

## FINAL PROJECT

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**Project Title:** Tax Collection

**Project Type:** Individual

**Project Description:** Inspired by a Vietnamese folk game from 11<sup>th</sup> century, this iOS application brings the game onto phone screen for the very first time. The first version of this application allows two people to play on the same device until one becomes the winner.

### A. DESCRIPTION AND DOCUMENTATION

The game utilizes two separate main view controllers and five additional view controllers for game instruction, which serve different functions as following:

#### 1. The View Controller



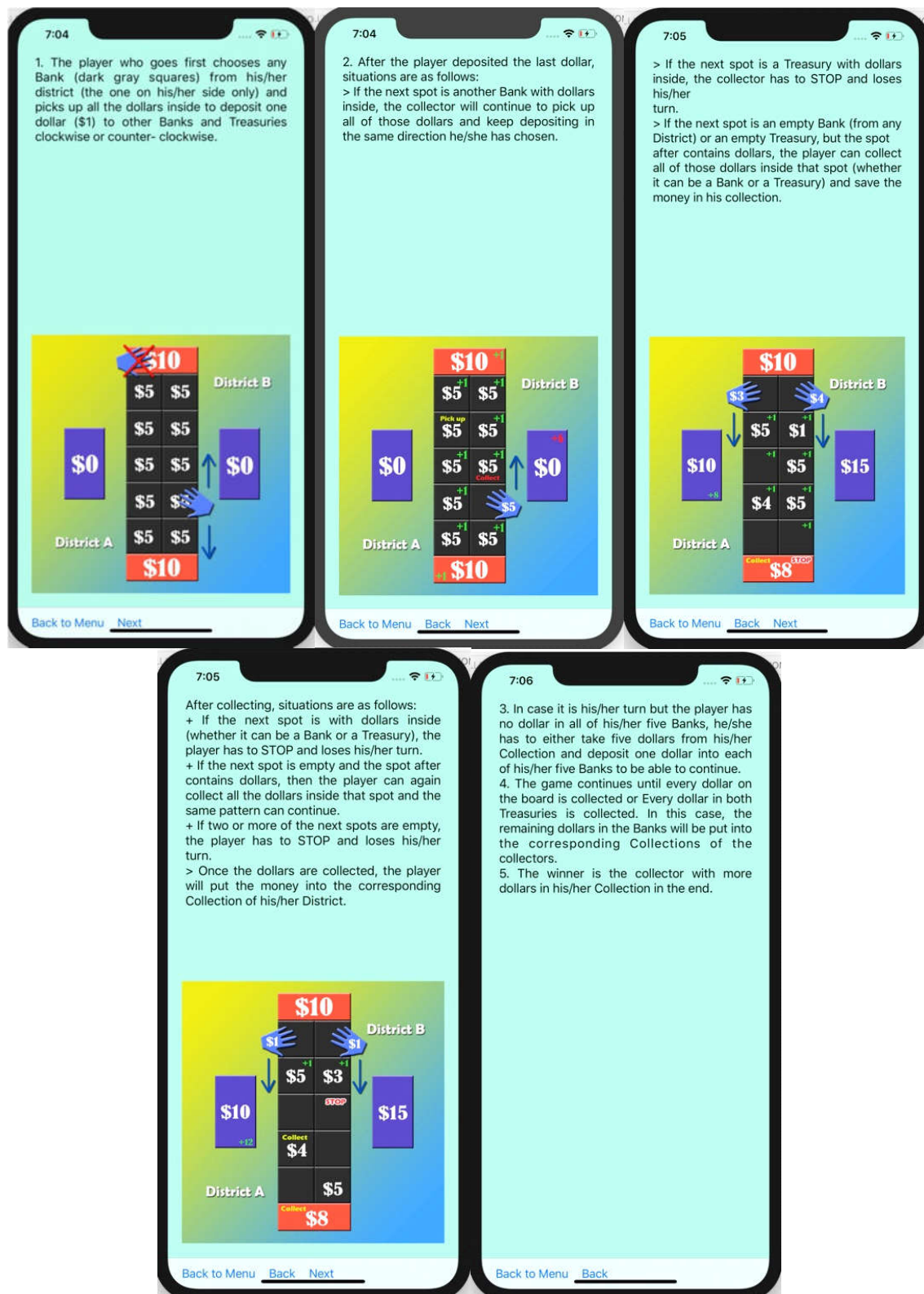
This is presented to the two users in the beginning for them to input their usernames in the two text fields.

After the usernames are filled in, the users can either press “Enter” or click on the background of the View Controller screen to complete the name filling step.

Then the users can click on “Start” button to initialize the game. When the “Start” button is clicked, the game will check if the two text fields are already filled in or not, in case any of them is empty, a warning will be displayed to instruct the users to enter their usernames in order to play, otherwise, the game will start.

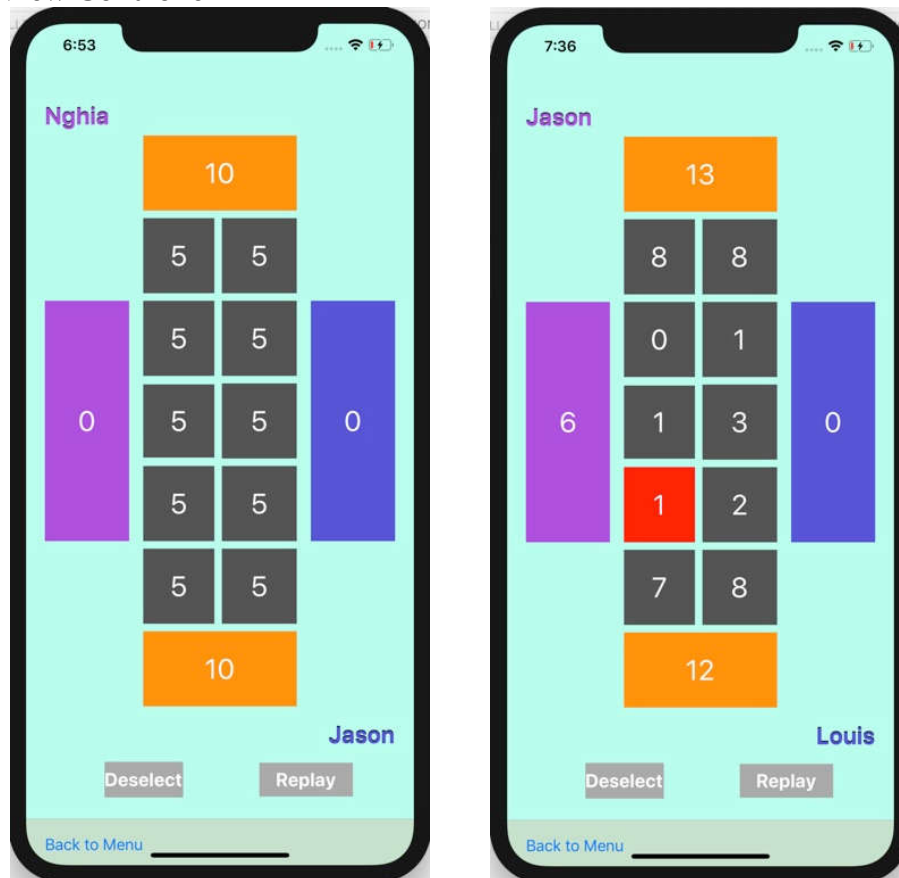
The two input usernames will be passed through a segue to be displayed in the Play View Controller.

#### 2. Additional View Controllers



The additional view controllers will walk the users through the game instruction step by step so that they players understand how to play the game. The toolbar allows users to step back and step forward as well as go back to the main menu at any time.

### 3. The Play View Controller



**Toolbar:** allows the users to click on to return to the main menu of the game.

#### Components of the game:

**Ten Banks (colored Dark Gray):** In the beginning, each Pocket contains five dollars, the left column of five Banks belongs to first user while the right column of five Banks belongs to second user.

**Two Treasuries (colored Orange):** In the beginning, each Treasury contains ten dollars. The Treasuries do not belong to any user.

**Two Collections (colored Purple):** The Collection on the left belongs to the first user while the one on the right belongs to the second user. They are used to record the collected amount of dollars the users collected.

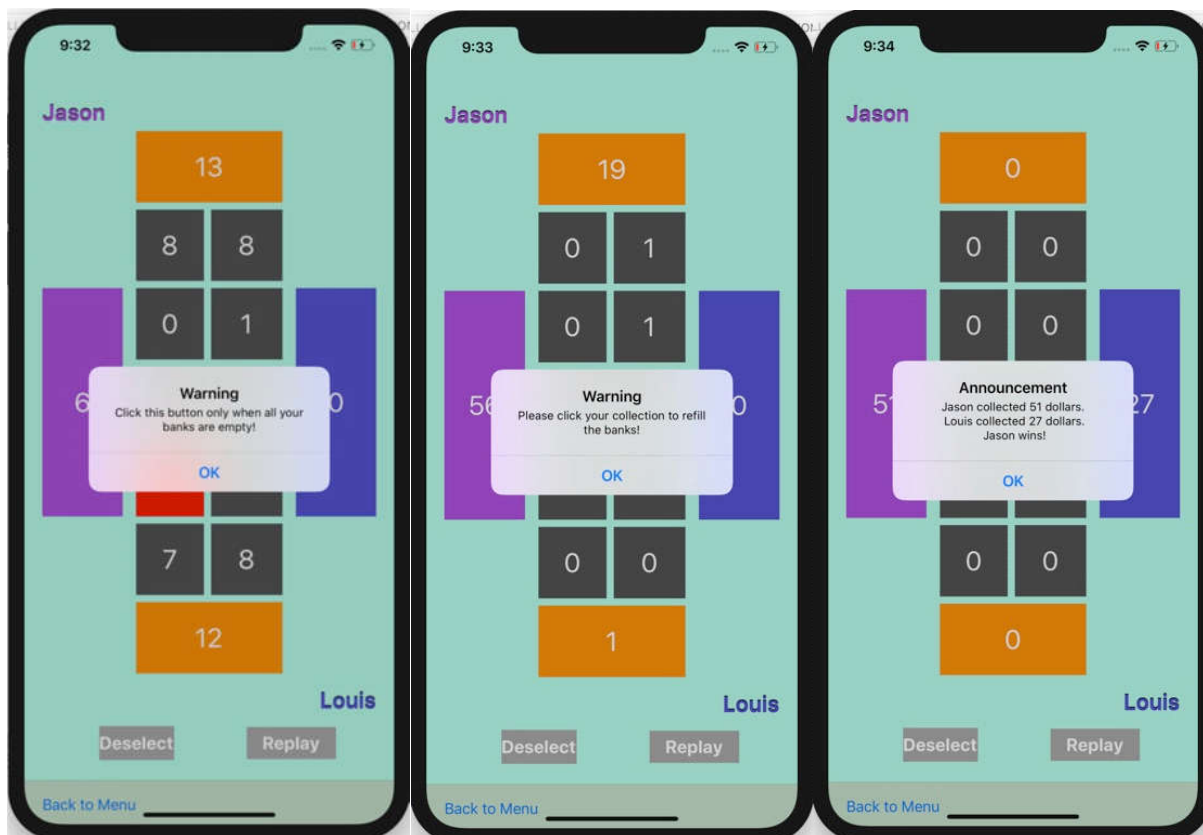
After any bank is selected, their dark gray backgrounds will be highlighted red.

**Replay button:** allow the users to click on to restart the game without having to fill in their usernames again.

**Deselect button:** allow the users to click on to deselect all the selected banks on their sides (the ones highlighted red so that they will return to dark gray).

**Swipe up or down:** this feature is activated after a bank is selected and allow the users to choose the direction to move according to the direction they swipe.

After the moves of the users, the collected dollars will be recorded in according Collections.



In the situation when all the Banks on the side of a user are empty, a warning will be displayed when that user click on any of his/her Banks saying “Please click your Collections to refill the Banks”. The user needs to click on his/her Collection to take five dollars from it and distribute to his/her five banks (one dollar each) in order to start moving.

In normal situations when there are still dollars in the Banks, if the user clicks on his/her Collection, a warning will be displayed saying “Click this button only when all your Banks are empty” to prevent dollars to be mistakenly withdrawn from the Collections.

When the game ends, the app will compare the money in the two collections and a warning will pop up to announce the winner.

## II. DISCUSSION

All the view controllers are connected through segues. The initial view controller is set to be the start screen controlled by “ViewController.swift”. This class file then checks the destination of the segue to see if it is the PlayViewController. If the destination is the PlayViewController, the usernames are then passed through segue and presented at the output “nameA” and “nameB” labels on PlayViewController. Otherwise, pass nothing to other view controller. Other view controllers are connected through segues allowing users to go back and forth or go straight back to the main Menu.

The Game Board Screen is controlled by “PlayViewController.swift”. The following will describe how this class is constructed to perform this game.

- All the bank (Dark Gray) and collection (purple) buttons are perform as both buttons and outlets.
- When a bank is selected, the bank color becomes red. Before it turns red, function “CheckEmptyA” or “CheckEmptyB” will be processed to check all five Banks to see if all of them are empty. If they are all empty, it requires the user to click on the

- collection to distribute 1 dollar to each of the empty bank from his/her side. If any bank has money in there but the user tries to distribute money from the collection by clicking on it, an announcement will pop up to tell them it's not legal to do that.
- Function “swipeActionUp” and “swipeActionDown” with some loops and conditions will handle how the money picked up is distributed around the game board. Before all the loops and conditions are processed, function “prepareArray” will store data values from the PlayViewController into the array, ensuring they contain correct values before starting. At the end, function “updateTable” will update the data values from the array back into the PlayViewController.
  - When the game finishes, function “Announcement” will calculate the values of two Collections, compare them and announce who the winner is. This checks the condition if every dollar on the board was collected or every dollar in the Treasuries were collected:
    - If the first condition is true, the function will compare the dollars recorded in the users' Collections and announce the winner as the user with more dollars.
    - If the second condition is true, the remaining dollars in the Banks will be added into the corresponding Collection of either user, then the function will compare the dollars recorded in the users' Collections and announce the winner as the user with more dollars.

### **III. Limitation and Future Solution**

Since this is an individual project with limited skills and time, there are some hold back in the application graphic design as well as media like sounds and music. The developer expected to develop the game into an online game board so that players from different locations can play together. There shall be a flag added to the game to announce whose player's turn is. In addition, more announcements will be added to the game to instruct the new players understand the game better. There will be a function let one player to borrow money from the other when he runs out of money in his collection as he has to distribute money to his empty banks. Feedbacks from players will help improve the next version of the game.