Assignment 1

Kwanghyun Park
Yonsei University

Outline

- Deadline
- No Plagiarism
- Leave Comments
- Scoring
- Problem 1
- Problem 2
- Submission
- Questions

Deadline

- Sunday, 8th October 23:59
- No late submissions at all
- It's the first assignment, so please take a time to learn about file i/o and tar zip/unzip.
  - it's described at the end of the slide (Appendix)
- The format of submission will be not be changed much, so taking time on the first assignment will ease your rest of the course

No Plagiarism

- No Mercy.

- The punishment will be made to both
  - the person who copied the code, and the person who shared the code.

Leave Comments

- Leave comments in your file for TAs to understand your code
- If no comments in the file, there may be a reduction of points

Scoring

- Problem1 (50)
- Problem2 (50)

- If your code outputs correctly for given example input#.txt file
  - 15 base score per problem
- There will be additional 20 test cases
  - (35 / 20) = 1.75 per each case

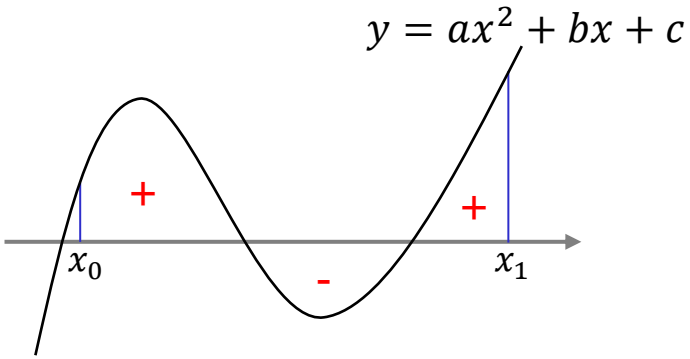
- Ex)
  Problem 1: All correct
  Problem 2: base score + 10 test case correct
  → 50 + (15 + 10*1.75) = 82.5

Problem 1

- Find the area between a graph and the x-axis
  - Use integral (적분)

- The inputs are a, b, c in the equation, and x0, x1 in the equation $y = ax^2 + bx + c$
- Use *double* datatype for decimal numbers

- Print numbers into precision of three



Problem 1

- Input will be given by *cin*

  Enter the number of interations for the loop: N

  Enter the coefficients of the equation [$y = ax^2 + bx + c$]

  a, b, c, x_0, x_1

  x N times

- Each a, b, c is an integer and can be positive, negative, or zero.
- x_0, x_1 can be any real number, including decimal numbers.
- print the area between a graph and the x-asis.
  - Single line spacing between the numbers

    Ex) 5.000

    1.000

    -3.500

Problem 1

Input

```
PS C:\Users\parktaehyeong\Documents\OOP> .\problem1
Enter the number of interations for the loop: 2
Enter the coefficients of the equation [y = ax^2 + bx + c]
a: 6
b: -4
c: 3
Enter the value of x0 and x1
x0: 0
x1: 3
Enter the coefficients of the equation [y = ax^2 + bx + c]
a: 5
b: 4
c: 3
Enter the value of x0 and x1
x0: -2
x1: 2
```

Compilation Code

```
g++ -o problem1 .\problem1.cpp
```

Output

Input for problem1 will not be read by file i/o.

input1.txt is given to show how the values will be given by *cin*.

output1.txt is created if ran the code

We will compare your output and the answer by diff command

It's good if you have nothing shown if typed the command

https://www.geeksforgeeks.org/diff-command-linux-examples/

```
$ diff answer.txt output1.txt
```

Problem 2

- Print the position of three objects after movements
- Input : *input2.txt*
- Order of inputs
  - Number of iterations
    - Position (x, y) of A, B, and C
    - Number of movements
      - Target
      - Direction
- Target: (target == ‘a’) means to move object A
- Direction: (dir == ‘h’) means to move left
  - h: left
  - l: right
  - j: down
  - k: up
- If target or direction is not correct, print error message and does not move

Problem 2

- The input format is as below

  N

  A_x A_y

  B_x B_y

  C_x C_y

  M

  t_0 d_0

  t_1 d_1

  ...

N : number of loops

M: number of movements

t: target

d: direction

Problem 2

Input

input2.txt

파일 편집 보기

```
3
0 0
0 0
0 0
4
a h
b k
c l
c j
0 3
4 2
-1 4
5
b k
c l
a h
a k
b l
1 2
3 4
5 6
4
a j
d k
c y
c l
```

Output

```
Position of A: (-1, 0)
Position of B: (0, 1)
Position of C: (1, -1)
Position of A: (-1, 4)
Position of B: (5, 3)
Position of C: (0, 4)
Wrong movement in iteration 2, movement 1
Wrong movement in iteration 2, movement 2
Position of A: (1, 1)
Position of B: (3, 4)
Position of C: (6, 6)
```

```
g++ -o .\problem2 .\problem2.cpp
```

```
.\problem2 > output2.txt
```

```
diff answer.txt output2.txt
```

- When ran the code, the printed text *(by cout)* in the terminal can be recorded in a file by '>>' command
- We will score the results by saving your programs printed texts by '>>', and compare by 'diff' command

Submission

- Zip the folder by following steps correctly

```
jiet@user-R2312WFTZSR:~/2023313148_hw1$ ls
problem1.cpp  problem2.cpp
jiet@user-R2312WFTZSR:~/2023313148_hw1$ cd ..
jiet@user-R2312WFTZSR:~$ tar -zcvf 2023313148_hw1.tar.gz 2023313148_hw1/
2023313148_hw1/
2023313148_hw1/problem2.cpp
2023313148_hw1/problem1.cpp
jiet@user-R2312WFTZSR:~$
```

- studentId_hw1.tar.gz
  - Ex) 2023313148_hw1.tar.gz

- There is going to be reduction of points if not following the folder hierarchy as well
- If unzipped your submission .tar.gz file should follow the folder hierarchy below

Current directory

- studentId_hw1.tar.gz
- studentId_hw1
  - problem1.cpp
  - problem2.cpp

Questions

- Recommendation: Classum in LearnUs
- You can also ask to TA: taehyeongpark@yonsei.ac.kr

- We are not going to answer
  - Questions not making sense
  - Questions related to the algorithm for solving the question
  - Questions you can infer the answer if read this file thoroughly
  - Questions you can simply solve by googling
    - Ex) how do I make a folder on ubuntu?

Appendix

- File I/O

```
#include <fstream>
ofstream outfile;
outfile << "Hello, World!\n"; // writing Hello,World! into the file

outfile.close(); // should close the file before terminating the process

ifstream infile("input.txt");
infile >> number; // reading the first digit written in input.txt

infile.close(); // should close the file before terminating the process
```

https://stackoverflow.com/questions/7868936/read-file-line-by-line-using-ifstream-in-c

Appendix

- Zipping and unzipping the folder by tar command
  - https://linuxize.com/post/how-to-extract-unzip-tar-gz-file/
  - https://www.cyberciti.biz/faq/how-do-i-compress-a-whole-linux-or-unix-directory/