

EXPERIMENT -8

AIM:-Write a program to solve the fractional Knapsack problem

```
#include <stdio.h>

void main()
{
    int capacity, no_items, cur_weight, item;

    int used[10];

    float total_profit;

    int i;

    int weight[10];

    int value[10];

    printf("Enter the capacity of knapsack:\n");

    scanf("%d", &capacity);

    printf("Enter the number of items:\n");

    scanf("%d", &no_items);

    printf("Enter the weight and value of %d item:\n", no_items);

    for (i = 0; i < no_items; i++)
    {
        printf("Weight[%d]:\t", i);

        scanf("%d", &weight[i]);

        printf("Value[%d]:\t", i);

        scanf("%d", &value[i]);
    }

    for (i = 0; i < no_items; ++i)

        used[i] = 0;
```

```

cur_weight = capacity;

while (cur_weight > 0)
{
    item = -1;

    for (i = 0; i < no_items; ++i)

        if ((used[i] == 0) &&

            ((item == -1) || ((float) value[i] / weight[i] > (float) value[item] / weight[item])))

            item = i;

    used[item] = 1;

    cur_weight -= weight[item];

    total_profit += value[item];

    if (cur_weight >= 0)

        printf("Added object %d (%d Rs., %dKg) completely in the bag. Space left: %d.\n", item + 1,
value[item], weight[item], cur_weight);

    else

    {

        int item_percent = (int) ((1 + (float) cur_weight / weight[item]) * 100);

        printf("Added %d%% (%d Rs., %dKg) of object %d in the bag.\n", item_percent, value[item],
weight[item], item + 1);

        total_profit -= value[item];

        total_profit += (1 + (float)cur_weight / weight[item]) * value[item];

    }

}

```

```
printf("Filled the bag with objects worth %.2f Rs.\n", total_profit);  
}
```

OUTPUT:-

Enter the capacity of knapsack:

50

Enter the number of items:

3

Enter the weight and value of 3 item:

Weight[0]: 10

Value[0]: 60

Weight[1]: 20

Value[1]: 100

Weight[2]: 30

Value[2]: 120

Added object 1 (60 Rs., 10Kg) completely in the bag. Space left: 40.

Added object 2 (100 Rs., 20Kg) completely in the bag. Space left: 20.

Added 66% (120 Rs., 30Kg) of object 3 in the bag.

Filled the bag with objects worth 240.00 Rs.

MANISH CHAUHAN

2200271549002

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