Midterm Quiz Project

LAB # Midterm

SECTION #2

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Problem

Create a program in C that will randomly assign one of three quizzes for a user to take. After that It will make the user retake the quiz until all answers are correct and print the average score across all attempts. It will also ask the user if they want to retake the quiz and have them do so if they say yes. Finally for bonus points, I must track the average score across all quiz attempts not just a single quiz attempt.

Analysis

I need to make several functions that will be able to be called inside a while loop. I need a function to decide which quiz to run using the rand() and modulo operator, and three separate functions for each of the quizzes. I will also need a while loop inside my function so that I can implement the ability to retake the quiz by just re-running the while loop. The ability to keep track of my overall score per quiz and over all quizzes will be a part of the quiz functions themselves using global variables with the output being calculated in the while loop.

Design

My group chose to start out by making a randomizer and quiz selection function. The randomizer just takes a user inputted number, multiplies by a random number, and mods it to 0-2 in order to decide which quiz to run. The quiz selection function just takes an integer and runs a quiz depending on the input. The quiz function implementation was pretty simple, after coming up with questions themselves by reviewing the previous in class activities, all it took was printf statements for the questions, scanf for the users answers, and if statements to compare if it was correct or not. Inside the if statements for the quiz, I tracked the current score for the quiz attempt with a global variable in order to use it next. The next step was implementing the while loop. The while loops purpose is to keep the quiz program running as long as the user has not answered a quiz perfectly, and will re-run only if the user wants to take another. The way this was accomplished was by having a global counter variable. Every iteration it checks to see if you tried a quiz yet, and if you haven't it asks for user input and randomly assigns a quiz. After that It keeps the quiz running until you get a perfect score which is determined by whether the current score was perfect or not before continuing the loop. If it wasn't it immediately repeated the loop and if it was it returned the average score for the quiz by using another global variable for basically the total score across all attempts and dividing it by the total times attempted. Once the quiz attempts are over it asks the user if they want to try again using a simple if else and will either reset the per quiz counter and total and continue the loop or break the loop. The bonus points were gotten just by adding a second set of counter and overall score variables, and just never resetting them.

Testing

Largely the program ran as intended when first testing, however there were a couple areas that we ran into problems with that required debugging. One of the big ones was as simple as adding a space in " %c" in order to not scan white space, because me and my partner were very confused as to why sometimes the multiple choice quiz would skip questions and just say the answer was wrong. After we discovered that error though, the problem was solved. Another problem I ran into was that the assignment wasn't as random as I wanted it to be, but I solved that by putting the seed for the random function inside of the function that called the rand() since before that if you entered for example 4 every time, you would always get the same quiz. The last big problem that we ran into was that I didn't originally implement the reset for the current quiz times taken and total score which caused issues when I was trying to only keep track of ones quiz's score.

Comments

There are probably some issues in the testing phase that I'm not aware of, however that is largely because me and my partner worked collaboratively on some parts, however the quiz functions we did independently, I wrote one and my partner wrote the other. While I implemented the while loop.

Screen Shots

```
jadenb04@CO1318-15 /cygdrive/u/fall2021/se185
$ ./proj
Welcome! This program will allow you to take three different quizzes.
Please enter a number between 1 and 9: 4

You will take Quiz 3.
This is a fill in the blank quiz.

Here is the first question.
int num1 = 4
int num2 = 6
nun1 = num2
What kind of error is this called?: syntax
That is correct!

Question 2:
The first and most common header file in C programming is #include<    >?: stdio
.h
That is correct!

Question 3:
const NUMBER = 3;int i;
int array1 = {10, 15, 50};

for (i = 0, i <= NUMBER; ++i){
        if(array1[i] _?_ 20){
                array1[i] = array1[i] * 2;
        }
}
What goes in _?_ so that the number in array1 is less than 20?: >
That is the wrong answer.

You will take Quiz 3.
This is a fill in the blank quiz.

Here is the first question.
int num1 = 4
int num2 = 6
nun1 = num2
What kind of error is this called?: syntax
That is correct!

Question 2:
The first and most common header file in C programming is #include<    >?: stdio
.h
That is correct!

Question 3:
const NUMBER = 3;int i;
int array1 = {10, 15, 50};

for (i = 0, i <= NUMBER; ++i){
        if(array1[i] _?_ 20){
                array1[i] = array1[i] * 2;
        }
}
What goes in _?_ so that the number in array1 is less than 20?: <
That is correct!
Your quiz average was: 12.50
Would you like to take another quiz? Please Answer y or n
y
Please enter a number between 1 and 9: 4
```

```
You will take Quiz 2.
This is a multiple choice question, please only enter a, b, c or d.

Here is the first question:
What is the output of the function below?:
int x = 10;
int x += 10;
printf("x");
a = 20
b = x
c = 10
d = 99
b
That is correct!
How many times does the following for loop run: for(int i = 0; i < 7;i+
}
a: 7
b: 6
c: Infinitely many
d: 0
a
That is correct!
Why is the function in line 5 incorrect?
int 1x = 52;
a: There is nothing wrong
b: 52 is not an integer
c: integers can only contain one number
d: The variable cannot begin with a number
d
That is correct!
Your quiz average was: 15.00
```

```
This is Quiz 1
Please Answer Questions as True or False
What is the output?
int x = 0;
int y = 1;
if(!(x) && y){
        printf("True");
} else{
        printf("False");
}
Anwer: True
That is correct!
This is a valid variable declaration in C
int 12345;
Anwer: True
That's the wrong choice!
str1 = str2; will not successfully copy str2 to str1
Anwer: True
That is correct!
This is Quiz 1
Please Answer Questions as True or False
What is the output?
int x = 0;
int y = 1;
if(!(x) && y){
        printf("True");
} else{
        printf("False");
}
Anwer: True
That is correct!
This is a valid variable declaration in C
int 12345;
Anwer: False
That is correct!
str1 = str2; will not successfully copy str2 to str1
Anwer: True
That is correct!
```

```
Would you like to take another quiz? Please Answer y or n
n
That's too bad, your overall average was: 11.00
```