CSE 321 Homework 5

PART 1

process function takes a list for input.List contains jobs with time and weight. They should be ordered minimize the weighted sum of the completion times.

So first important thing is ordering jobs according to their weights because if biggest weighted job is at the end of the scheduling, it must have biggest time and result will be big.Consequently jobs are ordered descending order with their weights.Then with a loop weighted sum is calculated according to given rules.

n is number of Jobs

Loops for descending ordering → O(n^2)

Loop for sum → O(n)

Time complexity is O(n^2) + O(n) = O(n^2)

PART 2

A.Show that the following algorithm does not correctly solve this problem by giving an instance which it does not return the correct answer.

for i= 1 to n

if Ni < Si then

Output “NY in Month i”

else

Output “SF in Month i” end

	Mont1	Mont2	Mont3	Mont4
NY	10	8	10	8
SF	8	10	8	10

n = 4 and M= 10 ;

Solution according to algorithm is : SF + NF + SF + NF + 3*M = 8+8+8+8+ 3*10 =62

Right solution is : SF + SF + SF+ SF = 8 + 10 + 8 + 10 = 36

Given algorithm does not correctly solve this problem because it ignores the moving cost M.

B. OptimalPlan function takes 3 input that list of Ny and Sf cities operating costs and M for moving cost.

In the function there is loop for calculating cost of two cities.Important point is adding minimum plan

in every iteration to the total cost. For example ; If Sf city's cost is smaller than Ny , moving cost is

added to Sf's cost plan.Return value is the minimum value of PlanN or PlanS

Loop runs n times.n is size of the lists also it is number of monts on the given plans.

Time complexity is --→ O(n)