

#Write a program to solve a 0-1 Knapsack problem using dynamic programming or branch and bound strategy

code

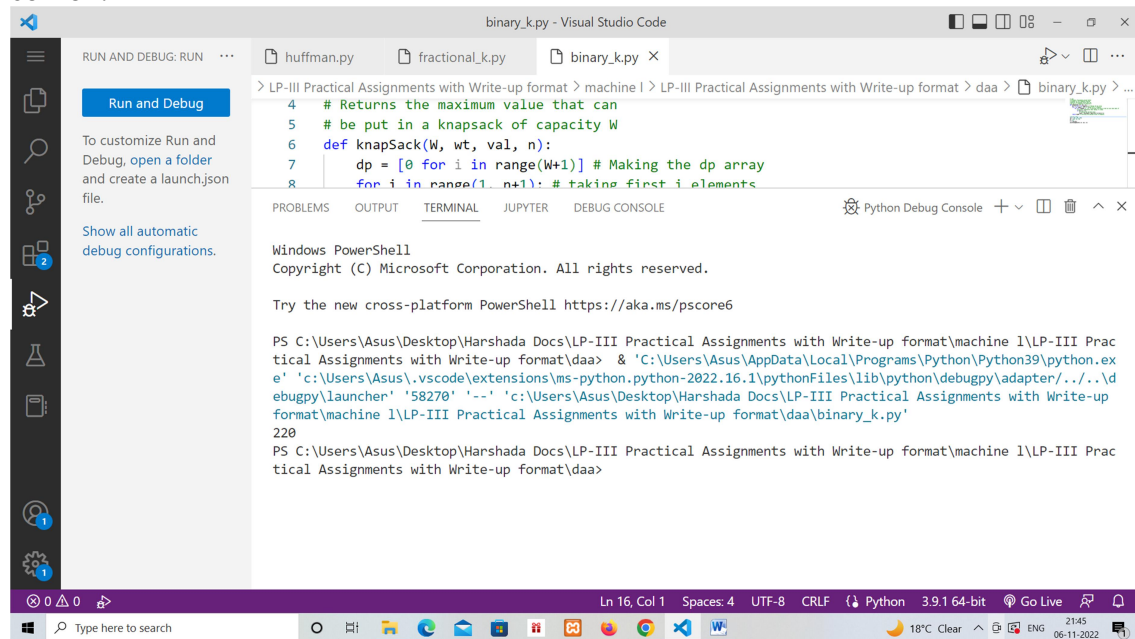
```
def knapSack(W, wt, val, n):  
    dp = [0 for i in range(W+1)] # Making the dp array  
    for i in range(1, n+1): # taking first i elements  
        for w in range(W, 0, -1): # starting from back,so that we also have  
data of
```

```
        # previous computation when taking i-1 items  
        if wt[i-1] <= w:  
            # finding the maximum value  
            dp[w] = max(dp[w], dp[w-wt[i-1]]+val[i-1])  
    return dp[W] # returning the maximum value of knapsack
```

Driver code

```
val = [60, 100, 120]  
wt = [10, 20, 30]  
W = 50  
n = len(val)  
print(knapSack(W, wt, val, n))
```

OUTPUT:



```
binary_k.py - Visual Studio Code  
huffman.py fractional_k.py binary_k.py  
LP-III Practical Assignments with Write-up format > machine I > LP-III Practical Assignments with Write-up format > daa > binary_k.py > ...  
4 # Returns the maximum value that can  
5 # be put in a knapsack of capacity W  
6 def knapSack(W, wt, val, n):  
7     dp = [0 for i in range(W+1)] # Making the dp array  
8     for i in range(1, n+1): # taking first i elements  
        for w in range(W, 0, -1): # starting from back,so that we also have data of  
            # previous computation when taking i-1 items  
            if wt[i-1] <= w:  
                # finding the maximum value  
                dp[w] = max(dp[w], dp[w-wt[i-1]]+val[i-1])  
    return dp[W] # returning the maximum value of knapsack  
  
# Driver code  
val = [60, 100, 120]  
wt = [10, 20, 30]  
W = 50  
n = len(val)  
print(knapSack(W, wt, val, n))  
  
PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE Python Debug Console  
Windows PowerShell  
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Try the new cross-platform PowerShell https://aka.ms/pscore6  
  
PS C:\Users\Asus\Desktop\Harshada Docs\LP-III Practical Assignments with Write-up format\machine 1\LP-III Practical Assignments with Write-up format\daa> & 'C:\Users\Asus\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Asus\.vscode\extensions\ms-python.python-2022.16.1\pythonFiles\lib\python\debugpy\adapter\..\..\debugpy\launcher' '58270' '--' 'c:\Users\Asus\Desktop\Harshada Docs\LP-III Practical Assignments with Write-up format\machine 1\LP-III Practical Assignments with Write-up format\daa\binary_k.py'  
220  
PS C:\Users\Asus\Desktop\Harshada Docs\LP-III Practical Assignments with Write-up format\machine 1\LP-III Practical Assignments with Write-up format\daa>
```