Name: Samit Dubey
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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];
```

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

    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
```