**Assignment 4**

def knapsack\_01(weights, values, capacity):

n = len(weights)

dp = [[0] \* (capacity + 1) for \_ in range(n + 1)]

for i in range(1, n + 1):

for w in range(capacity + 1):

if weights[i - 1] <= w:

dp[i][w] = max(dp[i - 1][w], dp[i - 1][w - weights[i - 1]] + values[i - 1])

else:

dp[i][w] = dp[i - 1][w]

return dp[n][capacity]

def main():

n = int(input("Enter the number of items: "))

weights = list(map(int, input("Enter the weights of items: ").split()))

values = list(map(int, input("Enter the values of items: ").split()))

capacity = int(input("Enter the knapsack capacity: "))

max\_value = knapsack\_01(weights, values, capacity)

print("Maximum value that can be obtained:", max\_value)

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Output:**

Enter the number of items: 5

Enter the weights of items: 3 4 5 6 7

Enter the values of items: 7 4 8 12 20

Enter the knapsack capacity: 8

Maximum value that can be obtained: 20