# 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.
   1. Where the value of d will be **0** when the item is not taken
   2. And the value will be **1** when the whole item is taken
   3. 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.
   4. Notice the input/output for better understanding.
      1. For Input#1
         1. Number items are 3
         2. The total size of the knapsack is 50
      2. 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.
   1. Explain your code in words if possible.
   2. 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**
   1. 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**  rice 120 30  pulse 60 10  sugar 100 20 | Total price achieved: **240.000**  List of selected items  **pulse** taken with a fraction of **1**  **sugar** taken with a fraction of **1**  **rice** taken with a fraction of **0.666667** |
| ***Input #2*** | ***Output#2*** |
| **6 15**  rice 40 5  pulse 10 4  sugar 24 3  wheat 36 6  oats 20 2  cumin 35 7 | Total price achieved: **114.000**  List of selected items  **oats** taken with a fraction of **1**  **rice** taken with a fraction of **1**  **sugar** taken with a fraction of **1**  **wheat** taken with a fraction of **0.833333** |
| ***Input #3*** | ***Output#3*** |
| **5 15**  a 260 2  b 777 7  c 589 3  d 570 5  e 480 4 | Total price achieved: 2010.000  List of selected items  **c** taken with a fraction of **1**  **a** taken with a fraction of **1**  **e** taken with a fraction of **1**  **d** taken with a fraction of **1**  **b** taken with a fraction of **0.142857** |