6) Implement Knapsack problem using Greedy Method.

```
#include <stdio.h>

void knapsack(int n, float weight[], float profit[], float capacity) {
   float x[20], tp = 0;
   int i;
   float 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]);

   printf("\nThe result vector is:-\n");
   for (i = 0; i < n; i++)
      printf("%f\t", x[i]);

   printf("\nMaximum profit is:- %f", tp);
}

int main() {
   float weight[20], profit[20], capacity;
   int num, i, j;
   float ratio[20], temp;
```

```
  printf("\nEnter the weights of %d objects :- ", num);
  for (i = 0; i < num; i++)
    scanf("%f", &weight[i]);

  printf("\nEnter the profits of %d objects :- ", num);
  for (i = 0; i < num; i++)
    scanf("%f", &profit[i]);

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

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

  // Sorting profits and weights according to p[i]/w[i] ratio
  for (i = 0; i < num; i++) {
    for (j = 0; j < num - i - 1; j++) {
      if (ratio[j] < ratio[j + 1]) {
        temp = ratio[j];
        ratio[j] = ratio[j + 1];
        ratio[j + 1] = temp;

        temp = weight[j];
        weight[j] = weight[j + 1];
        weight[j + 1] = temp;

        temp = profit[j];
        profit[j] = profit[j + 1];
        profit[j + 1] = temp;
      }
    }
  }

  knapsack(num, weight, profit, capacity);
  return 0;
}
```

```
Enter the capacity of knapsack:
15
Enter the number of items:
4
Enter the weight and profit of 4 item:
Weight[1]:      2
Profit[1]:      6
Weight[2]:      4
Profit[2]:      10
Weight[3]:      4
Profit[3]:      1
Weight[4]:      8
Profit[4]:      16
Added object 1 completely in the bag. Space left: 13.
Added object 2 completely in the bag. Space left: 9.
Added object 4 completely in the bag. Space left: 1.
Added 25%  of object 3 in the bag.
Filled the bag with objects worth 32.25 Rs.
```