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Assignment No 03

Title : Greedy Search Problem

Code :

# Greedy algorithm - selection sort

n = int(input("Enter number of array elements - "))

l = []

for i in range(n):

l.append(int(input("Enter element - ")))

print("List before sorting - ")

print(l)

print()

for j in range(n):

min\_index = j

for k in range(j+1,n):

if l[k]<l[min\_index] :

min\_index = k

l[j], l[min\_index] = l[min\_index], l[j]

print("After iteration "+ str(j+1) + " list - ")

print(l)

# Job Scheduling Problem

n = int(input("Enter number of jobs - "))

Jobs = []

Solution = []

Deadlines = []

Profits = []

totalProfit = 0

for i in range(0,n):

print("JOB "+str(i+1))

Jobs.append("J"+str(i+1))

Deadlines.append(int(input("Enter deadline - ")))

Profits.append(int(input("Enter profit - ")))

# sort profits in descending order

for j in range(0,n):

for k in range(j+1, n):

if Profits[k]>Profits[j] :

# swap values

Profits[k], Profits[j] = Profits[j], Profits[k]

# swap other lists too to maintain original relation between indices

Jobs[k], Jobs[j] = Jobs[j], Jobs[k]

Deadlines[k], Deadlines[j] = Deadlines[j], Deadlines[k]

# traverse through deadline

status = [False]\*n # to check if slot is free or not

for i in range(0,n):

deadline = Deadlines[i]

if status[deadline] is False: # free slot

status[deadline] = True

Solution.append(Jobs[i])

totalProfit+=Profits[i]

print("Sequence of jobs - ")

print(Solution)

print("Total profit - " + str(totalProfit))

Output :

C:\Users\Lenovo\AppData\Local\Programs\Python\Python39\python.exe D:/Aditya/PICT/TE/LP2/assign3/assign3.py

# Selection sort

Enter number of array elements - 7

Enter element - 22

Enter element - 12

Enter element - 9

Enter element - 36

Enter element - 11

Enter element - 28

Enter element - 15

List before sorting -

[22, 12, 9, 36, 11, 28, 15]

After iteration 1 list -

[9, 12, 22, 36, 11, 28, 15]

After iteration 2 list -

[9, 11, 22, 36, 12, 28, 15]

After iteration 3 list -

[9, 11, 12, 36, 22, 28, 15]

After iteration 4 list -

[9, 11, 12, 15, 22, 28, 36]

After iteration 5 list -

[9, 11, 12, 15, 22, 28, 36]

After iteration 6 list -

[9, 11, 12, 15, 22, 28, 36]

After iteration 7 list -

[9, 11, 12, 15, 22, 28, 36]

# Job Scheduling Problem

Enter number of jobs - 4

JOB 1

Enter deadline - 2

Enter profit - 100

JOB 2

Enter deadline - 1

Enter profit - 10

JOB 3

Enter deadline - 2

Enter profit - 15

JOB 4

Enter deadline - 1

Enter profit - 27

Sequence of jobs -

['J1', 'J4']

Total profit - 127

Process finished with exit code 0

Implementation Screenshots :

