VILNIUS UNIVERSITY
FACULTY OF MATHEMATICS AND INFORMATICS
INSTITUTE OF COMPUTER SCIENCE
INFORMATION TECHNOLOGIES STUDY PROGRAM

Problem-based Project

Tower Defense.
2D game with strategy and AI features.

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1 Purpose of the system

1.1 Theme

- The video game is a top-down 2D Tower Defense game. Made for Windows desktop devices. The theme of our game is magic. The enemies of the player are fantasy monsters, whereas the towers are magical wizards. The Video game consists of many waves, the player loses the game if the monsters reach the end of the level, as one monster damages a specified amount of Health Points and if it reaches 0 the game ends. The enemies and wizards all have special abilities that either help the player or do not.

1.2 Users

- Player - user that plays the game, but has less functionality than a Developer/Play Tester, for example, not being able to use the "Debug" feature.

1.3 Location

- All the code and documentation will be available on our GitLab repository. After the main release, the game will be uploaded on itch.io.

1.4 Responsibilities

- Provide the user with a main 50 wave game mode.

- Allow the user to place various towers, that have different abilities.

- The user must also fight various enemies with different abilities.

2 High-level overview of the system

The video game consists of two systems that contain:

- The video game program - the video game itself where players will be able to play and interact.

- The Database - a relational database that stores player data, which contains the player's progression.

- The Webserver - to connect the database with a client.

3 Functional Requirements

3.1 High Priority

- Have manually made waves of enemies, consisting of 50 waves.

- Have placeable towers and a shooting system.

- Have playable maps.

3.2 Medium Priority

- Having upgrades for towers that increase their stats and give them the ability to create status effects for enemies.

- A Saving function to save current map progress or beaten map progress

3.3 Low Priority

- Have a sandbox gamemode where you have infinite of everything and a challenge gamemode where you beat a level with conditions

4 Non-Functional requirements

4.1 Compatibility

- The game must be able to run on the majority of Windows devices.

- Implement Unicode compatibility in every step of the system: users must be able to type, submit and see non-Latin characters.

4.2 Reliability

- The game should not have any issues or bugs that prevent the player from a non-frustrating experience.

4.3 Performance

- The game should work well on a computer that can run Windows 7,8,10 reliably.

5 Versions

Version 0.1
- A fixed map to test functionality of later gameplay

- Enemies spawn and go forward.

- The player is able to place a tower, towers can shoot at enemies.

Version 0.3

- Added different towers and enemies.

- Enemies can damage the player health points and added losing conditions.

Version 0.5

- Added waves to the game, consisting of 10 waves with winning conditions.

- The upgrades can give status effects, like bleeding or slowness.

Version 0.7

- Game menus like the main menu and pause menu, and also a game HUD.

- Towers can be upgraded, giving them extra stats.

- Create more maps for the player

Version 1.0

- A Save and load feature, to get the players progress and to save current played map data.

- Finished wave amount consisting of 50 waves.