COMP 3609 – Game Programming

Project Final Report

STUDENT ID # 816029229

GAME CONCEPT:

In Cave Diver, you play as a scuba diver on the search for lost treasure. During this search you must collect as much gold coins as possible and locate the hidden treasure, all while being chased by a shark. After discovering the hidden treasure you must make your way back to you submarine, however there are several enemies in your path that you must either avoid or defeat.

HOW TO WIN:

In level 1, collect as much gold coins as you can and make it to the hidden treasure with at least 1 life remaining. In level 2, you must either defeat the enemies in your path by shooting them with the harpoon spears or avoiding them and making it to the submarine with at least 1 life remaining.

HOW TO LOSE:

On either level 1 or 2, you can only lose by having your 3 lives taken away. One life is taken away each time you are attacked by a shark.

HOW TO SCORE POINTS:

In level 1, there are gold coins scattered around the ocean cave that increases the players score by 5 points per coin collected. Finding the hidden treasure chest also increases the players score by 10 points. In level 2, every jellyfish killed increases the players score by 3 points and every shark killed increases the players score by 5 points.

HOW TO LOSE POINTS:

Being bitten by a shark decreases the players score by 3 points and being stung by a jellyfish removes 2 points from the players' score.

SPECIAL EFFECTS:

Level 1:

- Every 20 seconds that passes, the shark chasing the player speeds up.
- If the shark bites the player, they lose 3 points from their score along with 1 life and the shark gets slightly faster.
- If the shark eats a jellyfish, it becomes slower and is distracted (stops chasing the player) for 10 seconds.
- If the player is stung by a jellyfish, they lose 2 points from their score.
- After being bitten by a shark or stung by a jellyfish, there is a 5 second grace period where the player cannot be injured.
- Interacting with the hidden treasure chest progresses the game onto the next level.

Level 2:

- Every 20 seconds that passes, the shark chasing the player speeds up.
- If the shark bites the player, they lose 3 points from their score along with 1 life and the shark gets slightly faster.
- If the shark eats a jellyfish, it becomes slower and is distracted (stops chasing the player) for 10 seconds.
- If the player is stung by a jellyfish, they lose 2 points from their score.
- After being bitten by a shark or stung by a jellyfish, there is a 5 second grace period where the player cannot be injured.
- Pressing space bar fires a harpoon spear from the player.
- Each shark hit with a harpoon spear dies and the player is granted 5 points to their score.
- Each jellyfish hit with a harpoon spear dies and the player is granted 3 points to their score.
- Interacting with the submarine ends the game.

CONTROLS:

W or Up Arrow Key to move up

S or Down Arrow Key to move down

A or Left Arrow Key to move left

D or Right Arrow Key to move right

Space Bar to shoot harpoon spear (only in level 2)

CLASSES IMPLEMENTED:

The GameApplication class holds an instance of GameWindow and starts the game when the code is ran.

GameWindow class handles user input and states of the game.

TileMap is where most of the game logic lies and has references to the game entities. It possesses the logic for updating the games states and constantly updates what is shown on the screen.

TileMapManager reads the lines from textfiles and gets the game tiles and entities within the files. It plays a large role in what is shown and how it is shown.

PlayAnimation is responsible for handling the player sprite animation.

Player class is responsible for handling the player sprite, its collisions and movement.

Jellyfish & Shark classes are responsible for the jellyfish and shark entity movements and collisions.

Coin class is responsible for the coins the player can collect to increase their score.

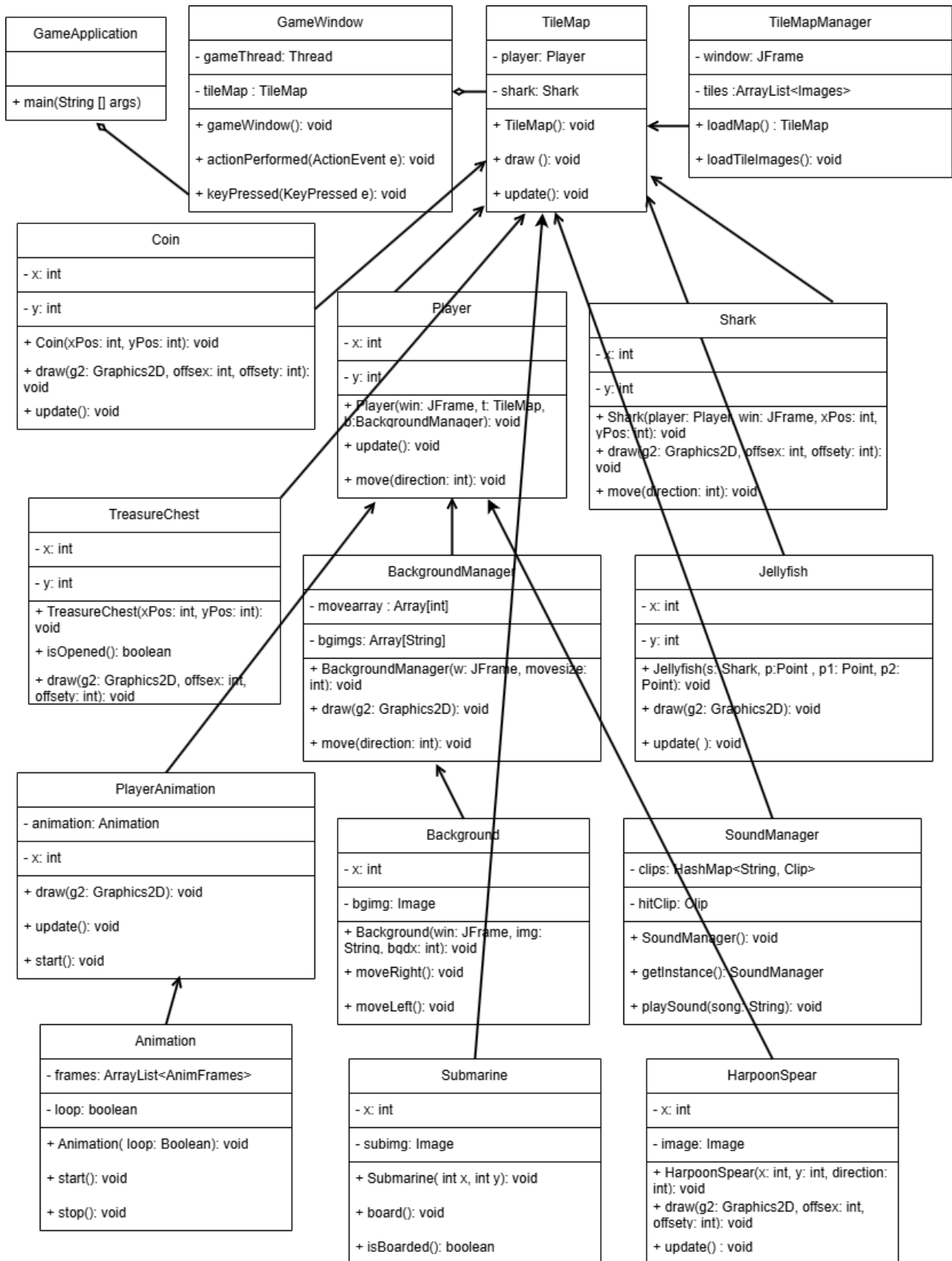Treasure chest class allows the player to progress to the next level.
Submarine class allows the player to win the game when the submarine is interacted with.

OBJECTED-ORIENTED MODEL:

GameApplication

+ main(String [] args)

GameWindow

- gameThread: Thread
- tileMap : TileMap

+ gameWindow(): void
+ actionPerformed(ActionEvent e): void
+ keyPressed(KeyPressed e): void

TileMap

- player: Player
- shark: Shark

+ TileMap(): void
+ draw (): void
+ update(): void

TileMapManager

- window: JFrame
- tiles :ArrayList<Images>

+ loadMap() : TileMap
+ loadTileImages(): void

Coin

- x: int
- y: int

+ Coin(xPos: int, yPos: int): void
+ draw(g2: Graphics2D, offsex: int, offsety: int): void
+ update(): void

Player

- x: int
- y: int

+ Player(win: JFrame, t: TileMap, b:BackgroundManager): void
+ update(): void
+ move(direction: int): void

Shark

- x: int
- y: int

+ Shark(player: Player, win: JFrame, xPos: int, yPos: int): void
+ draw(g2: Graphics2D, offsex: int, offsety: int): void
+ move(direction: int): void

TreasureChest

- x: int
- y: int

+ TreasureChest(xPos: int, yPos: int): void
+ isOpened(): boolean
+ draw(g2: Graphics2D, offsex: int, offsety: int): void

BackgroundManager

- movearray : Array[int]
- bgimgs: Array[String]

+ BackgroundManager(w: JFrame, movesize: int): void
+ draw(g2: Graphics2D): void
+ move(direction: int): void

Jellyfish

- x: int
- y: int

+ Jellyfish(s: Shark, p:Point , p1: Point, p2: Point): void
+ draw(g2: Graphics2D): void
+ update( ): void

PlayerAnimation

- animation: Animation
- x: int

+ draw(g2: Graphics2D): void
+ update(): void
+ start(): void

Background

- x: int
- bgimg: Image

+ Background(win: JFrame, img: String, bgdx: int): void
+ moveRight(): void
+ moveLeft(): void

SoundManager

- clips: HashMap<String, Clip>
- hitClip: Clip

+ SoundManager(): void
+ getInstance(): SoundManager
+ playSound(song: String): void

Animation

- frames: ArrayList<AnimFrames>
- loop: boolean

+ Animation(loop: Boolean): void
+ start(): void
+ stop(): void

Submarine

- x: int
- subimg: Image

+ Submarine(int x, int y): void
+ board(): void
+ isBoarded(): boolean

HarpoonSpear

- x: int
- image: Image

+ HarpoonSpear(x: int, y: int, direction: int): void
+ draw(g2: Graphics2D, offsex: int, offsety: int): void
+ update() : void

SOURCES:

Background Images: https://free-game-assets.itch.io/free-underwater-world-parallax-backgrounds

Player, Shark, Jellyfish, Coins & Tiles Images: https://nszym.itch.io/spearfishing-assets-pack

Player Hurt sound: https://pixabay.com/sound-effects/search/hurt/

Shark Hurt sound: https://uppbeat.io/sfx/t-rex-grunt/6166/20971

Jellyfish shock sound: https://pixabay.com/sound-effects/search/electric%20shock/

Shark Bite sound: https://www.myinstants.com/en/instant/chomp-55139/

Coin Collected sound: https://www.myinstants.com/en/instant/coin-mario/#google_vignette

Treasure Chest Sprites:
https://static.vecteezy.com/system/resources/previews/016/139/595/non_2x/cartoon-treasure-chest-box-animation-pirate-loot-vector.jpg

Submarine Sprite:
https://ih1.redbubble.net/image.225187163.4569/st,medium,507x507-pad,600x600,f8f8f8.u2.webp

YOUTUBE VIDEO LINK:

https://youtu.be/jDbN38-yF6I

GITHUB REPOSITORY LINK:

https://github.com/AnthonyCharles13/COMP3609-Project