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Sub: Algorithm Analysis and Design

- A thief is robbing a store and can carry a maximal weight of W into his knapsack. There are n items available in the store and weight of i^{th} item is wi and its profit is pi. What items should the thief take?
- In this context, the items should be selected in such a way that the thief will carry those items for which he will gain maximum profit. Hence, the objective of the thief is to maximize the profit.
- Implement Program for fractional knapsack using Greedy design technique.
  Note: First solve the example:
  W=60

Item	A	B	C	D
Profit	280	100	120	120
Weigh t	40	10	20	24

CODE:

```
W=int(input('Enter the weight of knapsac: '))
profits=[int(i) for i in input('Enter the profit of different items: ').split(' ')]
weights=[int(i) for i in input('Enter the weights of different items: ').split(' ')]

ratio=[]
for i in range(len(weights)):
    ratio.append(profits[i]/weights[i])

knapsac=[]
for j in range(len(ratio)):
    ind=ratio.index(max(ratio))
    if (W-weights[ind])>=0:
        W=W-weights[ind]
```

```
            knapsac.append(profits[ind])
            ratio[ind]=0
        else:
            if W>=0:
                frac=W/weights[ind]
                W=W-(weights[ind]*frac)
                value=frac*profits[ind]
                knapsac.append(value)
                ratio[ind]=0

    if 0 in knapsac:
        knapsac.remove(0)

    print('\nHence choosen profits are: ', *knapsac)
    print('\nTherefore total profit is: ', sum(knapsac))
```

OUTPUT: