BLG 336E ANALYSIS OF ALGORITHMS II

Sample Questions

Q1)[20pts] Consider the following job-shop scheduling problem. Each job is represented by its start time (s) and its finish time (f).

job	s	f
a	5	20
b	0	15
c	5	10
d	15	20
e	10	30

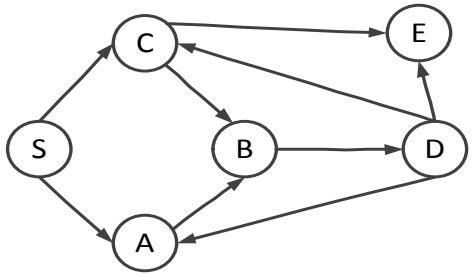
Q1a)[8pts] Give the pseudo code of a greedy scheduling algorithm that maximizes the total number of jobs processed when each job is processed by the same resource once at a time. Apply this algorithm and present the result.

Q1b)[4pts] What is the complexity of your algorithm? Why?

Q1c)[8pts] Give the pseudo code of a greedy scheduling algorithm that processes **all the jobs** with the minimum number of resources. Apply this algorithm and present the result indicating the corresponding resources of each job.

Q2) [25 pts]

Q2a) [16 pts] Show the constructions of **BFS** (Breadth First Search) and **DFS** (Depth First Search) trees for the **directed graph** given below. Start from node S (root). Explain the exploration of each node step-by-step. Assign node generation number incrementally for each newly explored node, e.g., assign 0 to node S, 1 to the next one.



Q2b) [4 pts] Is the given graph connected? Why or why not? Explain in detail.

Q2c) [5 pts] Is the given graph strongly connected? Why or why not? Explain in detail.