



SHREE L. R. TIWARI COLLEGE OF ENGINEERING

Approved by AICTE & DTE, Maharashtra State & Affiliated to University of Mumbai, NAAC Accredited, NBA Accredited program,
ISO 9001:2015 Certified | DTE Code No: 3423, Recognized under Section 2(f) of the UGC Act 1956, Minority Status (Hindi Linguistic)

Name: Samit Dubey

Roll no.: 22 Div: A

Batch: A1

Program:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
typedef struct {  
    double value, weight, cost;  
} Item;
```

```
int compare(const void *a, const void *b) {  
    double r1 = ((Item *)a)->cost;  
    double r2 = ((Item *)b)->cost;  
    return (r2 > r1) - (r1 > r2);  
}
```

```
double fractionalKnapsack(int W, Item arr[], int n) {  
    for (int i = 0; i < n; i++)  
        arr[i].cost = arr[i].value / arr[i].weight;
```

```
    qsort(arr, n, sizeof(Item), compare);
```

```
    int i = 0;  
    double total = 0.0;
```

```
    while (i < n) {  
        if (arr[i].weight <= W) {  
            W -= arr[i].weight;  
            total += arr[i].value;  
        } else {  
            total += arr[i].value * ((double)W / arr[i].weight);  
            break;  
        }  
        i++;  
    }  
    return total;  
}
```

```
int main() {  
    int n, W;  
    printf("Enter number of items: ");  
    scanf("%d", &n);
```

```
    Item arr[n];
```



SHREE L. R. TIWARI COLLEGE OF ENGINEERING

Approved by AICTE & DTE, Maharashtra State & Affiliated to University of Mumbai, NAAC Accredited, NBA Accredited program,
ISO 9001:2015 Certified | DTE Code No: 3423, Recognized under Section 2(f) of the UGC Act 1956, Minority Status (Hindi Linguistic)

Name: Samit Dubey

Roll no.: 22 Div: A

Batch: A1

```
printf("Enter weight and value for each item:\n");
for (int i = 0; i < n; i++)
    scanf("%lf %lf", &arr[i].weight, &arr[i].value);

printf("Enter maximum capacity of knapsack: ");
scanf("%d", &W);

double maxVal = fractionalKnapsack(W, arr, n);
printf("Maximum value in knapsack: %.2f\n", maxVal);

return 0;
}
```

Output:

Enter number of items: 3

Enter weight and value for each item:

10 60

20 100

30 120

Enter maximum capacity of knapsack: 50

Maximum value in knapsack: 240.00