something to keep in mind.
It also may be the case that this method is only valid for a certain kind of game player, and by chance every subject for this experiment was the type of player whose ratings could be broken down in this manner. The thesis included a variety of player ages and player skill levels, so hopefully this effect would be counteracted if it were the case that some players were particularly susceptible to being examined by this method.

It may be the case that the game designed for this experiment worked well with this method, while others would not. However, as discussed earlier, it was expected that this method would not work well with all types of games. For example, using this method to decide between different game storylines may not be effective. It is expected that this method would work well with many other types of games, though.
8. CONCLUSIONS

The purpose of this thesis was to show that by allowing the aspects of a game to vary and by rating user enjoyment of games created using those aspects, it may be numerically determined what sorts of games will most appeal to certain users or groups of users, and better games can be created based on this feedback. For this purpose, a tool was created that could automatically generate a game based on these aspects. It was used for an experiment in which players would play and rate a series of games with randomly chosen aspects, and the tool would attempt to make a “worst” and a “best” game for each player, which they would also rate. Data from each of these experiment trials was gathered and examined.

As shown in Table 8, the collected data indicated that games the system made which were meant to be the best fared much better than the games which were meant to be the worst, and did better than games selected randomly. The probability of the best games having an average rating of 0.69, as compared to the ratings of games selected randomly, was calculated to be $p=0.006$ for $n=20$, much better than the < 5% needed for statistical significance. This further indicates that the system was able to get a feel for which aspects each user preferred and didn't prefer, since otherwise it wouldn't have

Table 8: Average Ratings for each Game Type

<table>
<thead>
<tr>
<th>Rating</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average worst</td>
<td>0.4603968254</td>
</tr>
<tr>
<td>Average random</td>
<td>0.5322247024</td>
</tr>
<tr>
<td>Average best</td>
<td>0.6988304094</td>
</tr>
</tbody>
</table>

As shown in Table 8, the collected data indicated that games the system made which were meant to be the best fared much better than the games which were meant to be the worst, and did better than games selected randomly. The probability of the best games having an average rating of 0.69, as compared to the ratings of games selected randomly, was calculated to be $p=0.006$ for $n=20$, much better than the < 5% needed for statistical significance. This further indicates that the system was able to get a feel for which aspects each user preferred and didn't prefer, since otherwise it wouldn't have
known which ones to pick to ensure that the “best” game was more highly rated and that
the “worst” game was more lowly rated. Based on these results, the proposed system of
automatically generating games, gathering user ratings, and automatically generating an
improved game based on those ratings is an effective way for a game developer to
determine what aspects would be best used in their game, either by gathering the results
and responding to them manually, or by using a tool like the one used in this thesis to
automatically improve a game based on the user's feedback.

The results indicate that this method may have advantages over user feedback
based systems presented in past literature, as the automated nature of this thesis allows it
to study game designs in several unique ways; for example, a developer who is unsure of
what the target audience wants could develop a range of game aspect choices which are
suspected of being what the target audience wants, and then let testers from that audience
select these aspect choices through play. Previous game design studies which
incorporated user feedback relied on a trial and error based design cycle in which, based
on collected feedback, the designers would choose a new set of game aspect choices to
try, and then the cycle would be repeated. By considering all game elements in a single
study, a more comprehensive look at the design of a particular game can be taken. By
coupling this method with the use of a survey, it is also possible to detect if a game's
player base has several distinct groups of players that want different experiences from the
game, whereas most game design studies focus on making one game that tries to please
all players at once, which can sometimes be an unrealistic goal.
This method does have a few drawbacks. Setting an experiment of this kind up requires a good deal more work up-front than other methods, since game designers need to be able to anticipate the sort of game elements users might like to see, and include them all in the experiment. Also, if the game elements are not carefully chosen by the designers, the experiment will not be able to offer a significant look at what users want from the game. This method is best used in situations where potential user desires for game aspects are well known, but there is not a good metric for deciding which aspects are most important to focus on.
There are several ways future versions of this method might be improved, or different ways it could be performed that could yield better results.

Future versions of this method could benefit by having more data from each user or by having a larger pool of users so that statistical significance could be achieved for data from target demographics. Having a larger pool of data would also make it possible to get results for more complex games with more wildly varying aspects.

As was mentioned before, it could be advantageous to figure out the blame weight table automatically from the data instead of setting it ahead of time based on intuition, as this could take connections between rating parts and game aspects that the designer did not expect into account. This could be done using linear regression, support vector machines, or other learning methods.

The method as presented here relied to a certain extent on game aspects being independent of each other, but in games there are rarely aspects that are totally independent. A future version of this method could delve into correlations between different game aspects and try to detect cases where several aspects benefit from appearing together.

There is a clear advantage to studies that can be run in a totally automatic way, without any need for human input. If a metric could be designed that could simulate the enjoyment a human player would receive from a game, using a metric such as playtime or number of players deaths, a completely automatic version of this method could be
created. The question in that case is how accurately the metric could simulate human enjoyment.

A version of the method that exposed the underlying game aspects to users and let them choose on their own might also be useful, particularly if there was a community of players experimenting with the game aspects to find more enjoyable games. However, users may not understand what all of the game aspects mean without playing them, so there would probably still need to be an option to pick a game randomly. This social version of configuration optimization may be able to discard undesirable options and find better games efficiently.
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Dozier, K. (2012). Theory, design and evaluation of a learning object game immersed in complex systems 'LOGICS'.


URL:
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APPENDIX A: EXPERIMENTAL DATA LISTING

Username: 1675528

Gender: Male
Age: 26–30
Experience with games: 7+ years
Hours of games a week: 1 hour or fewer

Kind of gamer: Casual
Level of gamer: Adept
Played Platformer: Yes
Played FPS: Yes
Played Shooter: Yes
Played TRPG: Yes
Played ARPG: Yes
Played Strategy: Yes
Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: No
Played Arcade:                           Yes
Played Card:                             Yes
Played Facebook:                          No
Played a lot of Platformer:              No
Played a lot of FPS:                      Yes
Played a lot of Shooter:                 No
Played a lot of TRPG:                     No
Played a lot of ARPG:                     No
Played a lot of Strategy:                No
Played a lot of MMO:                      No
Played a lot of Racing:                   No
Played a lot of Sports:                   No
Played a lot of Puzzle:                   Yes
Played a lot of Arcade Puzzle:            No
Played a lot of Adventure:                No
Played a lot of Action Adventure:         Yes
Played a lot of Simulation:               No
Played a lot of Arcade:                   No
Played a lot of Card:                     Yes
Played a lot of Facebook:                 No
Favorite genre:                           FPS

Game 1: Star Conflict

    Theme: Space, Type 1
Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 8

Theme: 4

Game 2: Dungeon Battles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: Off
Ratings:

Overall: 7

Difficulty Enjoyment: 4

Weapons: 7

Theme: 7

Game 3: Vector Conflict

Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 7

Difficulty Enjoyment: 8

Weapons: 8

Theme: 5

Game 4: Castle Battles

Theme: Fantasy, Type 1
Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 7

Difficulty Enjoyment: 7

Weapons: 6

Theme: 4

Game 5: Dungeon Arena

Theme: Fantasy, Type 1

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On
Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 8

Theme: 4

Game 6: Dimension Conflict

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 7

Difficulty Enjoyment: 7

Weapons: 8

Theme: 4

Game 7: Star Wars
Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 4

Difficulty Enjoyment: 6

Weapons: 8

Theme: 4

Game 8: Star Battles

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
   Overall: 3
   Difficulty Enjoyment: 4
   Weapons: 7
   Theme: 3

Game 9: Vector Battles
Theme: Space, Type 2
Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: On

Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
   Overall: 4
   Difficulty Enjoyment: 6
   Weapons: 7
   Theme: 5
Game 10: Fantasy Arena

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
Overall: 3
Difficulty Enjoyment: 5
Weapons: 3
Theme: 3

Game 11: Magic Tales

Theme: Fantasy, Type 1
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: On

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 3

Difficulty Enjoyment: 5

Weapons: 4

Theme: 3

Username: 640471152

Gender: Female

Age: 46-50

Experience with games: 0-1 years

Hours of games a week: 1 hour or fewer

Kind of gamer: None

Level of gamer: None

Played Platformer: No

Played FPS: No

Played Shooter: No

Played TRPG: No

Played ARPG: No

Played Strategy: No
Played MMO: No
Played Racing: No
Played Sports: No
Played Puzzle: No
Played Arcade Puzzle: No
Played Adventure: No
Played Action Adventure: No
Played Simulation: No
Played Arcade: No
Played Card: No
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Card

Game 1: Magic Chronicles

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 2: Fantasy Arena

Theme: Fantasy, Type 2
Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 6

Difficulty Enjoyment: 6

Weapons: 5

Theme: 5

Game 3: Star Fights

Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 2
Weapons: 5
Theme: 5

Game 4: Space Battles

Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 6
Difficulty Enjoyment: 5
Weapons: 7
Theme: 6

Game 5: Space Battles 2
Theme: Space, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 3
  Difficulty Enjoyment: 2
  Weapons: 4
  Theme: 6

Game 6: Magic Battles
Theme: Fantasy, Type 2
Difficulty: Hard
Game Area Progression: Small cave network, find exit
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
  Overall: 4
  Difficulty Enjoyment: 5
  Weapons: 5
  Theme: 3

Game 7: Dimension Fights
  Theme: Space, Type 2
  Difficulty: Easy
  Game Area Progression: Rooms with mazes, find exit to next floor
  Player Weapon Style: Single weapon, infinite ammo
  Enemy Style: Gauntlet style
  Powerups: On
  Weapon Upgrade Style: None
  Treasure on Map: On

Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 8
  Theme: 8

Game 8: Castle Arena
Theme: Fantasy, Type 2
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
  Overall: 4
  Difficulty Enjoyment: 3
  Weapons: 4
  Theme: 3

Game 9: Dimension Wars
Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 8

Theme: 8

Username: 2075865734

Gender: Female

Age: 18-25

Experience with games: 2-4 years

Hours of games a week: 2 to 5 hours

Kind of gamer: Casual

Level of gamer: Novice

Played Platformer: Yes

Played FPS: Yes

Played Shooter: Yes

Played TRPG: No

Played ARPG: No

Played Strategy: No

Played MMO: No

Played Racing: Yes

Played Sports: No
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Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: Platformer

Game 1: Vector Fights

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
    Overall: 5
    Difficulty Enjoyment: 6
    Weapons: 3
    Theme: 5

Game 2: Castle Chronicles

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 5
  Difficulty Enjoyment: 4
  Weapons: 3
  Theme: 7

Game 3: Magic Chronicles
Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:
  Overall: 9
Difficulty Enjoyment: 8
Weapons: 10
Theme: 10

Game 4: Dimension Conflict

Theme: Space, Type 1
Difficulty: Normal
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On

Ratings:
Overall: 5
Difficulty Enjoyment: 5
Weapons: 3
Theme: 7

Game 5: Castle Arena

Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 6: Magic Chronicles 2

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 5

Weapons: 5

Theme: 9

Game 7: Galaxy Battles

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 10

Theme: 8

Game 8: Magic Tales

Theme: Fantasy, Type 2
Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 10

Theme: 7

Game 9: Star Wars

Theme: Space, Type 2

Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo

regenerates

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 4
Weapons: 3
Theme: 5

Game 10: Star Fights 2

Theme: Space, Type 2
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 4
Difficulty Enjoyment: 4
Weapons: 3
Theme: 5

Username: 14021510
Gender: Male
Age: 26-30
Experience with games: 5-6 years
Hours of games a week: 2 to 5 hours
Kind of gamer: Casual
Level of gamer: Adept
Played Platformer: Yes
Played FPS: Yes
Played Shooter: No
Played TRPG: No
Played ARPG: No
Played Strategy: Yes
Played MMO: No
Played Racing: Yes
Played Sports: Yes
Played Puzzle: No
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: No
Played Simulation: Yes
Played Arcade: Yes
Played Card: No
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: Yes
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: Yes
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: Yes
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: FPS

Game 1: Dungeon Tales

Theme: Fantasy, Type 1
Difficulty: Hard

Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 2: Star Battles

Theme: Space, Type 2

Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:
Overall: 8
Difficulty Enjoyment: 7
Weapons: 8
Theme: 8

Game 3: Vector Conflict
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Small cave network, find exit
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
Overall: 9
Difficulty Enjoyment: 7
Weapons: 10
Theme: 9

Game 4: Wizard Battles
Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 9

Difficulty Enjoyment: 9

Weapons: 9

Theme: 8

Game 5: Dungeon Chronicles

Theme: Fantasy, Type 1

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
  Overall: 7
  Difficulty Enjoyment: 3
  Weapons: 9
  Theme: 5

Game 6: Castle Arena
  Theme: Fantasy, Type 2
  Difficulty: Easy
  Game Area Progression: Small rooms in sequence, kill everything
  Player Weapon Style: Six weapon set, ammo regenerates
  Enemy Style: Gauntlet style
  Powerups: Off
  Weapon Upgrade Style: None
  Treasure on Map: Off

Ratings:
  Overall: 7
  Difficulty Enjoyment: 3
  Weapons: 8
  Theme: 5

Game 7: Dimension Battles
Theme: Space, Type 2
Difficulty: Normal
Game Area Progression: Small cave network, find exit
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
  Overall: 7
  Difficulty Enjoyment: 4
  Weapons: 9
  Theme: 8

Game 8: Magic Chronicles
Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 8
  Theme: 8

Game 9: Wizard Chronicles
  Theme: Fantasy, Type 1
  Difficulty: Hard
  Game Area Progression: Single level, survival
  Player Weapon Style: Six weapon set, ammo regenerates
  Enemy Style: Shooting gallery
  Powerups: On
  Weapon Upgrade Style: Upgrade through pickups
  Treasure on Map: On

Ratings:
  Overall: 7
  Difficulty Enjoyment: 3
  Weapons: 7
  Theme: 8
Game 10: Space Conflict

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 7

Difficulty Enjoyment: 3

Weapons: 2

Theme: 7

Game 11: Vector Conflict 2

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 9

Theme: 8

Username: 7755854

Gender: Male

Age: 18-25

Experience with games: 7+ years

Hours of games a week: 10 to 20 hours

Kind of gamer: Experienced

Level of gamer: Expert

Played Platformer: Yes

Played FPS: Yes

Played Shooter: Yes

Played TRPG: Yes

Played ARPG: Yes

Played Strategy: Yes

Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: Yes
Played a lot of Platformer: Yes
Played a lot of FPS: Yes
Played a lot of Shooter: Yes
Played a lot of TRPG: Yes
Played a lot of ARPG: Yes
Played a lot of Strategy: Yes
Played a lot of MMO: No
Played a lot of Racing: Yes
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: Yes
Played a lot of Action Adventure: Yes
Played a lot of Simulation: Yes
Played a lot of Arcade: Yes
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Action

Adventure

Game 1: Magic Chronicles

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: On
Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 2: Galaxy Conflict

Theme: Space, Type 2
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
  Overall: 3
  Difficulty Enjoyment: 4
  Weapons: 3
  Theme: 10

Game 3: Vector Battles
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 8
Weapons: 4
Theme: 8

Game 4: Magic Arena

Theme: Fantasy, Type 2
Difficulty: Hard
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On

Ratings:

Overall: 9
Difficulty Enjoyment: 8
Weapons: 8
Theme: 9

Game 5: Castle Arena
Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: On
Ratings:
  Overall: 9
  Difficulty Enjoyment: 8
  Weapons: 10
  Theme: 9

Game 6: Star Battles
Theme: Space, Type 2
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 8
  Difficulty Enjoyment: 7
  Weapons: 9
  Theme: 9

Game 7: Fantasy Tales
  Theme: Fantasy, Type 2
  Difficulty: Normal
  Game Area Progression: Small cave network, find exit
  Player Weapon Style: Single weapon, infinite ammo
  Enemy Style: All enemies
  Powerups: On
  Weapon Upgrade Style: None
  Treasure on Map: Off
  Ratings:
    Overall: 7
    Difficulty Enjoyment: 5
    Weapons: 4
    Theme: 9

Game 8: Vector Wars
Theme: Space, Type 1

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 3

Weapons: 2

Theme: 9

Game 9: Wizard Tales

Theme: Fantasy, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
  Overall: 7
  Difficulty Enjoyment: 2
  Weapons: 2
  Theme: 8

Game 10: Castle Chronicles
Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 9
  Theme: 9
Game 11: Castle Arena 2

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 3

Weapons: 5

Theme: 9

Game 12: Magic Battles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
  Weapons: 7
  Theme: 9

Game 13: Castle Tales
  Theme: Fantasy, Type 2
  Difficulty: Easy
  Game Area Progression: Rooms with mazes, find exit to next floor
  Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
Weapons: 5
Theme: 8

Game 14: Dungeon Arena

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 7
  Difficulty Enjoyment: 6
  Weapons: 5
  Theme: 9

Game 15: Fantasy Tales 2

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
  Weapons: 7
  Theme: 9

Game 16: Magic Battles 2
Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
Overall: 7
Difficulty Enjoyment: 5
Weapons: 8
Theme: 8

Game 17: Castle Battles

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
Overall: 8
Difficulty Enjoyment: 7
Weapons: 7
Theme: 8

Username: 4220763
Gender: Female
Age: 18-25
Experience with games: 7+ years
Hours of games a week: 20+ hours
Kind of gamer: Experienced
Level of gamer: Adept
Played Platformer: Yes
Played FPS: Yes
Played Shooter: Yes
Played TRPG: Yes
Played ARPG: Yes
Played Strategy: Yes
Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: Yes
Played a lot of Platformer: Yes
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: Yes
Played a lot of ARPG: Yes
Played a lot of Strategy: No
Played a lot of MMO: Yes
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: Yes
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: Yes
Played a lot of Simulation: Yes
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: TRPG

Game 1: Wizard Chronicles 2

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 2: Fantasy Battles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 4

Difficulty Enjoyment: 5

Weapons: 4
Theme: 8

Game 3: Wizard Arena

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 8

Theme: 7

Game 4: Castle Battles 2

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
  Overall: 7
  Difficulty Enjoyment: 5
  Weapons: 8
  Theme: 7
Game 5: Star Conflict
  Theme: Space, Type 1
  Difficulty: Easy
  Game Area Progression: Small rooms in sequence, kill everything
  Player Weapon Style: Single weapon, infinite ammo
  Enemy Style: Gauntlet style
  Powerups: Off
  Weapon Upgrade Style: Upgrade through pickups
  Treasure on Map: Off
Ratings:
  Overall: 8
  Difficulty Enjoyment: 3
  Weapons: 4
  Theme: 9
Game 6: Castle Arena 2

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 3

Difficulty Enjoyment: 9

Weapons: 8

Theme: 2

Game 7: Wizard Chronicles 3

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 1
Difficulty Enjoyment: 1
Weapons: 1
Theme: 1

Game 8: Star Battles
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 8
Difficulty Enjoyment: 7
Weapons: 9
Theme: 6

Game 9: Dimension Conflict 2
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
  Overall: 8
  Difficulty Enjoyment: 7
  Weapons: 8
  Theme: 4

Game 10: Dimension Battles 3
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 8
Difficulty Enjoyment: 8
Weapons: 8
Theme: 6

Username: 168693640

Gender: Female
Age: 18-25
Experience with games: 5-6 years
Hours of games a week: 1 hour or fewer

Kind of gamer: Casual
Level of gamer: Novice
Played Platformer: Yes
Played FPS: Yes
Played Shooter: No
Played TRPG: No
Played ARPG: No
Played Strategy: No
Played MMO: No
Played Racing: Yes
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Played a lot of Arcade: No
Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: Platformer

Game 1: Castle Battles

  Theme: Fantasy, Type 1
  Difficulty: Hard
  Game Area Progression: Single level, survival
  Player Weapon Style: Single weapon, infinite ammo
  Enemy Style: Shooting gallery
  Powerups: On
  Weapon Upgrade Style: Improve through use
  Treasure on Map: Off

  Ratings:

    Overall: 3
    Difficulty Enjoyment: 5
    Weapons: 5
    Theme: 3

Game 2: Castle Battles

  Theme: Fantasy, Type 1
  Difficulty: Hard
  Game Area Progression: Single level, survival
  Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
  Overall: 3
  Difficulty Enjoyment: 5
  Weapons: 4
  Theme: 3

Game 3: Castle Battles

Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
  Overall: 3
  Difficulty Enjoyment: 5
  Weapons: 3
  Theme: 4
Game 4: Fantasy Chronicles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 4

Difficulty Enjoyment: 5

Weapons: 4

Theme: 5

Game 5: Space Conflict

Theme: Space, Type 2

Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
  Overall: 2
  Difficulty Enjoyment: 5
  Weapons: 4
  Theme: 5

Game 6: Star Battles
  Theme: Space, Type 1
  Difficulty: Easy
  Game Area Progression: Rooms with mazes, find exit to next floor
  Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 6
  Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 7: Wizard Battles

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
Overall: 8
Difficulty Enjoyment: 8
Weapons: 8
Theme: 8

Game 8: Vector Fights

Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 9
  Theme: 8

Game 9: Castle Chronicles
Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:
  Overall: 7
  Difficulty Enjoyment: 3
  Weapons: 4
Game 10: Galaxy Battles
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
Overall: 7
Difficulty Enjoyment: 5
Weapons: 4
Theme: 6

Game 11: Dimension Fights
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
   Overall: 7
   Difficulty Enjoyment: 7
   Weapons: 4
   Theme: 6

Game 12: Galaxy Battles 2
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
Overall: 7
Difficulty Enjoyment: 7
Weapons: 4
Theme: 6

Game 13: Star Conflict

Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
Overall: 8
Difficulty Enjoyment: 6
Weapons: 4
Theme: 6

Username: 75768406
Gender: Male
Age: 26-30
Experience with games: 7+ years
Hours of games a week: 20+ hours
Kind of gamer: Experienced
Level of gamer: Expert
Played Platformer: Yes
Played FPS: Yes
Played Shooter: Yes
Played TRPG: Yes
Played ARPG: Yes
Played Strategy: Yes
Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: Yes
Played a lot of Platformer: Yes
Played a lot of FPS:                     Yes
Played a lot of Shooter:                 Yes
Played a lot of TRPG:                    Yes
Played a lot of ARPG:                    Yes
Played a lot of Strategy:                Yes
Played a lot of MMO:                     Yes
Played a lot of Racing:                  Yes
Played a lot of Sports:                  Yes
Played a lot of Puzzle:                  Yes
Played a lot of Arcade Puzzle:           Yes
Played a lot of Adventure:               Yes
Played a lot of Action Adventure:        Yes
Played a lot of Simulation:              Yes
Played a lot of Arcade:                  Yes
Played a lot of Card:                    Yes
Played a lot of Facebook:                Yes
Favorite genre:                          TRPG

Game 1: Galaxy Battles

    Theme: Space, Type 2
    Difficulty: Easy
    Game Area Progression: Rooms with mazes, find exit to next floor

    Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

  Overall: 9

  Difficulty Enjoyment: 8

  Weapons: 6

  Theme: 9

Game 2: Wizard Chronicles

  Theme: Fantasy, Type 1

  Difficulty: Hard

  Game Area Progression: Small cave network, find exit

  Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

  Overall: 8

  Difficulty Enjoyment: 2
Weapons: 9
Theme: 9

Game 3: Fantasy Battles

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 10
  Difficulty Enjoyment: 9
  Weapons: 10
  Theme: 10

Game 4: Vector Fights

Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 10

Difficulty Enjoyment: 10

Weapons: 10

Theme: 10

Game 5: Dungeon Battles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:
Overall: 8
Difficulty Enjoyment: 7
Weapons: 10
Theme: 9

Game 6: Dimension Battles

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 9
Difficulty Enjoyment: 8
Weapons: 10
Theme: 9

Game 7: Star Battles

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:
   Overall: 4
   Difficulty Enjoyment: 4
   Weapons: 8
   Theme: 7

Game 8: Dungeon Tales

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:
   Overall: 7
Difficulty Enjoyment: 2

Weapons: 7

Theme: 4

Game 9: Star Battles 2

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 3

Difficulty Enjoyment: 1

Weapons: 6

Theme: 4

Game 10: Dimension Fights

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

  Overall: 2
  Difficulty Enjoyment: 2
  Weapons: 7
  Theme: 3

Game 11: Dungeon Battles 2

  Theme: Fantasy, Type 1
  Difficulty: Easy
  Game Area Progression: Rooms with mazes, find exit to next floor

  Player Weapon Style: Six weapon set, ammo regenerates

  Enemy Style: Gauntlet style
  Powerups: Off
  Weapon Upgrade Style: Upgrade through pickups
  Treasure on Map: Off

  Ratings:
Overall: 8
Difficulty Enjoyment: 3
Weapons: 3
Theme: 7

Game 12: Castle Tales

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
Overall: 5
Difficulty Enjoyment: 4
Weapons: 4
Theme: 4

Username: 544010843
Gender: Male
Age: 36-40
Experience with games: 7+ years
Hours of games a week: 2 to 5 hours
Kind of gamer: Casual
Level of gamer: Adept
Played Platformer: Yes
Played FPS: Yes
Played Shooter: Yes
Played TRPG: No
Played ARPG: No
Played Strategy: Yes
Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: No
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: Yes
Played a lot of FPS: Yes
Played a lot of Shooter: Yes
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: Yes
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: Yes
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: Yes
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: Yes
Played a lot of Arcade: Yes
Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: MMO

Game 1: Vector Fights

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 3
Theme: 5

Game 2: Galaxy Battles
Theme: Space, Type 2
Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 6
Weapons: 4
Theme: 5

Game 3: Wizard Arena

Theme: Fantasy, Type 2

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 6

Difficulty Enjoyment: 6

Weapons: 5

Theme: 8

Game 4: Wizard Arena 2

Theme: Fantasy, Type 1

Difficulty: Easy

Game Area Progression: Small cave network, find exit
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: On
Ratings:
   Overall: 6
   Difficulty Enjoyment: 6
   Weapons: 4
   Theme: 7

Game 5: Dungeon Chronicles
Theme: Fantasy, Type 1
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
   Overall: 8
Difficulty Enjoyment: 9
Weapons: 6
Theme: 8

Game 6: Galaxy Battles 2

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:

Overall: 7
Difficulty Enjoyment: 7
Weapons: 5
Theme: 7

Game 7: Space Fights

Theme: Space, Type 2
Difficulty: Normal
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 6

Weapons: 4

Theme: 7

Game 8: Dimension Conflict

Theme: Space, Type 1

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:

Overall: 8
Difficulty Enjoyment: 8
Weapons: 6
Theme: 6

Game 9: Dimension Battles
Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
Overall: 7
Difficulty Enjoyment: 7
Weapons: 5
Theme: 4

Game 10: Dungeon Tales
Theme: Fantasy, Type 1
Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 8

Difficulty Enjoyment: 8

Weapons: 3

Theme: 9

Game 11: Fantasy Tales

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off
Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 8

Difficulty Enjoyment: 8

Weapons: 4

Theme: 9

Username: 1367018375

Gender: Female

Age: 51+

Experience with games: 0-1 years

Hours of games a week: 1 hour or fewer

Kind of gamer: None

Level of gamer: None

Played Platformer: No

Played FPS: No

Played Shooter: No

Played TRPG: No

Played ARPG: No

Played Strategy: No

Played MMO: No
Played Racing: No
Played Sports: No
Played Puzzle: No
Played Arcade Puzzle: Yes
Played Adventure: No
Played Action Adventure: No
Played Simulation: No
Played Arcade: Yes
Played Card: No
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
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Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Arcade Puzzle

Game 1: Wizard Chronicles

Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
Overall: 6
Difficulty Enjoyment: 4
Weapons: 6
Theme: 5

Game 2: Vector Conflict

Theme: Space, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 4

Difficulty Enjoyment: 3

Weapons: 5

Theme: 5

Game 3: Dimension Conflict

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off
Ratings:

Overall: 6

Difficulty Enjoyment: 6

Weapons: 7

Theme: 6

Game 4: Castle Battles

Theme: Fantasy, Type 2

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 9

Difficulty Enjoyment: 8

Weapons: 8

Theme: 9

Game 5: Castle Arena

Theme: Fantasy, Type 1
Difficulty: Hard

Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 6
Weapons: 6
Theme: 6

Game 6: Dimension Conflict 2

Theme: Space, Type 2
Difficulty: Easy

Game Area Progression: Single level, survival
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:

Overall: 4
Difficulty Enjoyment: 3
Weapons: 4
Theme: 6

Game 7: Galaxy Wars

Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 9
Difficulty Enjoyment: 9
Weapons: 8
Theme: 9

Game 8: Space Fights
Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 9

Difficulty Enjoyment: 8

Weapons: 9

Theme: 8

Game 9: Fantasy Battles

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
  Weapons: 6
  Theme: 7

Game 10: Wizard Arena

  Theme: Fantasy, Type 2
  Difficulty: Hard
  Game Area Progression: Rooms with mazes, find exit to next floor

  Player Weapon Style: Six weapon set, ammo regenerates

  Enemy Style: Gauntlet style
  Powerups: Off
  Weapon Upgrade Style: Improve through use
  Treasure on Map: On

Ratings:
  Overall: 10
  Difficulty Enjoyment: 10
  Weapons: 10
  Theme: 10
Username: 187045

Gender: Female
Age: 51+
Experience with games: 2-4 years
Hours of games a week: 1 hour or fewer

Kind of gamer: Casual
Level of gamer: Novice
Played Platformer: No
Played FPS: No
Played Shooter: No
Played TRPG: No
Played ARPG: No
Played Strategy: No
Played MMO: No
Played Racing: No
Played Sports: No
Played Puzzle: No
Played Arcade Puzzle: No
Played Adventure: No
Played Action Adventure: No
Played Simulation: No
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Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: Card

Game 1: Dungeon Chronicles
Theme: Fantasy, Type 2
Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 2: Galaxy Battles

Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 6
Weapons: 7
Theme: 5

Game 3: Fantasy Battles

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 4: Vector Battles

Theme: Space, Type 1
Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 5: Wizard Tales

Theme: Fantasy, Type 1

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:

Overall: 6
Difficulty Enjoyment: 4
Weapons: 7
Theme: 7

Game 6: Star Wars

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 8
Weapons: 9
Theme: 7

Game 7: Castle Chronicles
Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
  Overall: 3
  Difficulty Enjoyment: 3
  Weapons: 3
  Theme: 3

Game 8: Castle Tales
Theme: Fantasy, Type 2
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 9: Wizard Arena

Theme: Fantasy, Type 1
Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 10: Star Wars 2
Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Small cave network, find exit
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 10
  Theme: 8

Username: 9529336
Gender: Male
Age: 51+
Experience with games: 5-6 years
Hours of games a week: 1 hour or fewer
Kind of gamer: Experienced
Level of gamer: Adept
Played Platformer: Yes
Played FPS: Yes
Played Shooter: No
Played TRPG: No
Played ARPG: Yes
Played Strategy: Yes
Played MMO: No
Played Racing: Yes
Played Sports: Yes
Played Puzzle: No
Played Arcade Puzzle: Yes
Played Adventure: No
Played Action Adventure: No
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: Yes
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: Yes
Played a lot of Strategy: Yes
Played a lot of MMO: No
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Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: Yes
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: FPS

Game 1: Fantasy Arena

  Theme: Fantasy, Type 1
  Difficulty: Easy

  Game Area Progression: Small rooms in sequence, kill everything

  Player Weapon Style: Six weapon set, ammo regenerates

  Enemy Style: Shooting gallery

  Powerups: On
Weapon Upgrade Style: Improve through use  
Treasure on Map: Off  
Ratings:  
  Overall: 3  
  Difficulty Enjoyment: 4  
  Weapons: 8  
  Theme: 3  

Game 2: Vector Battles  
  Theme: Space, Type 2  
  Difficulty: Normal  
  Game Area Progression: Small cave network, find exit  
  Player Weapon Style: Start with 3 basic weapons, swap for more  
  Enemy Style: All enemies  
  Powerups: Off  
  Weapon Upgrade Style: None  
  Treasure on Map: On  
Ratings:  
  Overall: 4  
  Difficulty Enjoyment: 4  
  Weapons: 6  
  Theme: 4
Game 3: Space Conflict

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 3

Difficulty Enjoyment: 2

Weapons: 4

Theme: 2

Game 4: Magic Chronicles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off
Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 3
Difficulty Enjoyment: 4
Weapons: 2
Theme: 3

Game 5: Wizard Battles

Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:

Overall: 4
Difficulty Enjoyment: 4
Weapons: 4
Theme: 4

Game 6: Fantasy Chronicles
Theme: Fantasy, Type 1  
Difficulty: Easy  
Game Area Progression: Small cave network, find exit  
Player Weapon Style: Start with 3 basic weapons, swap for more  
Enemy Style: Shooting gallery  
Powerups: On  
Weapon Upgrade Style: Improve through use  
Treasure on Map: On  
Ratings:  
Overall: 6  
Difficulty Enjoyment: 7  
Weapons: 6  
Theme: 6  

Game 7: Galaxy Wars  
Theme: Space, Type 2  
Difficulty: Hard  
Game Area Progression: Single level, survival  
Player Weapon Style: Single weapon, infinite ammo  
Enemy Style: Gauntlet style  
Powerups: Off  
Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 2
Difficulty Enjoyment: 2
Weapons: 2
Theme: 2

Game 8: Fantasy Tales

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:

Overall: 2
Difficulty Enjoyment: 1
Weapons: 3
Theme: 2

Game 9: Magic Chronicles 2

Theme: Fantasy, Type 2
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:

  Overall: 2
  Difficulty Enjoyment: 1
  Weapons: 2
  Theme: 2

Game 10: Magic Tales

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: On
Ratings:

Overall: 5

Difficulty Enjoyment: 4

Weapons: 5

Theme: 4

Username: 1158884

Gender: Female

Age: 26-30

Experience with games: 2-4 years

Hours of games a week: 1 hour or fewer

Kind of gamer: Casual

Level of gamer: Novice

Played Platformer: Yes

Played FPS: No

Played Shooter: No

Played TRPG: No

Played ARPG: No

Played Strategy: No

Played MMO: No

Played Racing: Yes

Played Sports: Yes
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Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: Card

Game 1: Fantasy Arena

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
Overall: 6
Difficulty Enjoyment: 6
Weapons: 6
Theme: 6

Game 2: Magic Chronicles

Theme: Fantasy, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 7

Difficulty Enjoyment: 7

Weapons: 4

Theme: 7

Game 3: Vector Battles

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off
Ratings:

Overall: 2

Difficulty Enjoyment: 8

Weapons: 2

Theme: 6

Game 4: Vector Battles

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 2

Difficulty Enjoyment: 8

Weapons: 5

Theme: 2

Game 5: Space Wars

Theme: Space, Type 2

Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:
   Overall: 4
   Difficulty Enjoyment: 8
   Weapons: 6
   Theme: 4

Game 6: Dungeon Arena

Theme: Fantasy, Type 1
Difficulty: Easy

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: On
Ratings:
Overall: 8
Difficulty Enjoyment: 8
Weapons: 6
Theme: 5

Game 7: Space Wars 2

Theme: Space, Type 2
Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 1
Difficulty Enjoyment: 7
Weapons: 6
Theme: 3

Game 8: Star Fights

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:
- Overall: 3
- Difficulty Enjoyment: 4
- Weapons: 3
- Theme: 6

Game 9: Space Conflict

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off
Ratings:

Overall: 2

Difficulty Enjoyment: 2

Weapons: 5

Theme: 5

Game 10: Dungeon Tales

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 8

Weapons: 6

Theme: 6

Username: 73440062

Gender: Female
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Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: Yes
Played a lot of Facebook: No
Favorite genre: Card

Game 1: Dimension Conflict

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Small cave network, find exit
Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 3

Weapons: 6

Theme: 4

Game 2: Dimension Conflict 2

Theme: Space, Type 1

Difficulty: Normal

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 3
Difficulty Enjoyment: 2
Weapons: 2
Theme: 3

Game 3: Galaxy Battles
Theme: Space, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:
Overall: 3
Difficulty Enjoyment: 3
Weapons: 3
Theme: 3

Game 4: Magic Chronicles
Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 8
  Difficulty Enjoyment: 8
  Weapons: 7
  Theme: 8

Game 5: Magic Tales
Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
  Overall: 9
Difficulty Enjoyment: 9

Weapons: 5

Theme: 9

Game 6: Magic Tales

Theme: Fantasy, Type 2

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 9

Difficulty Enjoyment: 9

Weapons: 9

Theme: 9

Game 7: Dungeon Battles

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 4

Difficulty Enjoyment: 7

Weapons: 8

Theme: 8

Game 8: Fantasy Chronicles

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:
Overall: 9
Difficulty Enjoyment: 9
Weapons: 7
Theme: 9

Game 9: Galaxy Wars
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 2
Difficulty Enjoyment: 1
Weapons: 6
Theme: 2

Game 10: Dungeon Tales
Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

  Overall: 9
  Difficulty Enjoyment: 9
  Weapons: 2
  Theme: 9

Username: 1473697359

  Gender: Male
  Age: 18-25
  Experience with games: 7+ years
  Hours of games a week: 2 to 5 hours
  Kind of gamer: Experienced
  Level of gamer: Adept
  Played Platformer: Yes
  Played FPS: Yes
  Played Shooter: Yes
Played TRPG: No
Played ARPG: No
Played Strategy: Yes
Played MMO: Yes
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: Yes
Played a lot of Platformer: No
Played a lot of FPS: Yes
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: Yes
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Simulation

Game 1: Vector Fights

Theme: Space, Type 1

Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 4

Difficulty Enjoyment: 4

Weapons: 3
Theme: 2

Game 2: Space Battles

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 4

Weapons: 6

Theme: 5

Game 3: Magic Chronicles

Theme: Fantasy, Type 1

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
   Overall: 3
   Difficulty Enjoyment: 3
   Weapons: 1
   Theme: 3

Game 4: Dungeon Tales
   Theme: Fantasy, Type 2
   Difficulty: Hard
   Game Area Progression: Rooms with mazes, find exit to next floor
   Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
   Overall: 5
   Difficulty Enjoyment: 4
Weapons: 6
Theme: 6

Game 5: Dungeon Arena

Theme: Fantasy, Type 1
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
Overall: 3
Difficulty Enjoyment: 3
Weapons: 4
Theme: 5

Game 6: Castle Tales

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 1

Difficulty Enjoyment: 2

Weapons: 4

Theme: 2

Game 7: Wizard Chronicles

Theme: Fantasy, Type 2

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 2
Difficulty Enjoyment: 2

Weapons: 2

Theme: 2

Game 8: Dungeon Battles

Theme: Fantasy, Type 1

Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 7

Weapons: 7

Theme: 6

Game 9: Star Fights

Theme: Space, Type 1

Difficulty: Normal

Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

   Overall: 2
   Difficulty Enjoyment: 2
   Weapons: 2
   Theme: 2

Game 10: Vector Battles

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:
Overall: 6
Difficulty Enjoyment: 5
Weapons: 6
Theme: 2

Game 11: Dimension Fights
Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Username: 408355140
Gender: Female
Age: 18-25
Experience with games: 0-1 years
Hours of games a week: 1 hour or fewer

Kind of gamer: None
Level of gamer: Novice
Played Platformer: Yes
Played FPS: Yes
Played Shooter: No
Played TRPG: No
Played ARPG: No
Played Strategy: No
Played MMO: No
Played Racing: Yes
Played Sports: No
Played Puzzle: No
Played Arcade Puzzle: Yes
Played Adventure: No
Played Action Adventure: No
Played Simulation: No
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: Yes
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: Yes
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: Yes
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Platformer

Game 1: Dungeon Chronicles

Theme: Fantasy, Type 1
Difficulty: Easy

Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo renews

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 6
Difficulty Enjoyment: 7
Weapons: 5
Theme: 7

Game 2: Magic Chronicles

Theme: Fantasy, Type 2
Difficulty: Normal

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:
Overall: 4
Difficulty Enjoyment: 6
Weapons: 5
Theme: 6

Game 3: Dimension Fights

Theme: Space, Type 2
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:

Overall: 5
Difficulty Enjoyment: 7
Weapons: 6
Theme: 9

Game 4: Vector Fights

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:

Overall: 7
Difficulty Enjoyment: 8
Weapons: 8
Theme: 9

Game 5: Fantasy Chronicles

Theme: Fantasy, Type 2
Difficulty: Hard

Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
Overall: 4
Difficulty Enjoyment: 7
Weapons: 6
Theme: 4

Game 6: Castle Battles

Theme: Fantasy, Type 1
Difficulty: Hard
Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 4
Difficulty Enjoyment: 4
Weapons: 3
Theme: 4

Game 7: Magic Tales

Theme: Fantasy, Type 1
Difficulty: Easy
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

  Overall: 4
  Difficulty Enjoyment: 4
  Weapons: 7
  Theme: 4

Game 8: Dungeon Arena

Theme: Fantasy, Type 2

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: Off
Ratings:

Overall: 7
Difficulty Enjoyment: 8
Weapons: 5
Theme: 6

Game 9: Fantasy Battles

Theme: Fantasy, Type 1
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 4
Weapons: 4
Theme: 4

Game 10: Galaxy Conflict

Theme: Space, Type 1
Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
Overall: 8
Difficulty Enjoyment: 9
Weapons: 8
Theme: 9

Game 11: Star Fights
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: None
Treasure on Map: Off
Ratings:

Overall: 8

Difficulty Enjoyment: 8

Weapons: 7

Theme: 8

Game 12: Space Wars

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 7

Difficulty Enjoyment: 7

Weapons: 7

Theme: 8

Username: 1380819500

Gender: Male
Age: 31-35
Experience with games: 7+ years
Hours of games a week: 2 to 5 hours
Kind of gamer: Casual
Level of gamer: Novice
Played Platformer: Yes
Played FPS: Yes
Played Shooter: Yes
Played TRPG: Yes
Played ARPG: Yes
Played Strategy: Yes
Played MMO: No
Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: Yes
Played a lot of FPS:                      Yes
Played a lot of Shooter:                 Yes
Played a lot of TRPG:                    Yes
Played a lot of ARPG:                    Yes
Played a lot of Strategy:                Yes
Played a lot of MMO:                     No
Played a lot of Racing:                  Yes
Played a lot of Sports:                  Yes
Played a lot of Puzzle:                  Yes
Played a lot of Arcade Puzzle:           Yes
Played a lot of Adventure:               Yes
Played a lot of Action Adventure:        Yes
Played a lot of Simulation:              Yes
Played a lot of Arcade:                  Yes
Played a lot of Card:                    Yes
Played a lot of Facebook:                No
Favorite genre:                          TRPG

Game 1: Fantasy Chronicles

    Theme: Fantasy, Type 2

    Difficulty: Hard

    Game Area Progression: Small rooms in sequence,

    kill everything
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 4

Weapons: 5

Theme: 4

Game 2: Dungeon Chronicles

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:
Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 3: Vector Battles

Theme: Space, Type 2

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 6

Game 4: Dimension Conflict

Theme: Space, Type 1

Difficulty: Hard
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 6

Game 5: Space Fights

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On
Ratings:

Overall: 5

Difficulty Enjoyment: 4

Weapons: 5

Theme: 5

Game 6: Galaxy Fights

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 3

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 7: Galaxy Fights 2

Theme: Space, Type 1
Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 4

Weapons: 5

Theme: 5

Game 8: Galaxy Battles

Theme: Space, Type 2

Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Shooting gallery

Powerups: Off
Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 5

Difficulty Enjoyment: 3

Weapons: 5

Theme: 5

Game 9: Castle Chronicles

Theme: Fantasy, Type 2

Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off

Ratings:

Overall: 6

Difficulty Enjoyment: 5

Weapons: 5

Theme: 6
Game 10: Fantasy Chronicles 2

Theme: Fantasy, Type 2

Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Game 11: Star Fights

Theme: Space, Type 2

Difficulty: Normal

Game Area Progression: Single level, survival

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: Off
Weapon Upgrade Style: None

Treasure on Map: On

Ratings:

Overall: 5

Difficulty Enjoyment: 5

Weapons: 5

Theme: 5

Username: 789865744

Gender: Male

Age: 26-30

Experience with games: 7+ years

Hours of games a week: 10 to 20 hours

Kind of gamer: Experienced

Level of gamer: Adept

Played Platformer: Yes

Played FPS: Yes

Played Shooter: Yes

Played TRPG: Yes

Played ARPG: Yes

Played Strategy: Yes

Played MMO: Yes

Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: Yes
Played a lot of FPS: Yes
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: Yes
Played a lot of Strategy: Yes
Played a lot of MMO: No
Played a lot of Racing: Yes
Played a lot of Sports: No
Played a lot of Puzzle: Yes
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: Yes
Played a lot of Action Adventure: Yes
Played a lot of Simulation: No
Played a lot of Arcade: Yes
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Adventure

Game 1: Dungeon Tales

Theme: Fantasy, Type 1
Difficulty: Easy

Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
  Overall: 5
  Difficulty Enjoyment: 5
  Weapons: 5
  Theme: 5

Game 2: Vector Conflict

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On
Ratings:
  Overall: 6
  Difficulty Enjoyment: 7
  Weapons: 7
  Theme: 7

Game 3: Fantasy Chronicles

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:

Overall: 4
Difficulty Enjoyment: 3
Weapons: 7
Theme: 5

Game 4: Space Fights

Theme: Space, Type 2
Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 8
Difficulty Enjoyment: 9
Weapons: 2
Theme: 7

Game 5: Wizard Chronicles

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:
  Overall: 6
  Difficulty Enjoyment: 6
  Weapons: 8
  Theme: 6

Game 6: Vector Conflict

Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 8
Weapons: 9
Theme: 8

Game 7: Vector Conflict

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 4
Weapons: 7
Theme: 7

Game 8: Vector Conflict
Theme: Space, Type 1

Difficulty: Hard

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 5

Weapons: 9

Theme: 8

Game 9: Castle Tales

Theme: Fantasy, Type 1

Difficulty: Easy

Game Area Progression: Single level, survival

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: Off

Weapon Upgrade Style: None
Treasure on Map: Off

Ratings:
  Overall: 3
  Difficulty Enjoyment: 5
  Weapons: 3
  Theme: 5

Game 10: Vector Conflict 2
  Theme: Space, Type 2
  Difficulty: Hard
  Game Area Progression: Small cave network, find exit

  Player Weapon Style: Six weapon set, ammo regenerates

  Enemy Style: Gauntlet style
  Powerups: On
  Weapon Upgrade Style: Upgrade through pickups
  Treasure on Map: On

Ratings:
  Overall: 8
  Difficulty Enjoyment: 3
  Weapons: 8
  Theme: 8

Game 11: Vector Conflict 2
Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: Gauntlet style

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 7

Difficulty Enjoyment: 4

Weapons: 7

Theme: 7

Username: 397343

Gender: Male

Age: 51+

Experience with games: 2-4 years

Hours of games a week: 1 hour or fewer

Kind of gamer: None
Level of gamer: Novice
Played Platformer: Yes
Played FPS: Yes
Played Shooter: No
Played TRPG: No
Played ARPG: No
Played Strategy: No
Played MMO: No
Played Racing: No
Played Sports: No
Played Puzzle: No
Played Arcade Puzzle: Yes
Played Adventure: No
Played Action Adventure: No
Played Simulation: No
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: No
Played a lot of ARPG: No
Played a lot of Strategy: No
Played a lot of MMO: No
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: Platformer

Game 1: Dimension Wars

Theme: Space, Type 2

Difficulty: Hard

Game Area Progression: Single level, survival

Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies

Powerups: On

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: Off
Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 2: Dimension Wars
Theme: Space, Type 2
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off
Ratings:
Overall: 5
Difficulty Enjoyment: 5
Weapons: 5
Theme: 5

Game 3: Space Battles
Theme: Space, Type 1
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 7
  Difficulty Enjoyment: 5
  Weapons: 4
  Theme: 5

Game 4: Fantasy Tales

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off
Ratings:

Overall: 8
Difficulty Enjoyment: 6
Weapons: 7
Theme: 6

Game 5: Wizard Chronicles

Theme: Fantasy, Type 1
Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: All enemies
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On

Ratings:

Overall: 7
Difficulty Enjoyment: 7
Weapons: 8
Theme: 7

Game 6: Dimension Fights

Theme: Space, Type 2
Difficulty: Easy

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: All enemies

Powerups: Off

Weapon Upgrade Style: Upgrade through pickups

Treasure on Map: On

Ratings:

Overall: 8

Difficulty Enjoyment: 7

Weapons: 7

Theme: 5

Game 7: Dimension Fights 2

Theme: Space, Type 1

Difficulty: Easy

Game Area Progression: Small cave network, find exit

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style

Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
  Weapons: 7
  Theme: 7

Game 8: Vector Wars
  Theme: Space, Type 1
  Difficulty: Hard
  Game Area Progression: Rooms with mazes, find exit to next floor
  Player Weapon Style: Six weapon set, ammo regenerates
  Enemy Style: Gauntlet style
  Powerups: Off
  Weapon Upgrade Style: Improve through use
  Treasure on Map: Off

Ratings:
  Overall: 7
  Difficulty Enjoyment: 7
  Weapons: 7
  Theme: 5
Game 9: Star Conflict

Theme: Space, Type 2
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:
Overall: 7
Difficulty Enjoyment: 7
Weapons: 7
Theme: 5

Game 10: Dungeon Battles

Theme: Fantasy, Type 2
Difficulty: Normal
Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Single weapon, infinite ammo
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Improve through use

Treasure on Map: On

Ratings:

Overall: 7

Difficulty Enjoyment: 7

Weapons: 7

Theme: 5

Username: 103217312

Gender: Male

Age: 26-30

Experience with games: 7+ years

Hours of games a week: 5 to 10 hours

Kind of gamer: Experienced

Level of gamer: Expert

Played Platformer: Yes

Played FPS: Yes

Played Shooter: Yes

Played TRPG: Yes

Played ARPG: Yes

Played Strategy: Yes

Played MMO: Yes

Played Racing: Yes
Played Sports: Yes
Played Puzzle: Yes
Played Arcade Puzzle: Yes
Played Adventure: Yes
Played Adventure: Yes
Played Action Adventure: Yes
Played Simulation: Yes
Played Arcade: Yes
Played Card: Yes
Played Facebook: No
Played a lot of Platformer: No
Played a lot of FPS: No
Played a lot of Shooter: No
Played a lot of TRPG: Yes
Played a lot of ARPG: Yes
Played a lot of Strategy: Yes
Played a lot of MMO: Yes
Played a lot of Racing: No
Played a lot of Sports: No
Played a lot of Puzzle: No
Played a lot of Arcade Puzzle: No
Played a lot of Adventure: No
Played a lot of Action Adventure: No
Played a lot of Simulation: No
Played a lot of Arcade: No
Played a lot of Card: No
Played a lot of Facebook: No
Favorite genre: TRPG

Game 1: Space Wars

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates

Enemy Style: All enemies
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:

Overall: 2
Difficulty Enjoyment: 4
Weapons: 5
Theme: 3

Game 2: Dimension Wars

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Six weapon set, ammo must be found

Enemy Style: Gauntlet style

Powerups: Off

Weapon Upgrade Style: None

Treasure on Map: Off

Ratings:

Overall: 8

Difficulty Enjoyment: 5

Weapons: 6

Theme: 5

Game 3: Wizard Chronicles

Theme: Fantasy, Type 1

Difficulty: Normal

Game Area Progression: Small cave network, find exit

Player Weapon Style: Single weapon, infinite ammo

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: On
Ratings:

Overall: 7

Difficulty Enjoyment: 4

Weapons: 4

Theme: 6

Game 4: Wizard Battles

Theme: Fantasy, Type 2

Difficulty: Normal

Game Area Progression: Small rooms in sequence, kill everything

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Shooting gallery

Powerups: On

Weapon Upgrade Style: Improve through use

Treasure on Map: Off

Ratings:

Overall: 6

Difficulty Enjoyment: 7

Weapons: 6

Theme: 5

Game 5: Galaxy Conflict

Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo
regenerates

Enemy Style: Shooting gallery
Powerups: On
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: On

Ratings:
  Overall: 3
  Difficulty Enjoyment: 3
  Weapons: 5
  Theme: 5

Game 6: Vector Fights
Theme: Space, Type 1
Difficulty: Hard
Game Area Progression: Rooms with mazes, find
exit to next floor

Player Weapon Style: Six weapon set, ammo must be
found

Enemy Style: Gauntlet style
Powerups: On
Weapon Upgrade Style: Improve through use
Treasure on Map: On

Ratings:

Overall: 5
Difficulty Enjoyment: 5
Weapons: 6
Theme: 4

Game 7: Star Wars

Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor

Player Weapon Style: Start with 3 basic weapons, swap for more

Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

Overall: 3
Difficulty Enjoyment: 4
Weapons: 4
Theme: 3

Game 8: Magic Arena
Theme: Fantasy, Type 1
Difficulty: Easy
Game Area Progression: Single level, survival
Player Weapon Style: Six weapon set, ammo regenerates
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: None
Treasure on Map: On
Ratings:
  Overall: 3
  Difficulty Enjoyment: 5
  Weapons: 4
  Theme: 6

Game 9: Star Wars
Theme: Space, Type 2
Difficulty: Easy
Game Area Progression: Rooms with mazes, find exit to next floor
Player Weapon Style: Start with 3 basic weapons, swap for more
Enemy Style: Gauntlet style
Powerups: Off
Weapon Upgrade Style: Upgrade through pickups
Treasure on Map: Off

Ratings:

  Overall: 4
  Difficulty Enjoyment: 2
  Weapons: 6
  Theme: 4

Game 10: Fantasy Tales

  Theme: Fantasy, Type 1
  Difficulty: Normal

  Game Area Progression: Small cave network, find exit

  Player Weapon Style: Six weapon set, ammo must be found

  Enemy Style: Shooting gallery
  Powerups: On

Weapon Upgrade Style: Improve through use
Treasure on Map: Off

Ratings:

  Overall: 8
  Difficulty Enjoyment: 7
  Weapons: 6
  Theme: 6
APPENDIX B: DATA ANALYSIS SCRIPT

This script was written for Python 2.7, and was used with a csv file version of the data listed in Appendix A.

```python
import math

survey_answers = [
    ["Gender", ["Male", "Female", "Other"]],
    ["Experience with games", ["0-1 years", "2-4 years", "5-6 years", "7+ years"]],
    ["Hours of games a week", ["1 hour or fewer", "2 to 5 hours", "5 to 10 hours", "10 to 20 hours", "20+ hours"]],
    ["Kind of gamer", ["None", "Casual", "Hobby", "Experienced", "Hardcore"]],
    ["Level of gamer", ["None", "Novice", "Adept", "Expert", "Master"]],
    ["Played Platformer", ["No", "Yes"]],
    ["Played FPS", ["No", "Yes"]],
    ["Played Shooter", ["No", "Yes"]],
    ["Played TRPG", ["No", "Yes"]],
    ["Played ARPG", ["No", "Yes"]],
```
["Played Strategy", ["No", "Yes"]],
["Played MMO", ["No", "Yes"]],
["Played Racing", ["No", "Yes"]],
["Played Sports", ["No", "Yes"]],
["Played Puzzle", ["No", "Yes"]],
["Played Arcade Puzzle", ["No", "Yes"]],
["Played Adventure", ["No", "Yes"]],
["Played Action Adventure", ["No", "Yes"]],
["Played Simulation", ["No", "Yes"]],
["Played Arcade", ["No", "Yes"]],
["Played Card", ["No", "Yes"]],
["Played Facebook", ["No", "Yes"]],
["Played a lot of Platformer", ["No", "Yes"]],
["Played a lot of FPS", ["No", "Yes"]],
["Played a lot of Shooter", ["No", "Yes"]],
["Played a lot of TRPG", ["No", "Yes"]],
["Played a lot of ARPG", ["No", "Yes"]],
["Played a lot of Strategy", ["No", "Yes"]],
["Played a lot of MMO", ["No", "Yes"]],
["Played a lot of Racing", ["No", "Yes"]],
["Played a lot of Sports", ["No", "Yes"]],
["Played a lot of Puzzle", ["No", "Yes"]],
 aspects = ["Played a lot of Arcade Puzzle", ["No", "Yes"]],
["Played a lot of Adventure", ["No", "Yes"]],
["Played a lot of Action Adventure", ["No", "Yes"]],
["Played a lot of Simulation", ["No", "Yes"]],
["Played a lot of Arcade", ["No", "Yes"]],
["Played a lot of Card", ["No", "Yes"]],
["Played a lot of Facebook", ["No", "Yes"]],
]

 aspects = ["Theme", ["Fantasy, Type 1", "Fantasy, Type 2", "Space, Type 1", "Space, Type 2"]],
["Difficulty", ["Easy", "Normal", "Hard"]],
["Game Area Progression", ["Single level, survival", "Small rooms in sequence, kill everything", "Small cave network, find exit", "Rooms with mazes, find exit to next floor"]],
["Player Weapon Style", ["Single weapon, infinite ammo", "Six weapon set, ammo regenerates", "Six weapon set, ammo must be found", "Start with 3 basic weapons, swap for more"]],
["Enemy Style", ["Gauntlet style", "Shooting gallery", "All enemies"]],
["Powerups", ["On", "Off"]],
["Weapon Upgrade Style", ["None", "Improve through use", "Upgrade through pickups"]],
["Treasure on Map", ["On", "Off"]],
]

ing_names = ["Overall", "Difficulty Enjoyment", "Weapons", "Theme"]

aspect_rating_map = [
[1.00,0.00,0.00,1.00],
[1.00,1.00,0.00,0.00],
[1.00,0.50,0.00,0.00],
[1.00,0.00,1.00,0.00],
[1.00,0.25,0.00,0.00],
[1.00,0.00,0.00,0.00],
[1.00,0.00,1.00,0.00],
]
class thesis_ratings:
    def __init__(self, required_sources = 0):
        self.sources = 0
        self.required_sources = required_sources
        self.ratings = []
        for a in aspects:
            aspect_choice_ratings = []
            for aa in a[1]:
                aspect_choice_ratings.append([5, 0])
            self.ratings.append(aspect_choice_ratings)
    def add_source(self):
        self.sources += 1
    def add_rating(self, aspect_index, aspect_choice_index,
                   total_rating, total_rating_count):
        rating = self.ratings[aspect_index][aspect_choice_index]
        if rating[1] == 0:
            rating[0] = 0
        rating[0] += total_rating
rating[1] += total_rating_count

def print_info(self, base_tab=0):
    base_tabs = '\t'*base_tab

    if self.sources < self.required_sources:
        print base_tabs + "N/A"
        return

    if self.required_sources > 0:
        print base_tabs + "(" + str(self.sources), "of",
        self.required_sources, "sources")

        for a in range(len(aspects)):
            print base_tabs + aspects[a][0]
            for aa in range(len(aspects[a][1])):
                if self.ratings[a][aa][1] == 0:
                    print base_tabs + "\t", aspects[a][1][aa], "N/A"
                else:
                    print base_tabs + "\t", aspects[a][1][aa], self.ratings[a][aa][0]/self.ratings[a][aa][1]

    global_aspect_ratings = thesis_ratings()

    survey_ratings = []
for s in survey_answers:
    ratings = []
    for ss in s[1]:
        ratings.append(thesis_ratings(3))
    survey_ratings.append(ratings)

fin = open("thesis_results.csv")

range_start = 0.0
range_end = 1.0
range_diff = range_end - range_start

def remove_label(data):
    return data.split(':'][-1].strip()

class thesis_user:
    def __init__(self, name, survey_results, games):
        self.name = name
        self.survey_results = survey_results
        self.games = games
        self.aspect_ratings = thesis_ratings()
        self.min_rating = 10
self.max_rating = 1
for game in self.games:
    for r in game.ratings:
        if r < self.min_rating:
            self.min_rating = r
        if r > self.max_rating:
            self.max_rating = r
rating_diff = float(self.max_rating - self.min_rating)
for game in self.games:
    for i in range(len(game.ratings)):
        game.ratings[i] = ( ( game.ratings[i] - self.min_rating ) / rating_diff * range_diff ) + range_start

def print_info(self):
    print ""
    print "Username:", self.name
    for i in range(len(survey_answers)):
        name_str = survey_answers[i][0]
        name_str = name_str + ":"
        while len(name_str) < 40:
            name_str = name_str + " 
        print "\t" + name_str, survey_answers[i][1][self.survey_results[i]]
for i in range(len(self.games)):
    game = self.games[i]
    print "\tGame " + str(i+1) + ": " + game.name
    for d in range(len(game.design)):
        print "\t\t" + aspects[d][0] + ": " + aspects[d][1][game.design[d]]
        print "\t\tRatings:
        for r in range(len(rating_names)):
            print "\t\t\t" + rating_names[r] + ": " + str(game.orig_ratings[r])

    def write_info_to_file(self, fout):
        fout.write("\n")
        fout.write("Username: " + self.name + "\n")
        for i in range(len(survey_answers)):
            name_str = survey_answers[i][0]
            name_str = name_str + ":"
            while len(name_str) < 40:
                name_str = name_str + " "
            fout.write("\t" + name_str + " " +
                        survey_answers[i][1][self.survey_results[i]] + "\n")
        for i in range(len(self.games)):
            game = self.games[i]
fout.write("\tGame " + str(i+1) + ": " +
    game.name + "\n")

    for d in range(len(game.design)):
        fout.write("\tt\t" + aspects[d][0] + ": " +
        aspects[d][1][game.design[d]] + "\n")

    fout.write("\tt\tRatings:\n")

    for r in range(len(rating_names)):
        fout.write("\tt\tt\t" + rating_names[r] + ":
" + str(game.orig_ratings[r]) + "\n")

class thesis_game:
    def __init__(self, name, design, ratings):
        self.name = name
        self.design = design
        self.ratings = ratings
        self.orig_ratings = list(ratings)

    #toss header
    line = fin.readline()

users = []
while 1:
    line = fin.readline()
    if line == "":
        break

    # get the 8 lines that go with this
    lines = [line]
    for i in range(8):
        lines.append(fin.readline())
    parts_list = []
    for l in lines:
        parts_list.append(l.strip().split(','))

    # gather data about the user
    username = parts_list[0][0]
    survey_results = []
    for i in range(9):
        if i == 6 or i == 7:
            results = remove_label(parts_list[i][1])
            for c in results:
                survey_results.append(int(c))
        else:
results = remove_label(parts_list[i][1])
for i in range(len(results)):
    if results[i] == '1':
        index = i
        break
survey_results.append(index)

# walk along the list and gather results for played games

games = []
curr_game_index = 2
while 1:
    if curr_game_index >= len(parts_list[0]) or
       parts_list[0][curr_game_index] == "":
        break
    # we have a game here, add the game
    name = remove_label(parts_list[0][curr_game_index])
    design_str = remove_label(parts_list[1][curr_game_index])
    design = []
    for c in design_str:
        design.append(int(c))
overall = int(remove_label(parts_list[2][curr_game_index]))
difficulty = int(remove_label(parts_list[3][curr_game_index]))
weapons = int(remove_label(parts_list[4][curr_game_index]))
theme = int(remove_label(parts_list[5][curr_game_index]))
games.append(thesis_game(name, design, [overall, difficulty, weapons, theme]))
curr_game_index += 1

users.append(thesis_user(username, survey_results, games))

#now we get to correlate the data with survey results

#let's start by using the game ratings to calculate a final rating for each element per user
for user in users:
    for i in range(len(survey_answers)):
        survey_ratings[i][user.survey_results[i]].add_source()
    for game in user.games:
for d in range(len(game.design)):
    design_index = game.design[d]
    rating_weights = aspect_rating_map[d]
    total_rating = 0
    total_rating_count = 0
    for r in range(len(game.ratings)):
        total_rating += game.ratings[r] * rating_weights[r]
        total_rating_count += rating_weights[r]

    user.aspect_ratings.add_rating(d, game.design[d], total_rating, total_rating_count)
    global_aspect_ratings.add_rating(d, game.design[d], total_rating, total_rating_count)

    for i in range(len(survey_answers)):
        survey_ratings[i] [user.survey_results[i]].add_rating(d, game.design[d], total_rating, total_rating_count)

print "Username: ", user.name
user.aspect_ratings.print_info()
for i in range(len(survey_answers)):
    print survey_answers[i][0]
    for j in range(len(survey_answers[i][1])):
        print "\t", survey_answers[i][1][j]
        survey_ratings[i][j].print_info(2)

print "Global Ratings"
global_aspect_ratings.print_info()
print "Global Rating Std Dev"
for a in range(len(aspects)):
    print aspects[a][0]
    avg = 0
    avg_sq = 0
    for aa in range(len(aspects[a][1])):
        value = global_aspect_ratings.ratings[a][aa][0]/global_aspect_ratings.ratings[a][aa][1]
        avg += value
        avg_sq += value ** 2
    avg /= len(aspects[a][1])
    avg_sq /= len(aspects[a][1])
    var = avg_sq - avg ** 2
print math.sqrt(var)

total_worst = 0
n_worst = 0

total_random = 0
n_random = 0

total_best = 0
n_best = 0

total_diff = 0
n_diff = 0

for user in users:
    for i in range(min(8, len(user.games))):
        total_random += user.games[i].ratings[0]
        n_random += 1
    if len(user.games) >= 9:
        total_worst += user.games[8].ratings[0]
        n_worst += 1
    if len(user.games) >= 10:
total_best += user.games[9].ratings[0]

n_best += 1

total_diff += user.games[9].ratings[0] - user.games[8].ratings[0]

n_diff += 1

print "Average random:", total_random / float(n_random)

print "Average worst:", total_worst / float(n_worst)

print "Average best:", total_best / float(n_best)

print "Average diff:", total_diff / float(n_diff)

print "Overall diff:", total_best / float(n_best) - total_worst / float(n_worst)

fout = open("users.txt", "w")

for user in users:
    user.write_info_to_file(fout)

fout.close()