

Bill Zhang
izhan411@ucsc.edu
4/7/2021

CSE13S Spring 2021
Assignment 1: Left, Right and Center
Design Document

This lab is about making a simple game. The game has 3 dice, each dice with 4 different kinds of faces. The pass, right, left, and center faces. If you roll the pass face you pass your turn. If you roll right, you give 1\$ to the player on your right, vice versa for the left face. If you roll the center, then you put 1\$ in the pot.

The inputs to this program are given by the user:

1. Seed for the random generator
2. Number of active players in the game

Top Level Diagram:

Main:

Set dice faces in array: Dice
Set array names of players: Names

Prompt for random seed
Error if seed is less than 0
Set random seed

Prompt for number of players (has to be between 2 and 14 inclusive)
New Variable: NumberOfPlayers

New Variable for balance of pot: Pot Balance
New Array for player balances (length will be equal to number of players): Balance
Set every element in Array Balance to 3.

New integer variable: Pos
Pos = 0 (Pos 0 will refer to the 0th player in the array Names, and also 0th number in the array Balance, vice versa for all numbers in pos)

Infinite loop:

If (CheckActivePlayers() = 1)
 Break out of this infinite loop
If the player has more than 3\$. Roll dice 3 times
If player has 2\$: roll dice 2 times
If player has 1\$: roll dice 1 time
If player has 0\$: Skip his turn

Go to next player (on the right): Pos + 1
If pos + 1 was higher than or equal to player - 1, go to 0 instead

The CheckActivePlayers, AddMoney, and RemoveMoney methods are described below.

CheckActivePlayers:

Checks how many active players are left

Pseudocode:

CheckActivePlayers():

 New Variable integer: Active

 For every element in balance:

 If element is above 0:

 Active + 1

 Return Active

AddMoney:

Adds 1\$ to a position of a player.

Pseudocode:

AddMoney(position):

 Add 1 to integer at element(position) in array Balance

 Return True

RemoveMoney:

Removes 1\$ to a position of a player.

Pseudocode:

RemoveMoney(position):

 Remove 1 from integer at element(position) in array Balance

 Return True

RollDie:

Simulates rolling a die

Pseudocode:

rollDie(position):

 n = random number between 0 and 5.

```

        Output = nth Element of Array: Dice
    If output is right,
        If pos + 1 >= Number of players:
            AddMoney(0)
            AddMoney(pos+1)
            RemoveMoney(pos)

    If output is left
        If pos - 1 < 0
            AddMoney(Number Of Players - 1)
            AddMoney(pos-1)
            RemoveMoney(pos)

    If output is center,
        Balance + 1
        RemoteMoney(pos)
    If output is pass, do nothing.

```

Design Progress:

- First design was made on 4/7
- Design was changed to match code on 4/11
- Main change was that i decided to create a rollDie function instead of having that in the main loop to simplify the code a bit

While the game was easy to create in terms of code, the hardest part was learning the rest of the stuff. Stuff like formatting, creating makefiles, creating a design document, making sure outputs matched, and making sure everything fit the coding standards. Also debugging was a bit hard as well. I was too used to having a compiler that is able to step through a program and see all values of variables in real time. Vim did not have this functionality, I had to run the program many times with different print statements to debug.