**7. C/C++ Program to solve discrete Knapsack and continuous Knapsack problems using greedy approximation method.**

#include<stdio.h> #include<stdlib.h> int main()

{

float weight[50],profit[50],ratio[50],Totalvalue,temp,capacity,amount; int n,i,j;

printf("Enter the number of items :"); scanf("%d",&n);

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

{

printf("Enter Weight and Profit for item[%d] :\n",i); scanf("%f %f", &weight[i], &profit[i]);

}

printf("Enter the capacity of knapsack :\n"); scanf("%f",&capacity);

for(i=0;i<n;i++) ratio[i]=profit[i]/weight[i];

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

for (j = i + 1; j < n; 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]; profit[j] = profit[i]; profit[i] = temp;

}

printf("Knapsack problems using Greedy Algorithm:\n"); for (i = 0; i < n; i++)

{

if (weight[i] > capacity) break;

else

{

Totalvalue = Totalvalue + profit[i]; capacity = capacity - weight[i];

}

}

if (i < n)

Totalvalue = Totalvalue + (ratio[i]\*capacity); printf("\nThe maximum value is :%f\n",Totalvalue); return 0;

}

**Output**

Enter the number of items :4

Enter Weight and Profit for item[0] : 2 10

Enter Weight and Profit for item[1] : 3 5

Enter Weight and Profit for item[2] : 5 15

Enter Weight and Profit for item[3] : 7 7

Enter the capacity of knapsack : 10

Knapsack problems using Greedy Algorithm:

The maximum value is :30.000000