

Our Solution(s)

Run Code

Your Solutions

Run Code

Solution 1

```
1 # Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 # O(nc) time | O(nc) space
4 def knapsackProblem(items, capacity):
5     knapsackValues = [[0 for x in range(0, capacity + 1)] for y in range(0, len(items) + 1)]
6     for i in range(1, len(items) + 1):
7         currentWeight = items[i - 1][1]
8         currentValue = items[i - 1][0]
9         for c in range(0, capacity + 1):
10             if currentWeight > c:
11                 knapsackValues[i][c] = knapsackValues[i - 1][c]
12             else:
13                 knapsackValues[i][c] = max(
14                     knapsackValues[i - 1][c], knapsackValues[i - 1][c - currentWeight] + currentValue
15                 )
16     return [knapsackValues[-1][-1], getKnapsackItems(knapsackValues, knapsackValues[-1][-1], items)]
17
18
19 def getKnapsackItems(knapsackValues, items):
20     sequence = []
21     i = len(knapsackValues) - 1
22     c = len(knapsackValues[0]) - 1
23     while i > 0:
24         if knapsackValues[i][c] == knapsackValues[i - 1][c]:
25             i -= 1
26         else:
27             sequence.append(i - 1)
28             c -= items[i - 1][1]
29             i -= 1
30     if c == 0:
31         break
32     return list(reversed(sequence))
33
```

Solution 1

Solution 2

Solution 3

```
1 def knapsackProblem(items, capacity):
2     # Write your code here.
3     # return [
4         # 10, // total value
5         # [1, 2], // item indices
6     # ]
7     pass
8
```

Our Tests

Custom Output

Submit Code

```
1 items = [
2     [10, 2],
3     [40, 4],
4     [30, 5],
5     [50, 6]
6 ]
7 capacity = 10
8 knapsackProblem(items, capacity)
9 [10, [1, 2]]
```

```
1 items = [
2     [60, 2],
3     [100, 4],
4     [120, 6],
5     [140, 8]
6 ]
7 capacity = 8
8 knapsackProblem(items, capacity)
9 [140, [3, 4]]
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```
1  #!/usr/bin/env python3
2
3  # Import the random module
4  import random
5
6  # Create a list of numbers
7  numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
8
9  # Shuffle the list
10 random.shuffle(numbers)
11
12 # Print the shuffled list
13 print(numbers)
14
15 # Create a list of names
16 names = ["Alice", "Bob", "Charlie", "David", "Eve", "Frank", "Grace", "Heidi", "Ivy", "Jack"]
17
18 # Shuffle the list
19 random.shuffle(names)
20
21 # Print the shuffled list
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112 print(names)
```

Run or submit code when you're ready.