Central university of Haryana

Department of computer science & engineering under SOET

ADA lab

(BT CS 505A)

Lab-4.

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Problem statement:
implementKnapsack Problem with output as maximum profit

code:

ada ▾ python_lab / knapsack.py

 pavan-kumar-202102 fractionalknapsack

1 contributor

35 lines (26 sloc) | 870 Bytes

```python
# Fractional Knapsack Problem

def max_profit(capacity,weights,profits,objects):
    p_to_w = []
    for i in range(len(profits)):
        p_to_w.append(profits[i]/weights[i])

    items = []

    for i in range(len(profits)):
        items.append([weights[i],profits[i],p_to_w[i],objects[i]])

    items = sorted(items,key=lambda x:x[2],reverse = True)

    cur_capacity = 0
    profit = 0

    for item in items:
        if cur_capacity+item[0] < capacity:
            cur_capacity+= item[0]
            profit += item[1]
        else:
            r = capacity - cur_capacity
            cur_capacity += r
            profit += ((r/item[0])*item[1])
            break
    return profit



weights = [40,10,20,24]
profits = [280,100,120,120]
objects = [1,2,3,4]
capacity = 60
print("Max profit", max_profit(capacity,weights,profits,objects))
```

Output:

```
   e589e4b..cbb0f9b  ada -> ada
PS E:\sem 5\lab program> python .\knapsack.py
Max profit 440.0
PS E:\sem 5\lab program>
```

Github link:

https://github.com/pavan-kumar-202102/python_lab/blob/ada/knapsack.py