ECSE210L: Design and Analysis of Algorithms

Lab 5 (Week 6: Feb, 10 - 14, 2020)

Instructors: ***Shakti Sharma and Raghunath Reddy M***

1. Job scheduling : There is a student 'X'. He is organizing a grand Üphoria". Each activity require some resources (such as: dance and play require costumes, some event require special kind of lights, speakers, auditorium etc.). Based on the requirement there are deadline set to different events. for example there can't be a loud event (which require speaker) after 10 PM. similarly based on the constraints events have a deadline and there will be penalties if event crosses the deadlines. Each event consume 1 Hour time. 'Uphoria' is planned from 12PM to 12AM (12 hours). Help 'x' by scheduling events to get minimum penalty.

   Note: consider each activity A_i has a penalty P_i and deadline D_i. Solve for general case and then update your array with the given data. Publish the final schedule and total cost.

   Activities, and their associated penalties and deadlines are as follows.

Activity	Deadline	Penalty
Silent disco	12AM	1,00,000
Bonfire	12AM	5,00,000
Street Play	2PM	60,000
Dancing competition	8PM	75000
Short film screening	10PM	45,000
Rangoli	4PM	50,000
scavenger hunt	5PM	2,00,000
face art	4PM	40,000
solo music	7PM	95,000
group music	7PM	1,50,000
Mime	11PM	1,20,000
poetry recitation	11PM	3,00,000

2. In the above example, consider that duration of event has been updated. also, consider that now penalty is directly proportional to delay. Every half an hour delay in an activity cost the institute Rs. 50,000. Write a program to find the schedule of activities, which fetch minimum maximum penalty in schedule.

Activity	Deadline	Duration of event
Silent disco	12AM	2 Hr
Bonfire	12AM	2 Hr
Street Play	2PM	1 Min
Dancing competition	8PM	1 Hr
Short film screening	10PM	30 Min
Rangoli	4PM	30 Min
scavenger hunt	5PM	1.5 Hour
face art	4PM	30 Min
solo music	7PM	30 Min
group music	7PM	1 Hr
Mime	11PM	1 Hr
poetry recitation	11PM	1Hr

3. There are several clouds in the space. Assuming all rainy clouds are on the same 2-D plane, cloud those are closest to each other can be the reason to start the rain. Find the location of clouds those are closest to each other. [Use the code given in file, çloud-data"(on LMS) to generate test cases.]