# Lab Task#7 Fractional Knapsack Assignment

1. Given **n** ( the total number of items) and **M** (the size of the knapsack) . And then followed by **n** lines there will be descriptions (name, price in BDT, weights in kg ) of all the items.
2. Use the idea of Fractional knapsack and print the names of the items are taken in the knapsack and with which fraction (**0 ≤ d ≤ 1)** are they taken.
    a. Where the value of d will be **0** when the item is not taken
    b. And the value will be **1** when the whole item is taken
    c. And the value will be (**0 < d < 1)** when the item is taken at some other amount rather than the total amount of the item.
    d. Notice the input/output for better understanding.
        i. For Input#1
            1. Number items are 3
            2. The total size of the knapsack is 50
        ii. For Output#1
            1. Things can be taken in the knapsack with total price of **240.00.**
            2. The rest of the lines describes the **names** of which **items** are taken and by which **fraction** they are taken.
3. Implementation should be done in either C or C++ or Python or Java.
    a. Explain your code in words if possible.
    b. Also, if I ask you about your code, you better be able to answer. So please, understand the code before submitting it.
4. **Assignment File Name**: AlgoLabAssign7_GreedyFractionalKnapSack_**191**-115-**ZZZ**
    a. Replace **zzz** with your roll.
5. If You find any problem in the question, let me know. I will correct it.

| ***Input #1*** | ***Output#1*** |
|---|---|
| **3 50**<br>rice 120 30<br>pulse 60 10<br>sugar 100 20 | Total price achieved: **240.000**<br>List of selected items<br>**pulse** taken with a fraction of **1**<br>**sugar** taken with a fraction of **1**<br>**rice** taken with a fraction of **0.666667** |
| ***Input #2*** | ***Output#2*** |
| **6 15** | Total price achieved: **114.000** |

| | |
|---|---|
| rice 40 5<br>pulse 10 4<br>sugar 24 3<br>wheat 36 6<br>oats 20 2<br>cumin 35 7 | List of selected items<br>**oats** taken with a fraction of **1**<br>**rice** taken with a fraction of **1**<br>**sugar** taken with a fraction of **1**<br>**wheat** taken with a fraction of **0.833333** |
| ***Input #3*** | ***Output#3*** |
| **5 15**<br>a 260 2<br>b 777 7<br>c 589 3<br>d 570 5<br>e 480 4 | Total price achieved: 2010.000<br>List of selected items<br>**c** taken with a fraction of **1**<br>**a** taken with a fraction of **1**<br>**e** taken with a fraction of **1**<br>**d** taken with a fraction of **1**<br>**b** taken with a fraction of **0.142857** |