**Castle Defense Game Design Document**

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PROG2370 - Game Programming with Data Structures

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Castle Defense is a game that displays 2D graphics, runs on Windows 10, comes with simple castle icon, and one click installer.

**Description & features of the game**

**Purpose**

You need to defense a Castle with your archer from the invasion of enemies.

**Starting Game**

In the beginning of the game, you need to enter a unique player name that you are going to use for the high score record.

**Play Sound and Music**

After you enter a player name, the background music Eldon - Pink cheeks will be played and continuously repeated. Each time you shoot an arrow or use a bomb, the sound effect of arrow shooting sound and bomb explosion sound will be played.

**Screens**

In a game you have 5 screens, Start screen with menu, Game screen, Help, High Score, and Credit. You can select menu by using keyboard arrow keys and hit enter. In the help scene, you can see the description how to play the game. In the Credit Scene

**Game Control**

While you are playing game, you can control your archer to aim and shoot arrows by mouse and use bombs by keyboard button B. You can pause while you are playing game with keyboard button P. You can go back to the start screen by ESC key from Game, Help, High Score, Credit Screen. You can quit the game by select Quit menu and hit enter.

**Level and Score System**

Your level start with level 1. Each time you kill an enemy by shooting an arrow, your score increases by one. If you collect 20 points at each level, you can clear a level and move on to the next level.

**Save Game & Load Game**

Player name, level, and score are saved automatically to the file CastleDefenseSave.txt. You will start with Level 1 and Score 0, and you can check on the high score screen if you are the first player. You can stop playing game anytime you want with press ESC. But, if you want to keep playing with your saved level and score, you need to hit enter on the load game. If you hit the enter on the start game, the saved level and score will be initialized and overridden.

**High Score Screen**

You can see the top 5 high scores in the High Score Screen.

**Credit Screen**

You can see the game creator of castle defense.

**Archer & Arrow**

Archer’s shooting speed and arrow speed will be increased according to the level you are in.

**Enemies**

In each level, enemies are generated randomly according to the level you are in. In level 1, an enemy ‘red bat’ will come out. In level 2, an enemy ‘Samurai’ will be added. In level 3, an enemy ‘Normal Zombie’ will be added. In level 4, an enemy ‘Mad Zombie’ will be added. Enemies moving speed will be increased randomly according to the level you are in.

**Special Feature – Bomb**

The number of Bomb you can use depends on the level. In the level 1~4, you can’t use bomb. If you clear 5 levels or more levels, you can get certain chance of using bomb so that you can clear the enemies on the field, but the score will not be increased.

**Class Diagram**

|  |  |
| --- | --- |
| **Program & Game and Game1** | **Manager Classes, Extensions, and Static Resources** |
| **Graphical user interface, application  Description automatically generated** |  |

|  |
| --- |
| **Scenes** |
|  |

|  |
| --- |
| **Entity** |
|  |

Concept

* To start a game, you need to enter a unique player name,
* If you start a new game, the score will be overridden
* When you create a Player Name, it initialize with Level 1 and Score 0.
* You can check this on high score
* You can load your level and score. If you don’t have any game
* BombCount = Level \* 0.2

**References**

Reference to the resources used.

Level, Game Start, Stop

1. Castle
2. CorssBow
3. Enemy
   1. Position
   2. Speed
      1. X
      2. Y = LayerDepth
   3. Scale
   4. State
      1. Move
      2. Idle??
      3. Attack??
      4. Hurt??
      5. Die??
4. Enemy Generator
   1. Level
   2. Random Y
5. Collision Detector
   1. Dead motion
   2. Score System
6. Sound
7. Music
8. Skill
   1. Bomb
9. Castle
   1. Health??
10. CorssBow
11. Enemy
    1. State
       1. Move
       2. Idle??
       3. Attack??
       4. Hurt??
       5. Die??
    2. Speed
    3. Size
    4. Position
       1. X
       2. Y = LayerDepth
    5. Health??
12. Enemy Generator
    1. Level
    2. Random Y
13. Skill
    1. Bomb

SpriteBatch, Texture, position, speed, origin,

https://docs.godotengine.org/en/stable/tutorials/2d/2d\_movement.html

Enemy List

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Cute Wolf | Red Bat | Bold Samurai + Sword | HeroGuy | EnemyGuy | Soldier + Sword |
| Idle  Run  Attack  Hurt  Die | Logo  Description automatically generated  Idle  Walk  Attack  Hurt  Die | A person holding a knife  Description automatically generated with medium confidence  Idle  Run  Attack  Hurt  Die | Logo  Description automatically generated  Idle  Run  Slash  Hurt  Die | A picture containing logo  Description automatically generated  Idle  Walk  Attack  Hurt  Die | A picture containing text, helmet  Description automatically generated  Idle  Run  Attack  Hurt  Die |
| Cute Zombie1 | Cute Zombie | Powerful Knight 1 | Powerful Knight 2 | Powerful Knight 3 | Orcs 1 |
| Shape  Description automatically generated  Idle  Walk  Attack  Hurt  Die | A picture containing vector graphics  Description automatically generated  Idle  Walk  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | A picture containing toy  Description automatically generated  Idle  Walk  Run  Attack  Hurt  Die |
| Orcs 2 | Orcs 3 | Troll 1 | Troll 2 | Troll 3 |  |
| Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die | Idle  Walk  Run  Attack  Hurt  Die |  |

Reference

<https://www.freesoundeffects.com/free-sounds/explosion-10070/>