RMIT UNIVERSITY

Assignment 2 (40%)

COSC2659 - iOS Development

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Subject code: COSC2659

Campus: Saigon South

Date of submission: 06th Septemper 2023

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I. Introduction

My game called treasure hunters or treasure race - is a dice game with simple gameplay. In the game, three forces including pirates, knights, and magicians will go through an arduous journey to find the treasure location. Players move by rolling dice so the winner depends entirely on luck. The game's gameplay is extremely simple, however, unexpected challenges plus a map full of obstacles make the game fun and unpredictable. The game can be extremely fun for children aged 5-10 years old.

II. Project Motivation

Inspired by famous board games such as Monopoly or Ludo chess, the treasure race is a simpler and less computational version. When I was still a kid, I played this game countless times with my classmates. At that time, the game came completely from children's imagination, we created a long map with a series of obstacles and items such as swords, guns, monsters, abysses, etc. Back then, this game created a lot of laughter, however, we had to play it manually with paper and pen. Therefore, I wanted to make a phone version as a souvenir even though the game does not seem very attractive right now.

III. Game Explanation

- This is a simple dice game in which two players try to outrun each other to reach the treasure first.
- To start the game, players need to enter their name, select an avatar and select the game type. The game supports 2 different game types, in which players can play against the computer or share the device with another player.
- First, the user needs to decide who goes first by choosing one of the two buttons with the player's name at the top of the screen. These two buttons also represent the current player turn during the game (the green button show the current player)
- Below the turn change buttons is the game status area which includes player 1's status bar, the map, and player 2's status bar.
- The status bar includes each player's name, avatar, score and dice. When it's their turn, the player will click on the dice icon to roll, the results returned corresponding to the number of steps that the player will make.

- Initially, players cannot enter the map immediately. Instead, players need to roll the dice of 1 or 6 to move into the starting point. If a player can enter starting point they get 100 points and the first achievement badge. After that, that player will be given another turn.
- The game ends when one of the two players reaches the final point with the treasure icon. At this point, the winner get 100 points and the third achievement badge.
- Along the way, there are a few obstacles that players must pay attention to as below:
  + Bomb: When entering a bomb square, the player will be killed and go back to initial position.
  + Portal: With the portal square, player will be teleported to a different square with that portal.
  + Three steps plus: This square allows the player to advance 3 square.
  + Two steps minus: This square makes the player move 2 cells back.
- Additionally, the game allows players to overtake their opponents, however, if a player encounters their opponent on the same square, they can kick them off the track. If a player can kick another player, they can get 100 points and the second achievement badge.

IV. Technical Details

a. Main Views

Figures 1,2,3,4,5: Main views of the game include Menu View, Leaderboard View, How To Play View, Game View, and Settings Views

b. ***Main Features***

i. *Menu View*

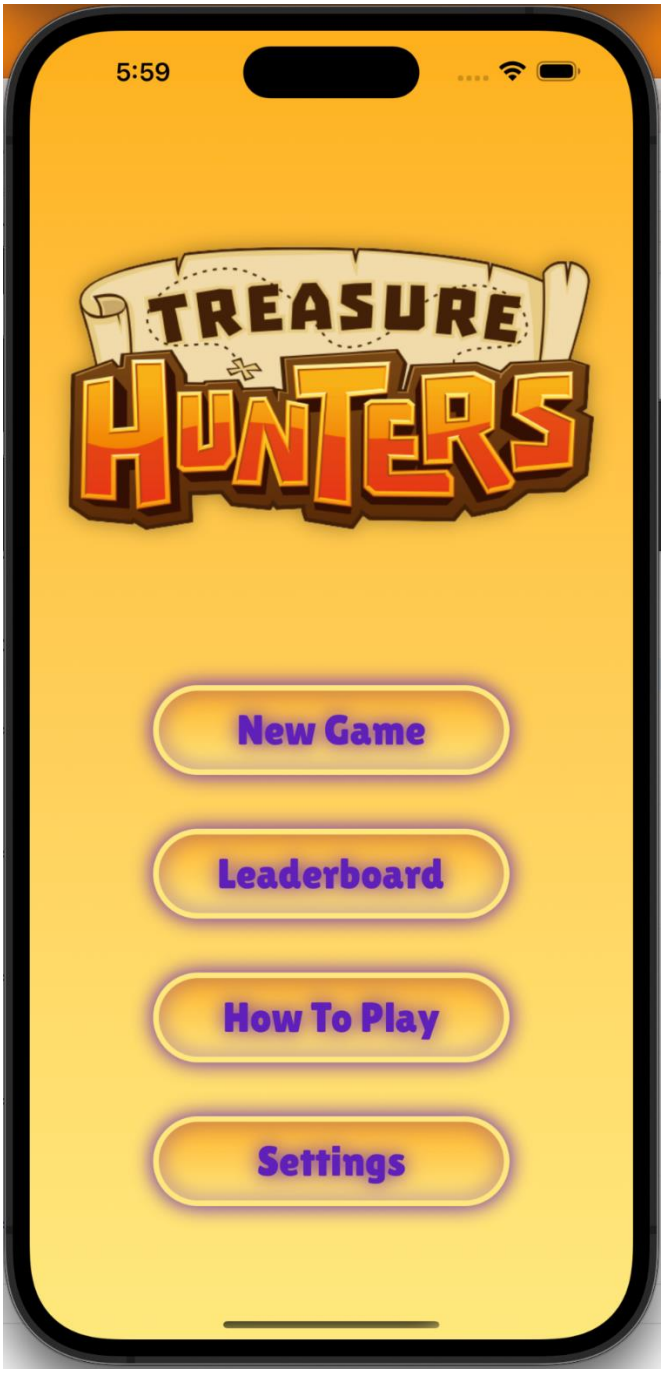

Figure 6: Menu View

Description: This view includes the game logo and buttons leading to other views. All components are placed in the NavigationView to conveniently navigate to the child views. I used the fullScreenCover sheet to navigate to child views, where buttons change the value of a different state variable.

ii. *Leaderboard View*

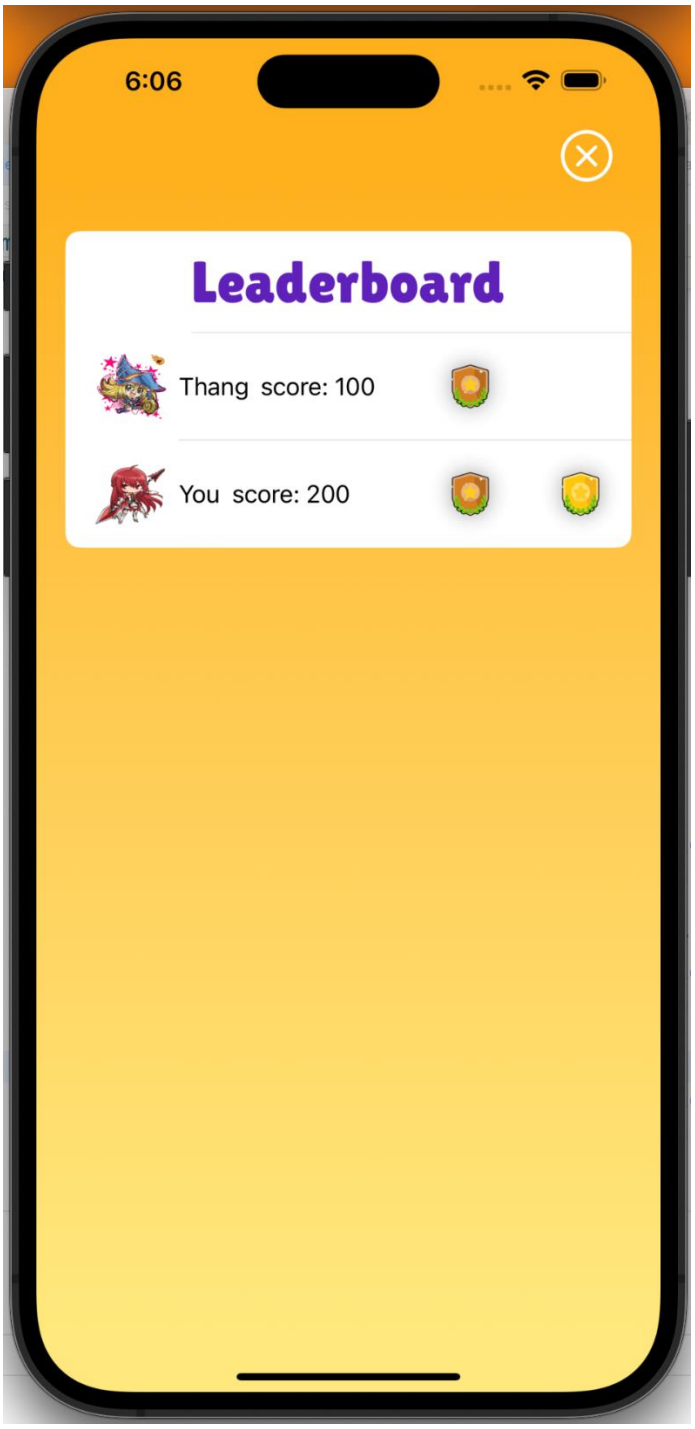

Figure 7: Leaderboard View

Description: This view shows the names of players who have completed the game, their scores, and the achievement badges they earned during the game. I used

UserDefaults variable to store players information as json. Therefore, when the player exits the application, the information is still saved.

iii. Game View

Figure 8: Game View

Description: Players can choose to play or play against the machine or with friends. The player then enters a name and selects an avatar. If the player name already exists then at the end of the game the score will be updated, otherwise the system will add a new player to the leaderboard. I created a separate struct named Player in the GameModels file to manage all player information such as name, avatar, position, score, etc. Scores and moves will also be displayed on this Game view. When the game ends, a message board will appear for the user to start a new game. All game logic is written in the GameService.

iv. Game Settings View

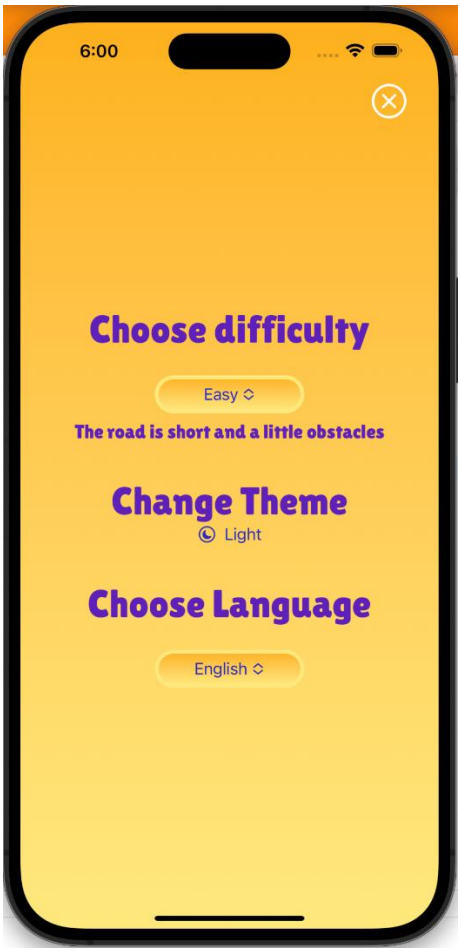

Figure 9: Game Settings View

Description: In view settings the user can change the difficulty for the game. There are 3 different levels including easy, medium, and hard. I created 3 different maps for the game. In the GameItems file, you can change the array of items for each difficulty level. I have created an enum object called GameLevel to manage the difficulty of the game.

v. *How To Play View*

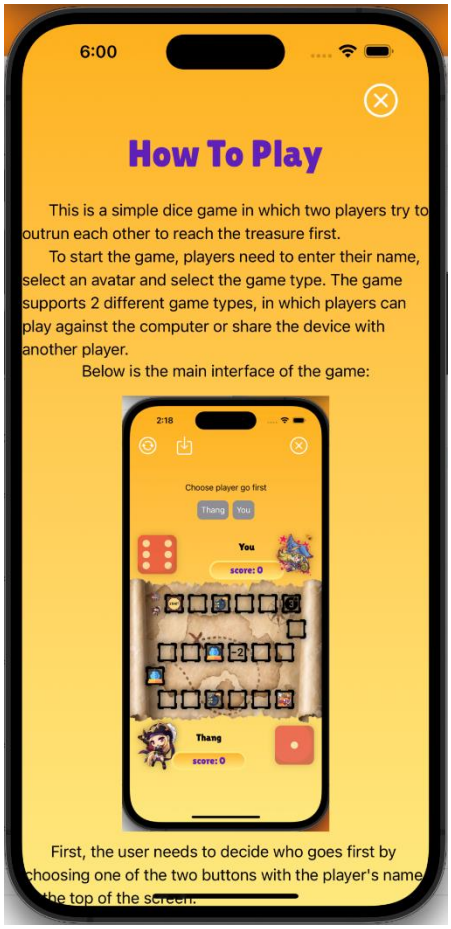

Figure 10: How To Play View

Description: This view contains detailed information on how to play Treasure Race. I used a series of TextView and Image to show the gameplay in the most clear way.

vi. Sound

The game supports background music for all 4 main views including menu view, leaderboard view, how to play view, and settings view. In the game view, every time a player rolls the dice, enters the start box, kicks another player, gets a bomb, teleports, etc., there will also be a sound effect that makes the game more lively.

vii. Device Compatibility

The The game works well on devices like iPhone 14, 14 Pro, 14 Pro Max, iPad Pro (11 - 12.9 inches). However, on the 12.9-inch iPad Pro, the images may be a bit small but it does not affect the experience.

c. ***Advanced Features***

i. *Save and Resume*

Figure 11: Button to save the game

Description: During game play, users can save their progress at any time by clicking the same button above in GameView. I have implemented the logic for this requirement in the function saveProgress and restore in the GameService file. I basically store all the game information in the AppStorage variable and restore them when needed.

ii. *Game Progression and Level*

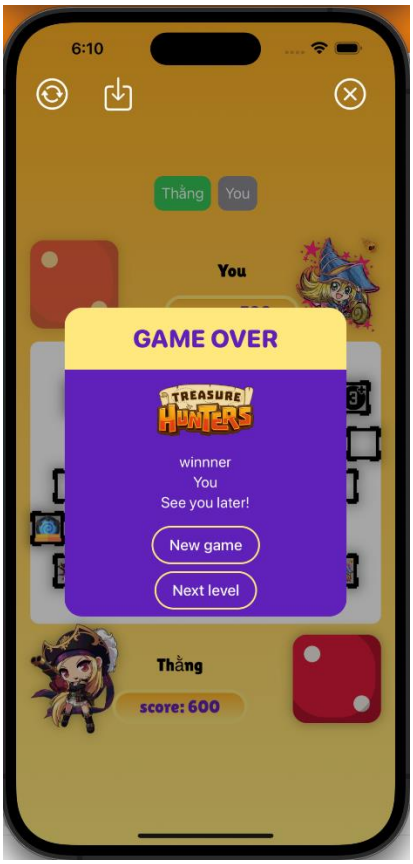

Figure 12: Next Level button when the game ends

Description: As mentioned above my game supports 3 different levels and when the game is over, the player can select the Next Level button to move to a higher difficulty. When that button is clicked, I just change the gameLevel state variable in the GameService file.

iii. Multilanguage Support

Figure 13: Multilanguage Feature

Description: In the settings I have created a function to change the language for the app. Currently the game only supports two languages: Vietnamese and English. I have created two localizable files in the Views folder to contain the translation of the game. Thanks to that, when the player selects a language, the app will get information from the appropriate localizable file to display.

iv. Toggle Theme settings

Figure 14: Light and Dark Mode

Description: Also in the settings section, users can change the theme of the application according to their preferences. I have created an AppStorage variable to store the user selector and for each view I will check that variable and set the appropriate colorScheme.

V. Setup / Installation Instructions

In order to run the application successfully, users can unzip the submitted file and run it on Xcode or go to the github address below if problems occur:

https://github.com/doquangthang-zet/Treasure-Race

VI. Video Link

This is the link to the video demonstration:

https://drive.google.com/file/d/1fLpaX0Fidk7WTRh5XkMVi7kA6LDppptn/view?usp=sharing

or:

https://youtu.be/B7tTv6qE0z8