

## **CS 403 Algorithm Design & Analysis**

### **Lab Assignment 3**

- Submit a report (with full explanation of your algorithm's running time and complexity) along with the codes and readme file in a zipped folder. The report should be in PDF format as a single document. If you want to assume something during coding, then mention in your report.
- The last date of submission is 1st April, 2017. You are advised to understand and read assignment questions and if you have any query then post it on moodle forum so that we all can have a good discussion.
- Late submissions will have penalty of 15% per day (that is 15% per day will be reduced on the score you achieve as the late submission penalty).
- You have to do code for all questions and give a good explanation in your report. Your reports would be evaluated thoroughly. Please provide pseudo-codes in report.
- We will provide test datasets at the time of evaluation. In that case, your code should be well generalized. Analyze your codes with different test sets during implementations of algorithms.
- Submit your assignment to:  
`jyoti_nigam@students.iitmandi.ac.in / krati_gupta@students.iitmandi.ac.in`

Q-1 : Implement a recursive algorithm for weighted interval scheduling using

A. Compute-Opt(j)

B. M-Compute-Opt(j) (Refer section 6.1 from book)

C. Find-Solution (Refer page 258)

Compute the running time and draw recursion tree.

Tasks	Start time (Sec)	End time (Sec)	Weights
Task 1	3	7	3
Task 2	5	8	2
Task 3	8	15	4
Task 4	9	17	1

Q-2 : Implement merge-and-count and sort-and-count for some input dataset. Fix your input data size and use any random number generator. Also find running time (Refer section 5.3).

Q-3 : Implement closest-pair and find running time for your input dataset (refer section 5.4).

Q-4 : Write pseudo code for an algorithm to compute all least squared errors in  $O(n^2)$ . Implement the algorithm (Refer section 5.4).