BUGMANIA - GAME DEV PROJECT

SEMINAR REPORT

Submitted by

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In partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING of

FACULTY OF ENGINEERING AND

TECHNOLOGY

S.R.M. Nagar, Kattankulathur, Kancheepuram

District **NOVEMBER 2020**

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Section 3 of UGC Act, 1956)

BONAFIDE CERTIFICATE

Certified that the Seminar report titled "**Bugmania - GameDev Project**" is the bonafide work of "Shreyas Datta**[RA1811003010018]**" submitted for the course 18CSP103L Seminar – I. This report is a record of successful completion of the specified course evaluated based on literature reviews and the supervisor. No part of the Seminar Report has been submitted for any degree, diploma, title, or recognition before.

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1. ACKNOWLEDGEMENT

A person thrives when they are inspired and motivated. It plays a key role in the success of any venture.

I would like to express my sincere thanks to Ms.M.Ranjani ma'am for encouraging me to the highest point and always helping me whenever I got stuck. Due to her guidance I was able to complete my project.

I would like to thank my parents for their support, care and inspiration.

2. ABSTRACT

Game Development is the art of creating games and describes the **design**, **development** and **release** of a game. The various elements that go into it includes *game mechanics*, *rewards*, *player engagement* and *level design*.

 A game developer could be a programmer, a sound designer, an artist, a designer or many other roles available in the industry. It can be undertaken by an entire Studio of people or by a single individual. It can be as small or as large as you like. **Artists** create and design assets, **Developers** focus on programming gameplay mechanics and a **Tester** is tasked to verify the integrity of the game.

Our goal here is to follow a definite workflow of development and complete a working prototype which emcompasses all the schools of development, including making fun and working gameplay mechanics, competent audio design and feedback, distinct visual elements and competent level design.

3. OVERVIEW

Theme

BUGS.

As provided by the **GameOff '21** Game Jam.

Targeted Platforms

 - PC

Influences

- Enter the Gungeon
- Rogue-like, beat-up-em mechanics
- Hades
- BulletsPerMinute
- Escapists
- Stardew Valley

4. PROJECT DESCRIPTION

1.1 Brief Description

You play as one of '3' unique and changeable bug characters each with their own special attribute, fighting your way through hordes of enemies and multiple enemy archetypes, in a series of hand-crafted 'dungeons' in a rogue-lite fashion and track your time completion stats and collectibles for every 'run'.

1.2 Elaborate Description

Below are the salient features and development goals for the game, elaborating on the various game mechanics.

- **This is a top-down view, rogue-like beat-em-up game where you get to control one of '3' bug characters each with their own special attribute offering key differences and variations**

to one's playstyle, thus encouraging multiple playthroughs. You also get to 'switch' to the different characters once you unlock them. The goal is to create a fluid and satisfying combat system which is engaging for the player. Since interactivity and player interest is key for any video game, we need to make sure interest is sustained over the time of the game.

- **This is a beat-up-em style of dungeon crawler where you get swarmed by hordes of enemies attacking in both melee and ranged fashion**. We also provide various enemy archetypes with different functions to increase gameplay value. Working with the first goal, our aim is to increase the scope of player interactivity by giving users the freedom to approach different problems (enemies) with different solutions.

- **We also implement standardised patrol A.I for enemies, which is based on the concept of Dijkstra's shortest path algorithm**. Adding predetermined routes which are followed by the AI creates a more dynamic and lively environment.

- **Construct functional and appealing levels and backdrops for immersion and additional gameplay.** Adding onto the dynamic and lively environment of our 3rd goal, creating semi-interactable enviroments promotes exploration and thus player engagement as players are encouraged to look around the presented level.

- **Make intuitive and seamless U.I for Menu systems and displaying and tracking stats**. A simplistic and easy to follow UI makes it easier for players to understand their capabilities of interaction with the environment and the game as a whole. Simple collectible stats, timer and end-screen stats will also add value to every run and playstyle.

5. PROJECT SCOPE

Deadline

Minimum Viable Prototype: 19 November, 2021
Game Jam Final Date: 02 December, 2021

Team

Mudit Rastogi
Shreyas Datta
Antariksh Mukherjee

Software Used

- Unity 2019.4.0
 - Aseprite
- GitHub + Desktop
- Visual Studio Code 2020
- Adobe Photoshop
- Blender
- Adobe Audacity

Mechanics

Special Abilities and Actions

The players have access to the special abilities of the 3 controllable bug characters, each performing unique skills/moves on the press of the special hotkey (can be remapped later). Further elaboration on the special abilities of the 3 bugs :

1. Grasshopper: It's special ability is to 'dash'. On the press of the button, the grasshopper 'dashes' over a certain distance primarily to avoid incoming attacks or to better position itself. The freedom on the usage of the dash and its properties encourages player intuition and creativity. The grasshopper can also interact with certain fixed positions on the stage to 'hop' and reach inaccessible areas, encouraging player exploration and adding replayability.

2. Mantis: The mantis can perform an 'AOE' whirlwind attack around itself in a fixed radius to attack in a 360-degree range. This opens up easier and more intuitive ways of dealing with herd-style enemies who tend to swarm and overwhelm players. This also opens up the opportunity for players to decide between the bugs and choose the one more suitable and efficient for the present task, thus enabling active player choice and input, further adding depth to character switching.

3. Beetle: The beetle has the ability to 'charge' in a fixed direction over a certain distance. While conceptually similar to the dash, it is slower and lacks the precise movement alteration/corrections of the dash, as players can only charge in a fixed direction and not change the same, mid-frame of the animation. The 'charge' also serves the purpose of being able to 'break' and smash through special interactable/breakable walls spread throughout the levels, adding to exploration and replayability.

Enemy archetypes

The game sports multiple enemy archetypes each serving a unique function in combat, to keep the loop of beat-up-em combat fresh, fun and challenging each playthrough. Covering both melee and ranged attack patterns, some of the enemy archetypes are as follows:

1. Houseflies: Traditional low-damaging, low-health melee-ranged grunt units who serve as starting enemy types for the player to get accustomed to the combat flow and rogue-like loop. They patrol the level, attacking only when in a certain vicinity of the player.

2. Spiders: Enemies that, once defeated, split into smaller versions of itself, and act as a herd-type to attack the player.

3. Stink-bugs: Units that attack from a ranged distance. They maintain a safe distance from the player, and toss over 'stink-bombs' or explosives at the player to hinder their movement. If the player does get within a certain range of the enemy type, it rushes to the player location and explodes, dealing damage.

4. Crickets: Debuff units. They are enemy types that remain still in strategic positions of the level, and emit a sound wave in a fixed radius around them, that affects the player with a movement speed debuff (ie, it slows down the player) as long as the players are within that radius.

Time Tracker and Collectibles

There is a countdown timer that starts at the beginning of the level cluster everytime the player starts a 'new run'. It keeps track of the time spent by the player in each level, and during the game-over screen, shows an overall time stat of the 'total duration' of that run. Encourages the player to beat their own 'best time' through multiple playthroughs.

Furthermore, players also get to collect 'coins'/orbs in each level, the same being granted either through enemy loot drops or as special-case level exploration rewards. This too is a stat the player can track right under the health bar.

Health Bar

The player and enemies have a functioning health bar, which remains visible on the top-left of the screen(for the player) as well as appear and disappear on hit and death of the enemy unit by the player.

6. DEPLOYMENT

- The code has been uploaded on github.
  Github Repo link:
  https://github.com/ShreyasDatta/GameOff202
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- Game hosted on the Itch.io platform
  https://mudimax.itch.io/bugmania