

Introduction to Programming EE2310 Homework 12

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Problem

Use the given reference code and finish the game of life board game.

Things have done

- Load maps, include multiple islands.
- Separate players who wants to go to college and get a job directly.
- For players go to college, stop at the Exam square and take an exam. If he/she didn't pass the exam, he/she will stay at the square until next row. If pass, randomly pick a job.
- For players get a job directly, pick a job randomly before start.
- Stop at the SetSail square and go to other island.
- Stop at MarriedOrCelebrate square, if player not married, get married and have a baby, and get the anniversary gift.
- Square actions include above squares and GetMoney, PayMoney, HaveBaby and GetPet.
- If player is at SpinToWin square, play spin to win game and give the prize out.

Solution, Additional Feature, Program Flow & Structure

Functions, data structure and program flow

p.s. Functions which are given in the reference code are not included.

- `main()`
 - Start setting and load map
 1. Get the number of players.
 2. Set the game ending age.
 3. Define the player vector, the map and call LoadMap function to read in the map.
 - First row (College or Career), for every player:
 1. Place player to the start square.
 2. Let the player choose the direction and roll the dice.
 3. Make the player forward toward the chosen direction.
 - a. If choose to go to college, move the player to square 6 and call

- PlayerForward function with original moving points minus 1.
 - b. If choose to get a career, call ChooseJob function to choose a job randomly, and do the works same as (a.).
- 4. Call squareAction to do the action player should do.
- Roll a dice and make player forward: while age is bigger than 0, for every player:
 1. Roll the dice
 2. If the moving point is 10, the retiring age minus 10.
 3. If the moving point is not 10, call PlayerForward function to move the player, then call squareAction function to do the action player should do.
- Compute Final Value, for every player:
 1. Call ComputeTotalValue to calculate the final score.
 2. Record the highest score and print out the winner.
- squareAction
 - Multiple if-else to recognize the square type and do the corresponding action.
- PlayerForward
 - Move the player square by square.
 - If the player meets square that has to stop, break from the moving loop.
- CooseJob
 - Randomly choose a job
- Exam
 - Randomly generate the score, return true if passed.
- SpinToWin
 - For every player:
 1. Choose their lucky number.
 - Do below actions until a winner is found:
 1. Roll the dice to decide the winner.
 2. Search the winner one by one.
 - Return the winner's ID.

Output Result

```
Enter the number of players (2~6) :4

----- Player 1's turn -----
Player 1 is at: College or Career?
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Which direction do you want to go? 1.College 2.Career:

Player 1 foward 6 steps!

Player 1 is at: Change to a new subject.

Player 1 now has 40

----- Player 2's turn -----

Player 2 is at: College or Career?

Which direction do you want to go? 1.College 2.Career:

Your job is a trapeze artist!

Player 2 foward 5 steps!

Player 2 is at: Draw a Story Card.

Player 2 now has 60

----- Player 3's turn -----

Player 3 is at: College or Career?

Which direction do you want to go? 1.College 2.Career:

Your job is a trapeze artist!

Player 3 foward 1 steps!

Player 3 is at: Get pay!!

Player 3 now has 60

----- Player 4's turn -----

Player 4 is at: College or Career?

Which direction do you want to go? 1.College 2.Career:

Player 4 foward 3 steps!

Player 4 is at: Work and study aboard!

Player 4 now has 80

----- Player 1's turn -----

Player 1 foward 8 steps!

Player 1 is at: Spin or pay to pass the exams.

STOP!

Test passed!

Your job is a flying doctor!

Player 1 now has 40

(Skip the middle)

----- Spin to Win! -----

Player 1 , choose your lucky number (1~10): 3

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Player 2 , choose your lucky number (1~10): 8
Player 3 , choose your lucky number (1~10): 1
Player 4 , choose your lucky number (1~10): 4
The winner is 4
Player 4 now has 1430

----- Player 4's turn -----
10 years left!

----- Player 1's turn -----
Player 1 foward 6 steps!
Player 1 is at: Swim uninhabited island
Player 1 now has 1360

----- Player 2's turn -----
Player 2 foward 9 steps!
Player 2 is at: Get married and have a baby!
STOP!
Player 2 now has 1030

----- Player 3's turn -----
Player 3 foward 1 steps!
Player 3 is at: Get pay!!
Player 3 now has 1670

----- Player 4's turn -----
Player 4 foward 8 steps!
Player 4 is at: Lawsuit!
Player 4 now has 1530

----- Player 1's turn -----
Player 1 foward 4 steps!
Player 1 is at: Get married and have a baby!
STOP!
Player 1 now has 1410

----- Player 2's turn -----
Player 2 foward 6 steps!
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Player 2 is at: Discover a lost city.
Player 2 now has 1080

----- Player 3's turn -----
Player 3 foward 8 steps!
Player 3 is at: Happy birthday!
Player 3 now has 1670

----- Player 4's turn -----
Player 4 foward 5 steps!
Player 4 is at: Draw a Story Card.
Player 4 now has 1530

----- Player 1's turn -----
Player 1 foward 4 steps!
Player 1 is at: Live on a beach for a year!!
Player 1 now has 1760

----- Player 2's turn -----
Player 2 foward 1 steps!
Player 2 is at: Get pay!!
Player 2 now has 1080

----- Player 3's turn -----
Player 3 foward 4 steps!
Player 3 is at: Draw a Story Card.
Player 3 now has 1670

----- Player 4's turn -----
0 years left!

----- Game Over -----
Player 1 has 1760 .
Player 2 has 1080 .
Player 3 has 1670 .
Player 4 has 1530 .
The winner is player 1
```