Department of MACS, NITK Surathkal
MCA801 Computer Algorithms
Programming Assignment-Demonstration schedule

Note:

1. The report should be submitted on or before 09-NOV-2018 by 4:00 PM.
2. Report must include (i)Algorithm and its analysis (ii) Snapshot of output
3. Demonstration schedule will will be as per the following table
4. Programs will be tested for large inputs; input data from file;
5. Use adj list representation for problems on graphs

Marks Distribution	
Mid Sem	25%
Programming Assignment	20%
Quiz	10%
End Sem	45%

Venue: MACS meeting room

1.

Sl.no	**Problem**	**Roll nos**		**Schedule of Demo**
1	Randomized Selection problem	For all		
2	Selection in worst case linear time(by groups of 5)	For all		
3	Fully parenthesize a given chain of Matrices	174CA001	174CA043	10 Nov. 2018, 9:30
4	Longest Common Subsequence problem	174CA004	174CA044	
5	Consider 2 sorted arrays X and Y of size n1 and n2 respectively. Find the median of combined array in O(log n) time.	174CA005	174CA045	
6	Find the i^{th} smallest of combined arrays X and Y of Qn.5 in O(*log* n) time.	174CA007	174CA049	
7	Rod Cutting Problem (DP)(top down and bottom up)	174CA009	174CA050	10 Nov. 2018, 10:00
8	Obtain an optimal BST for a given keys and corresponding probabilities	174CA010	174CA051	
9	Dynamic programming for integer knapsack problem	174CA011	174CA055	
10	Obtain DFS traversal for a directed graph and list back egdes, cross edges and tree edges	174CA012	174CA057	

11	Find Strongly Connected Component of a given graph using DFS.	174CA013	174CA060	10 Nov. 2018, 10:30
12	Obtain topological sort of a Directed acyclic graph	174CA014	174CA063	
13	Implement binary heap with all operations	174CA016	174CA065	
14	Find Shortest path using Dijkstra algorithm	174CA017	174CA066	
15	Find shortest path considering negative cost cycles	174CA023	174CA067	10 Nov. 2018, 11:00
16	Implement the all pair shortest path algorithm Floyd-warshal algorithm	174CA024	174CA069	
17	Implement KMP algorithm for string matching	174CA028	174CA070	
18	Generate a graph and compute MST using Prims algorithm	174CA029	174CA072	
19	Generate a graph and compute MST using Kruskal's algorithm	174CA031	174CA073	10 Nov. 2018, 11:30
20	Obtain maximum flow from source to sink for a given network using Ford-fulkerson Algorithm	174CA034	174CA078	
21	Encode a given text file using Hoffman coding and decode the same	174CA035	174CA080	
22	Implement insertion sort and merge sort. Compare their running times for large n. Hence find the smallest value of n for which merge sort performs better than insertion sort. Plot the graph of input size n vs. running time	174CA037	174CA081	
23	Implement quick sort and merge sort algorithms. Compare their running time and plot the graph of input size n vs. running time.	174CA038	174CA082	10 Nov. 2018, 12:00
24	Implement Radix sort algorithm	174CA040	174CA084	
25	Solve (i) 0-1 Knap sack problem using Dynamic programming. (ii) Fractional Knap sack problem	174CA042	174CA085	

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(Course Instructor)