Name: Surwade Trisharan Rajesh

Roll no.: 48

```cpp
//Write a programme to find solution of knapsack instant
#include <iostream>
using namespace std;
class Knapsack
{
    float weight[20], profit[20], capacity;
    int num;
    float ratio[20], temp;
public:
    void getData()
    {
        int i;
        cout << "Enter the no. of objects : ";
        cin >> num;
        cout << "Enter the weight & profit of each objects : ";
        for (i = 0; i < num; i++)
        {
            cin >> weight[i];
            cin >> profit[i];
        }
        cout << "Enter the capacity of each kanpsack : ";
        cin >> capacity;
        for (i = 0; i < num; i++)
        {
            cout << weight[i];
        }
        for (i = 0; i < num; i++)
        {
            ratio[i] = profit[i] / weight[i];
        }
    }
    void knapsack()
    {
        sortData();
        hknapsack(num, weight, profit, capacity);
    }
    void sortData();
    void hknapsack(int n, float weight[], float profit[], float capacity);
};
void Knapsack::sortData()
{
    int i, j;
    for (i = 0; i < num; i++)
    {
        for (j = i + 1; j < num; j++)
        {
            if (ratio[i] < ratio[j])
            {
                temp = ratio[j];
                ratio[j] = ratio[i];
                ratio[i] = temp;
                temp = weight[j];
                weight[j] = weight[i];
                weight[i] = temp;
                temp = profit[j];
```

```cpp
                profit[j] = profit[i];
                profit[i] = temp;
            }
        }
    }
}
void Knapsack::hknapsack(int n, float weight[], float profit[], float capacity)
{
    float x[20], tp = 0;
    int i, u;
    u = capacity;
    for (i = 0; i < n; i++)
        x[i] = 0.0;
    for (i = 0; i < n; i++)
    {
        if (weight[i] > u)
            break;
        else
        {
            x[i] = 1.0;
            tp = tp + profit[i];
            u = u - weight[i];
        }
    }
    if (i < n)
        x[i] = u / weight[i];
    tp = tp + (x[i] * profit[i]);
    cout << "\n the result vector is : ";
    for (i = 0; i < n; i++)
        cout << " " << x[i];
    cout << "\n Maximum profit is : " << tp;
}
int main()
{
    Knapsack ksd;
    ksd.getData();
    ksd.knapsack();
};
```

Output:

Enter the no. of objects : 4

Enter the weight & profit of each objects : 12 32

11 22

45 44

12 43

Enter the capacity of each kanpsack : 20

 the result vector is : 1 0.666667 0 0

 Maximum profit is : 64.3333