Project One：Math Problem Generator & Solver

Specification & Design & Results

2016052948 CST 黄稻浪

Specification

This project aims to help users to randomly generate math problems with a certain degree of difficulty. And orders the computer to quickly calculate the answers and correct them. In this project, we mainly have three tasks:

Task 1. A Math Problem Generator. It should generate primary school level Math problems according to the requirement specified in an input text file, and output the problems generated in a text file. The problems should cover + - * / operations in integers, fractions and fix-point numbers with given ranges.

Task 2. A Math Problem Solver. It read the problems generated by Task 1 and output a reference answer text file that contains problems & answers.

Task 3. A Math Answer Checker. It read an exam paper text file including problems with answers given by students, check all answers one by one, add a CORRECT or WRONG mark for every problem, and output a text file based on the input paper with checking marks.

Design

I use Python 3.6 to design this project. And use the module "random" to generate numbers randomly.

Question settings: Generate five random questions each time. The integer

range is from 1 to 100. About the fraction, the range of the numerator and

denominator is from 1-10, and in order to avoid the cases like 8/8, 4/2, 3/6, I

have set the numerator and denominator not divisible, if divisibility will continue

to randomly generate them. As for the decimal number, I only allow decimals

with an accuracy of 0.1.

As for the difficulty of the questions, I mixed the calculation of the integer,

fractions and decimals, and asked the tester's answer to retain two decimal

places. Although it may seem difficult, it is certainly not a problem for students

who can use a calculator. And in order to make the topic more diversified, I set

up one operation calculation and two operations calculations and make them

appear randomly.

Results

Test.txt (Store the question and allow user to put the answers into the file):

```
If the answer is infinite, your answer should retain two decimal places
Question 1 : 6.1 - 8.6 =
Question 2 : 6.0 * 70 =
Question 3 : (4/3) - 46 = -44.67
Question 4 : 98 * (7/4) + (3/2) =
Question 5 : 0.8 - (8/9) =
```

Answer.txt (Store questions and corresponding answers):

```
Here are the answers :
Question 1 : 6.1 - 8.6 = -2.5
Question 2 : 6.0 * 70 = 420.0
Question 3 : (4/3) - 46 = -44.67
Question 4 : 98 * (7/4) + (3/2) = 173.0
Question 5 : 0.8 - (8/9) = -0.09
```

Report.txt (Record your scores and the right or wrong remark of each question):

Here is my answer in the Test.txt:

If the answer is infinite, your answer should retain two decimal places
Question 1 : 6.1 - 8.6 = -2.5
Question 2 : 6.0 * 70 = 420.1
Question 3 : (4/3) - 46 = -44.67
Question 4 : 98 * (7/4) + (3/2) = 173.0
Question 5 : 0.8 - (8/9) =

Here is the Report.txt file:

Here is your score :
Problem 1: CORRECT
Problem 2: WRONG
Problem 3: CORRECT
Problem 4: CORRECT
Problem 5: Please enter your answer!
Your score is : 3