Week 2: Exercises

Problem 1.

Redo Problem 1 in Week 1's Exercise using both the two methods for computing the polynomial and the posynomial functions mentioned in our class (see Lecture2016-02-JiushaoQin.ppt): (1) Direct computation of the functions without considering efficiency, and (2) Using Jiushao QIN's algorithm (秦九邵算法). Measure the runtime (运行时间) of the two methods and report the runtime improvement as:

imp = (oldRuntime-newRuntime)/oldRuntime

Requirement:

(1) Record the runtime of the polynomial function and the posynomial function, separately.
(2) To make the runtime value large enough, you may compute the same polynomial/posynomial function 10000x10000 times in two nested (嵌套的) for-loops (for 循环) to measure the total runtime.
(3) You may use the attached source code to measure the runtime or use your own timer if you know how to implement (实现) one.

Problem 2: I choose not to choose

Please help our TA to make the choice randomly.

1. Reviewer Assignment

(1) Write a class named "ReviewerAssigner";
(2) Write a public member function named "load" to load in "ContactEmail.txt";
(3) Write a public member function named "choose" for the following task: for each student No. in the given list of students, randomly choose 3 reviewers from the given list (note that a student cannot review the homework of himself/herself);
(4) Write a public member function named "output" to output the review selection results into a text file named "reviewer.txt". Please define the output format by yourself;
(5) In the main() entrance function, use your designed class ReviewerAssigner to find the reviewers for the homework review.

2. Team Assignment

(1) Write a class named "TeamAssigner";
(2) Write a public member function named "load" to load in "ContactEmail.txt";
(3) Write a public member function named "assign" to randomly assign all the students to 3-student teams. If the total number of students is not divisible by 3, we prefer to have 2-student and 4-student teams. No 1-student team is allowed;
(4) Write a public member function named "output" to output the students'

team information into a text file named “team.txt”;

(5) In the main() entrance function, use your designed class TeamAssigner to assign the teams for our final project.

Requirement and tips:

(1) Learn to use C++ fstream to load and write files.

(2) Learn to use C++ function rand(). For each run of your program, learn to use the function srand() to obtain different random numbers.

(3) Besides the required public member functions, you may add other member functions and member variables as you want.

Problem 3.

Finish Exercise No. 13, in TIC++, p. 255 (Chapter 4).

Requirement:

(1) Use multiple-file project: you need to create at least three files, i.e., videotape.h, videotape.cpp, and main.cpp.

Problem 4.

Finish Exercise No. 6, in TIC++, p. 281. (Chapter 5)

Requirement:

(1) Use multiple-file project (see the requirement for Problem 2).

Problem 5.

Finish Exercise No. 8, in TIC++, p. 281. (Chapter 5)

Requirement:

(1) Use multiple-file project (see the requirement for Problem 2).

(2) You don’t need to compile and run the program using different compilers.

Rules for Submission: Follow the rules in Week 1’s Exercises for submitting your homework.