Wyvern's Wrath

A 2D VERTICAL SHOOTER

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ABSTRACT

This final write-up contains all the information about our gaming application, and the development cycle taken to achieve completion. Within this report contains some insight on why we decided to develop this gaming application in the first place, as well as the details of the game itself. We'll be listing out all the features that made it into the game, as well as the features that were omitted due to time constraints. Our general work cycle will also be displayed in a timeline, so the reader can see which features of the game took the longest to implement, as well as the amount each person contributed to the project. Potential ideas for future development are listed at the end.

Since our first experiences with gaming, we've all wanted to give back to the gaming community by creating games as enjoyable as the ones we played in our youth. This application is the result of that desire.

OBJECTIVE

The purpose of our application is simply to provide entertainment to any consumers that enjoy side-scrolling shooters. While these consumers are our main target audience, we believe that anyone who desires a quick mobile game will also find enjoyment from our application. Mobile games are typically pick up and play games so that consumers can play them whenever and wherever on the fly. As a result, we focused more on the fun factor of a quick gaming session rather than grinding through extended play.

While many other 2D shooters already exist, especially those of the space shooter genre, we wanted to create our our version of the genre. Although none of the currently existing 2D shooter games are lacking, we felt that most of them had been polluted by advertisements or pay-to-win scenarios. Since we disliked both of these common aspects of modern-day apps, we decided that we wanted to create a vanilla mobile game, something that would bring a sense of nostalgia to consumers.

COMPONENTS

Our gaming application will contain the following features: A title menu, a shop with an upgrades system, a settings menu with seed, reset, and sound toggle functionalities, a level selection hub, multiple levels, enemy variety, power up drops, a boss fight, and a credits system.

Features

- *Title menu.* The main menu of the game, this will contain buttons that will lead the player to the level selection hub, the settings menu, and the shop.
- *Shop.* A shop system with upgrades for life, shielding power, and shot spread. You'll be spending any credits you earn from levels here.
- *Settings.* The settings will have a toggle mute button, and will also contain two other buttons to modify seed and data settings. The seed settings menu allows the player to set a seed to lock levels into a certain pattern, and also clear the seed set at will. The data settings will allow the player to manage their score and credits; when prompted to, the game can wipe the game of the player's highscore, or all of their data.
- *Level Selection.* There will be a level selection hub that gives the player the option to choose one of three levels. The levels consist of a score attack level, a survival level, and a boss fight level.
- *Enemies.* We'll have two enemy varieties, and a boss. They'll all drop power ups based on random number generation.
- *Drops.* The drops consist of a bomb that clears the whole screen of enemies, a shield which locks shooting but grants invulunerability and ramming power for a duration, and a stopwatch that temporarily freezes enemies on the screen.
- *Boss Fight.* The boss fight occurs once level 3 is completed, and proceeds to destroy all enemies on screen while prompting the player. The sprite for the boss is a placeholder, but the actual boss's functionality has been fully implemented with laser attacks, random drops, and a death animation.
- *Score.* The score system acts as the credits system. We save the scores earned by the player after a game over or victory, and the total accumulation of those scores function as credits. When the player earns 5000 score in a level, they'll be given extra lives for the duration of the level.

Application Lifestyle

When the app starts up, it'll load into a title screen with multiple options that allow the player to start the game, adjust settings, or go into the shop to upgrade their wyvern.

Starting a new game will send the player into the level selection screen, where a player can choose one of three levels.


Selecting settings will allow the user to adjust a variety of settings, such as seeds and score.

The shop will contain three buttons that will display messages based on whether or not the upgrade you desire has successfully been purchased. The numbers below the sprites will turn red to indicate that the player can upgrade that trait no further. The spread sprites will change based on upgrades purchased.

The end-of-level screens will display a variety of navigational buttons and the player's score. Yellow text will prompt the player if their previous highscore is beaten. The pause menu has nothing special, and locks the controls and stops music while open.
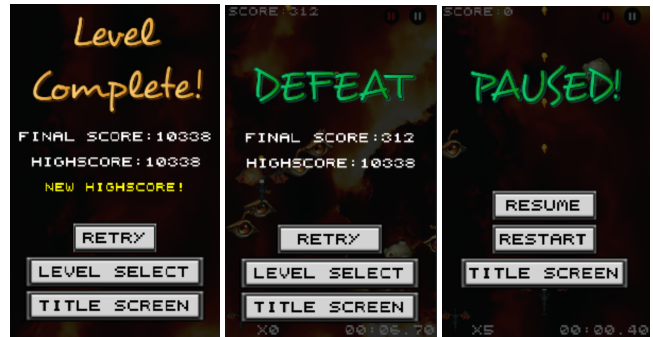
DEVELOPMENT

The development process was very organic, as we all contributed to the application whenever we had an idea or a spur of inspiration. The application was within the scope of completion during to the simplicity of the game design; once the gameplay loop was fully implemented, visual flair and extra features would take much less time and serve as extras. As for the actual order of implementation, we deviated from our original proposed development timeline quite a bit:

- Title screen, buttons, menu functionalities [WEEKS 1 - 4]
- Basic gameplay loop [WEEKS 4 - 7]
  - User interface/HUD [WEEKS 4 - 7]
  - Temporary upgrade pickups [WEEK 5]
  - Enemy sprites [WEEKS 5 - 7]
- Credits system [WEEKS 7 - 8]
- Shop and settings menu polishing [WEEKS 8 - 9]
- Boss Battles [WEEKS 9 - 10]

The application itself has changed lot in terms of visuals since its conception, but most of the general gameplay has stayed intact. We omitted a few ideas from our proposed application due to time constraints, but overall most of the features made it into the final build. The omitted ideas were mainly extra power ups and quality of life buttons.

CONTRIBUTION

We split up the work evenly for most of the application's development cycle and contributed to almost all parts of the application, so it's tough to pinpoint exactly who was in charge of certain portions of the application. In terms of the interim presentation, Jason and Jerry worked on making a script and formulating what to say, while Wesley designed the visuals for the powerpoint presentation. As for the proposal and the final write-up, everyone contributed to writing, and Wesley acted as the final reviser for both papers.

- *Jerry:* Implemented the boss fight, drop power ups, enemies, and timer for the levels. Worked on the general template for the menus and also did lots of soundtrack and sprite searching. Also implemented the code needed to create and

destroy buttons, so that buttons could be placed anywhere in the game extremely quickly. Made the initial seed and reset options useable in the settings menu. Worked heavily on implementing damaged enemy visuals and text pop for score. Also implemented the initial skeleton code of the levels.

- *Wesley:* Implemented the credits system and shop. Also helped refine the backend implementation of the enemies and drop power ups. Worked on refining the settings functionality, and implemented the level selection hub. Was in charge of the art direction of the game, and made sure that the game was visually and audibly appealing to consumers. Implemented the destruction of enemies and the wyvern's victorious fadeaway off screen after level completion. Also implemented groundwork for end level conditions and audio cues. Designed some of the art for the game himself.
- *Jason:* Handled play-testing and sprite searching. Since he was the main playtester, he served as a crucial debugger; he also worked on the initial groundwork for the game's menus. Worked on making the time stop power up function correctly, which was the most difficult powerup to implement. Implemented a debugging toggle button that could be used for testing new events added to the game, such as the boss fight or the game over menu. Also worked on code that would make text pop-up and fade off screen for visual flair. Was the main video editor for the final demo video.

Everyone was heavily involved in implementing the backend coding for the actual levels. For example, the pause, game over, and level complete menus were all equally worked on. These menus were developed during the 3 week period of the gameplay loop development cycle.

FUTURE WORK

Nothing is truly missing from our application, but we would've liked to include some better sprites and original soundtrack to help individualize our application. More levels, more power ups, and more upgrades are features that could always be added if we were to continue working in the future. In essence, the game itself is a finished product as is, and can simply be expanded upon in terms of size and breadth.