Govind Pillai
gopillai@ucsc.edu
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CSE 13s Spring 2021
Assignment 1: Left, Right, and Center
Design Document

PURPOSE:

The purpose of this lab is to learn the basics of creating and using arrays, functions, constants, if-else statements, loops, and random numbers in C. In addition to this, makefiles and header files are also used.

DESIGN SUMMARY:

Most of the code I am going to be building is through a big while loop. Assuming that all user inputs are valid, the while loop will start. The first thing that is checked is how many players have money. I do this using a for loop. The for loops will run through how many active players we have and check the bank to see how much money the player has. It is important that the for loop only runs through active players because the bank initializes $3 dollars to the maximum 14 players when the program starts. If only 1 player has money, the loop is exited. Otherwise, the loop continues to run. The next step is finding out how many rolls the current player has. This is done by checking the current position's bank. If the player at the current position has more than $3, the program runs 3 rolls using a for loop. Otherwise it just runs how many dollars the player has using the same for loop. Using an enumerator and array that has all 6 faces of a die, the for loop checks each roll and distributes money accordingly. The program will also print out who is rolling, the roll, and what happened. After all rolls for the current player are over, the variable holding the current position is set to the position of the player on the right of the current position. Then the code loops back to the start of the while loop. Once the loop is exited, the program prints out the winner with the money they have in hand and the money in the pot.

PSEUDOCODE:

```
enumerator assigns PASS, LEFT, RIGHT, and CENTER to integer constants
Initialize array to represent faces of the die

left(current_pos, number_of_players) {
        Returns pos of player to the left of current_pos
}
right(current_pos, number_of_players) {
        Returns pos of player to the right of current_pos
}

main() {
        Initialize num_players to 0
        Initialize random_seed to 0
        Initialize players_with_money 0
```

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Initialize current_pos to 0
Initialize num_rolls to 0
Initialize pot to 0
Initialize bank array of size 14 and set each element to 3
Print(“Enter random seed: ”)
User input set to random_seed
if(random_seed is not an unsigned integer) {
        Exit program
}
Print(“Enter number of players: ”)
User input set to num_players
if(num_players in not within the bounds 0 < x < 15) {
        Exit program
}
while(true) {
        for(all indexes of active players) {
                if(element at index in bank > 0) {
                        Increment players_with_money
                }
        }
        if(players_with_money <= 1) {
                Break from loop
        }
        Set players_with_money to 0
        if(player at current pos has 3 or more dollars) {
                Set num_rolls to 3
        }else{
                Set num rolls to amount of money player at current_pos has
        }
        for(number of rolls) {
                if(left is rolled) {
                        Increment element at the pos left of current pos in bank by 1
                        print (left is rolled and $1 is given to player on the left)
                }
                else if(right is rolled) {
                        Increment element at the pos right of current pos in bank by 1
                        print(right is rolled and $1 is given to player on the right)
                }
                else if(center is rolled) {
                        Increment pot by 1
                        print(center is rolled and player puts $1 in the pot)
                }
                else if(pass is rolled) {
                        print(pass is rolled)
```

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                    }
                }
                Set current pos to the pos right of current pos
            }
            print(player wins with $x in hand and $y in the pot)
}
```