

Question 3:

Given: the schedule list of time that the trains departure and arrive

Aim: Only use minimum amount of platform.

Solution:

Step 1:

Find out all the trains that arrive before midnight and departure after current day then take them off from the schedule and arrange these train and check all the platform schedule, if we can arrange it in then insert it, if no, arrange it to another new platform. At the end count them.

Step 2:

Chose from schedule list of set which consist of arriving time and departure time, each time we select the Aim-Train with earliest departure time and put it onto the platform schedule, if the time section of Aim-Train is conflicted with the train that already on the current platform, then we go to the next platform to check if there is a place that could allow Aim-Train stay if no then keep checking next platform until we find a platform that allow the train stay. If we have checked all the platform that there are no available room for the Aim-Train then we create another platform and let the train stay at there.

Step 3:

Repeat step 2 until we fill up one platform, and then repeat step 2 for next platforms. When we selected to the end of schedule list count all the platform.

To prove optimal:

In the optimal solution, each platform schedule list either does not contain any of the jobs from the schedule list or contains just one of them. If it does not contain any of the train from schedule list, then it would have been insert into platform when the problem was solved for all trains excluding schedule list, by the same argument as was given for the Activity Selection problem; if it does contain a certain train from schedule list, then it would have been insert into platform during the round when we started with certain train.