ADDS Practical 2 Design

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UML Diagram

Human
-string *hand
+human(int gRound)   +string *getHand()   +~human()

Computer
-string *hand
+computer(int gRound);   +string *getHand();   +~computer();

Referee
-string *result
+referee(string *player1, string *player2, int gRound)   +void printResult(int gRound)   +~referee()

Description

Human

This class stores an string array of "R"s "P"s and "S"s. The length of the array depends on "gRound" when human object is created, user is asked to input "R" or "P" or "S" for "gRound" times. GetHand() will return the array.

> **-string *hand** : this array stores all human choices in it.

> **+human(int gRound)** : this is the human constructor, takes the rounds of games as a parameter. Then, the hand array with the size of game rounds is dynamically allocated. In a for loop, user is asked to input their choices(R,P,S) and stored in hand array.

> **+string *getHand()** : this function will return the hand array.

> **+~human()** : this is the human destructor.

Computer

This class automatically generate an array of "R"s "P"s and "S"s with length of "gRound" and store it. GetHand() will return the array.

> **-string *hand :** this array stores all computer choices in it.

> **+computer(int gRound) :** this is the human constructor, takes the rounds of games as a parameter. Then, the hand array with the size of game rounds is dynamically allocated and initialised to "R".

+string *getHand() : this function will return the hand array.

+~computer() : this is the computer destructor.

Referee

This class takes 2 string array and compare their elements then store the result in a new array with length of "gRound". Results are "Win(W)"or "Lose(L)" or "Tie(T)".
printResult() will print out all of the element in one line with spaces in between.

-string *result : This is an array for storing the results of the game (W,L,T)

+referee(string *player1, string *player2, int gRound) : The referee constructor takes 2 players choices(array) and the rounds of game played as parameter. Elements in both array are compared one by one in a for loop, the results(W,L,T) are stored in result array.

+void printResult(int gRound) : This function takes game rounds as parameter and print out all elements in result array with a space in between.

+~referee() : this is the referee destructor.

main

The main function will ask user to input a number(k) to determine how many rounds the user wants to play. Then human and computer are created using "k". use gethand() to get the string array from both human and computer. Create a referee object and pass these two array to it. Use printresult() to print out the result.

Testing

1. input: 3RRR
   output: T T T

2. input: 3RPS
   output: T W L

3. input: 0
   output: exit program
   wrong input should exit program

4. input: 5RRSPP
   output: T T L W W