PYTHON PROGRAM

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1  #Program to implement 0/1 Knapsack
2  # 0-1 knapsack problem
3  def knapSack(W, wt, val, n):
4      K = [[0 for x in range(W + 1)] for x in range(n + 1)]
5
6      for i in range(n + 1):
7          for w in range(W + 1):
8              if i == 0 or w == 0:
9                  K[i][w] = 0
10             elif wt[i - 1] <= w:
11                 K[i][w] = max(val[i - 1] + K[i - 1][w - wt[i - 1]], K[i - 1][w])
12             else:
13                 K[i][w] = K[i - 1][w]
14     return K[n][W]
15 def print_array(a):
16     for i in a:
17         print("%2d" % (i), end="  ")
18     print("\n")
19 import random
20 n = 10
21 wt = [0] * (n)
22 val = [0] * (n)
23 W = 30
24 for i in range(n):
25     wt[i] = random.randint(3, 10)
26     val[i] = random.randint(12, 40)
27 print("Profits :", end=" ")
28 print_array(val)
29 print("Weights :", end=" ")
30 print_array(wt)
31 print("Capacity is :", W)
32 print("\nMaximum Profit is :", knapSack(W, wt, val, n))
33
```