Atılım University

CMPE 225 Object Oriented Programming
Fall, 2019-2020
Homework 2
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Due Date: December 23rd, 2019, 23:59

Write a program that tests a primary school student's addition skills for integers and fractions. The program should include 3 classes:

- MathProblem abstract class including
  - isanswercorrect (bool) : stores true if answer is correct, false otherwise
  - setproblem(): dummy function
  - askuserforanswer(): dummy function
  - displayproblem(): dummy function
- IntegerProblem class used to generate problems to add two integers and is derived from MathProblem class
  - num1,num2 (int): operands of the addition
  - correctanswer (int): correct answer of the addition
  - useranswer (int): the user's answer to the addition
  - setproblem(): virtual member function which generates 2 random numbers (between 1-100), assigns them to num1 and num2, and also assigns to correctanswer, the sum of num1 and num2.
  - displayproblem(): virtual member function which asks the problem to the user.
  - askuserforanswer(): virtual member function which asks the user for the answer of the addition, checks whether the answer is correct, and gives an appropriate response.
- FractionProblem class used to generate problems to add two fractional number and is derived from MathProblem class
  - n1,d1 (int): numerator and denominator of the first operand of the addition
  - n2,d2 (int): numerator and denominator of the second operand of the addition
  - corrn,corrd (int): numerator and denominator of the correct answer
  - usern,userd (int): numerator and denominator of the user's answer
  - setproblem(): virtual member function which generates the numerators and denominators of the 2 operands randomly (between 1-10), and also assigns the sum of the operands to corrn and corrd (do not simplify the answer).
  - displayproblem(): virtual member function which asks the problem to the user.

- askuserforanswer(): virtual member function which asks the user for the answer(usern,userd) of the addition, checks whether the answer is correct, and gives an appropriate response.

- main function should ask the user what type of addition he/she wants to perform, set and display the problem generated, get user's answer, and give appropriate response until the user chooses to Quit.

The grading of the homework will be based on:

1. If you cheat, or high similarity percentage, you will get 0.
2. In addition, if your code does not compile, your final grade will be over 45% of your total grade.
3. **Late submissions will not be graded.**

Good luck

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SAMPLE RUN:

```
Please choose type of addition problem:
    1. Fraction
    2. Integer
    3. Quit
Choice: 2
Question is: 45 + 87 = ?
Enter answer:  132
          Good Job!

Please choose type of addition problem:
    1. Fraction
    2. Integer
    3. Quit
Choice: 2
Question is: 67 + 10 =?
Enter answer:  87
          Sorry! The correct answer is 77


Please choose type of addition problem:
    1. Fraction
    2. Integer
    3. Quit
Choice: 1
Question is: 1/2 + 3/4 = ?
Enter answer:  5/4
          Good Job!

Please choose type of addition problem:
```

```
    1. Fraction
    2. Integer
    3. Quit
Choice: 1
Question is: 3/5 + 2/3 = ?
Enter answer:  5/10
          Sorry! The correct answer is 19/15

Please choose type of addition problem:
    1. Fraction
    2. Integer
    3. Quit
Choice: 3
```