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CIS 17A

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https://github.com/bn2595114/NguyenBryan_CSC17A_48096

Introduction

This game is basically Mastermind with several bonus features. It is a game where you have a certain amount of attempts to figure out a set code the computer has randomly generated. The given characters or colors are given to the user with no specific order. The user must put the correct colors in the correct spot in order to win the game. Certain hints are given when the user enters either the right color, or both the right color and the right position. I chose this game because I believed that it would be challenging to my current ability and my previous game, hangman, seemed too difficult to code several hundred more lines.

Summary

The program is approximately 900 lines. However, it meets the criteria in other aspects such as the use of polymorphism, aggregation, static variables, inheritance, templates, and many of the concepts I have learned during the semester. There are several variables and classes in this program. There are approximately 10 classes and 1 structure. Variables are made from these classes and also as a setter. The program was bittersweet in the way how some parts were extremely easy, and some parts I just could not figure out. However, the code works better than I had anticipated. It took me all of my free time to code this program. No outside concepts were included in this program.

Description

The way I programmed this problem was by first laying down the groundwork for the problem. I coded the very basics of the game while trying to use the newer concepts learned in class. This part was very quick and easy, however, the number of lines coded after I finished the game was very little. Because of this, I thought of ideas that would further design and polish the game. I created several custom settings depending on what the user would like to play and a point system.

```
Enter a number.
1) View Player Statistics
2) Continue to Game
3) Enter the shop
2
Entering the game...
Please enter the number of the difficulty.
1) Easy
2) Medium
3) Hard
4) Custom Mode
5) Cheating Mode
1
You get 1 point for playing easy mode!
If you complete this round in 5 rounds, you will receive 2 times bonus points!
Finishing in 4 rounds, 3 times! And 3 rounds and under, 5 times!
The code is 4 characters long!
Characters: R, O, Y, G, B, I, V, W
You have 10 attempts to guess your 4 character long code
Attempt 1
Enter Your Characters(no space):
ROYG

There are 0 characters that are in the correct position and 3 correct characters in your guess
Attempt 2
Enter Your Characters(no space):
ORYG

There are 0 characters that are in the correct position and 3 correct characters in your guess
Attempt 3
Enter Your Characters(no space):
YGRO

There are 3 characters that are in the correct position and 3 correct characters in your guess
Attempt 4
Enter Your Characters(no space):
YGRB

There are 3 characters that are in the correct position and 3 correct characters in your guess
Attempt 5
Enter Your Characters(no space):
YGRI

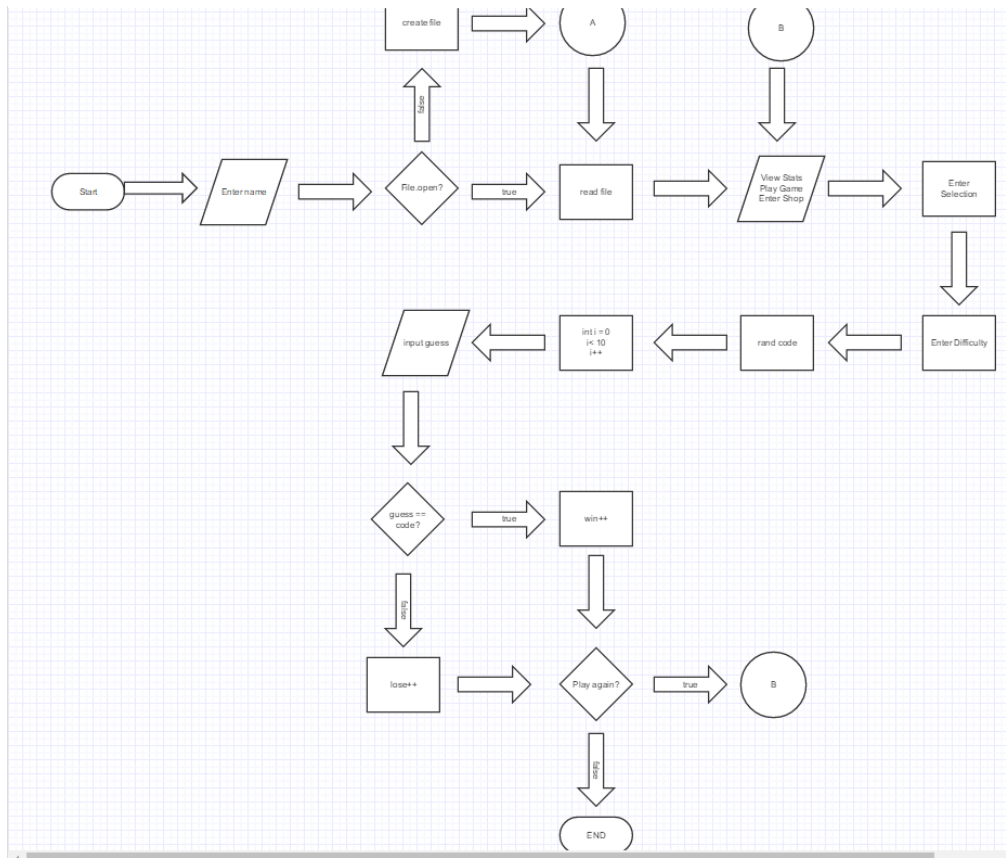
There are 4 characters that are in the correct position and 4 correct characters in your guess
Congratulations! You win!
You completed the round in 5 turns!
You have received 2 bonus points!
Play again? y for YES, n for NO

```

Put 999999 instead of having to put undefined. Ranking depends on Win Lose Average

```
Enter a number.  
1) View Player Statistics  
2) Continue to Game  
3) Enter the shop  
1  
Stats:  
Name: Bryan  
Wins: 3  
Losses: 0  
Win Lose Average: 999999.00  
Games Played: 3  
Points: 3  
Rank: Diamond  
Entering the game...  
Please enter the number of the difficulty.  
1) Easy  
2) Medium  
3) Hard  
4) Custom Mode  
5) Cheating Mode
```

```
Enter a number.  
1) View Player Statistics  
2) Continue to Game  
3) Enter the shop  
3  
Welcome to the shop! Here are our selected items.  
1) Hat (5 points)  
2) Gloves (5 points)  
3) Hammer (5 points)  
4) Shoes (5 points)  
5) Pants (5 points)  
6) Shirt (5 points)  
Please enter the number to purchase and anything else to exit  
1  
You do not have enough points!  
Points Remaining: 3  
Entering the game...  
Please enter the number of the difficulty.  
1) Easy  
2) Medium  
3) Hard  
4) Custom Mode  
5) Cheating Mode
```



Pseudocode

If start button is pressed

Get Name and open file

Display instructions

Display Menu to play game, view stats, open shop

Input choice

Display game modes

Input game mode

Display possible guesses

While failures less than 10

Enter guess

If code is guessed < 10

User Wins

Else

User Loses

If user plays again

Start Again

Else

Output data to file

End

<u>Data Type</u>	<u>Variable</u>	<u>Description (Located In Classes)</u>
Char*	Guess	User Guess(14)
Int	Match	Matching characters and same position as answer(15)
Int	In	Matching characters in answer(16)
Char*	Code	Randomized code that user must guess (19)
String	Name	Stores user name(18)
Int	Wins	Stores wins(19)
Int	Losses	Stores losses(20)
Float	Avg	Stores average(21)
int	Games	Stores Games played(22)
int	point	Stores points(23)

Static int	Games	Stores games played by all users(15)
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Concepts:

Static Variable	15 of Count.h
Template	BonusTemplate.h
Classes	Everywhere
Operator Overloading	Score.cpp 42-56
Constructors	In every Class in public
Destructors	InGame.h (3)
Pure Polymorphism	Cheater.h (14)
Polymorphism	Score.h (50)
Overriding class fn	Score.h(77)
Aggregation	Score.h(71, 73)
Inheritance	Cheater.h(17) Score.h(56, 68, 81)
Protected Member	Score.h(17)
Exceptions	Main.cpp(52-57)

Score
#name : string #wins : int #losses : int #avg : float #games : int #point : int
+Score(); +Score(name:string, wins:string, losses:string, avg:float, games:int, point:int) +getName() : String +setWin(win:int) : void +setLose(lose:int) : void +setAvg(win:int, lose:int) : void +getAvg() float +setGame(games:int) : void +out() : void +getWin() const : int +getLose() const : int +setPoints(point:int) : void +getPoints() const : virtual int Score operator++ : int Score operator-- : int

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Rank
-rank : string
+Rank() +setRank(float) : void +getRank() : string

Store
+Store(); +setPoints(point: p) : void +getP() const : int +buy() : void

Points
+Points() : Score() +Points(point:int) : Score() +loseP() : void +getPoints() const : int