Algorithm Analysis Homework 3

Due by 4/22(Fri.)

You are to write a program to solve activity selection problem with following approach.

a. Greedy approach
b. Dynamic Programming

First, generate <start time, finish time> pair using random number generator function (seed=408). Use first number as start time of job 1. Then, enerate second number and if it is larger than start time of job1, use it as finish time of job1. Otherwise discard it and generate next number and compare it with start time of job1. And continue to generate next pair of <start time, finish time>. Start time and finish time is ranged from 1 to (number of jobs X 10). For example, if number of jobs are 10, then start/finish time is from 1 and 100.

You are going to run your program for various input size as follows.

number of jobs
10
100
1,000
10.000
100,000

For an output, build a table as follows.

Number of jobs	Execution time in microseconds	
	Greedy	Dynamic Programming
10		
100		
1000		
10000		
100000		

Note

1) Write program in C++. You may use STL algorithm, but are not allowed to use STL container.
2) If the program does not compile, you will get no point. Make sure that your program runs in g++.
3) Submit one program source file only, not multiple files. . (i.e. main function calls two function – greedy(?) and dp(?). Name your file as 'hw3_studentid_name.cpp'. Do not submit output file.
4) Follow the output format suggested above.
5) Note that time unit is micro-seconds, not seconds.
6) At header part of comment, list all the references you used when you do this homework.

   For ex)

   (1) 강의 slide chapter 16.

   (2) Blog: ** URL here **

   (3) book: "Algorithm analysis in C++" by Someone
7) After that, include comment about which algorithms were implemented. For ex) if your program provide solution only for greedy, include comment such as "my program works for greedy only."