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Practical – 7

Write a program to implement Making change problem and Knapsack problem using Greedy Method.

1) **Making change problem**

Code:

```
#include<stdio.h>
        int numberofcoin(int arr[],int total)
        {
          int j=0,sum=0,i=0;
            while(sum<=total)
            {
              if(sum+arr[i]<=total)
              {
                sum=arr[i]+sum;
                printf("\t%d",arr[i]);
                j=j+1;
                if(sum==total)
                {
                  break;
                }
              }
              else
              {
                i=i+1;
              }
            }
            return j;
        }
        void main()
        {
          int arr[100],n,i,total,s;
          printf("Enter number of units which you have to enter\n");
          scanf("%d",&n);
          printf("\nEnter units\n");
```

```
    for(i=0;i<n;i++)
    {
       scanf("%d",&arr[i]);
    }
    printf("\nEnter Total number which you need\n");
    scanf("%d",&total);
    s=numberofcoin(arr,total);
    printf("\nTotal need is = %d ",s);
 }
```

2) Knapsap Problem

```
#include<stdio.h>

struct knapsap{
int v,w;
int vw;
}k[100];
void orderofvw(int TW,int n)
{
   int sum=0,i=0,y=0;
   sum=k[i].w;
   while(TW>=sum)
   {
      if(TW==sum)
      {
         break;
      }
      sum=k[i].w+sum;
      y=k[i].v+y;
      i=i+1;

   }
   printf("\nBy orderofVW %d",sum);
}
void inceraseorede(int TW,int n)
```

```
{
   int sum=0,i=0,y=0;
   sum=k[i].w;
   while(TW>=sum)
   {
      if(TW==sum)
      {
         break;
      }
      sum=k[i].w+sum;
      y=k[i].v+y;
      i=i+1;

   }
   printf("\nBy incerase value %d",sum);
}
void decresorder(int TW,int n)
{
   int sum=0,i=0,y=0;
   sum=k[i].w;
   while(TW>=sum)
   {
      if(TW==sum)
      {
         break;
      }
      sum=k[i].w+sum;
      y=k[i].v+y;
      i=i+1;
   }
   printf("\nBy Decreseweight %d",sum);
}
int main()
{
   int TW=100,n,i,j,flag,temp;
   printf("\nEnter no of item in knapsap");
```

```
scanf("%d",&n);
for(i=0;i<n;i++)
{
   printf("\nEnter value & Weight for %d\n",i+1);
   scanf("%d%d",&k[i].v,&k[i].w);

}
  for(i=0;i<n-1;i++)
   {
      flag=0;
      for(j=0;j<n-i-1;j++)
      {
         if(k[j].v<k[j+1].v)
         {
            temp=k[j].v;
            k[j].v=k[j+1].v;
            k[j+1].v=temp;
            temp=k[j].w;
            k[j].w=k[j+1].w;
            k[j+1].w=temp;
            flag=1;
         }
      }
      if(flag==0)
         break;
   }
   decresorder(TW,n);
  for(i=0;i<n-1;i++)
   {
      flag=0;
      for(j=0;j<n-i-1;j++)
      {
         if(k[j].v>k[j+1].v)
         {
            temp=k[j].v;
            k[j].v=k[j+1].v;
            k[j+1].v=temp;
            temp=k[j].w;
            k[j].w=k[j+1].w;
            k[j+1].w=temp;
            flag=1;
         }
      }
      if(flag==0)
         break;
   }
   orderofvw(TW,n);
  for(i=0;i<n-1;i++)
   {
      flag=0;
      for(j=0;j<n-i-1;j++)
      {
         if((k[j].v/k[j].w)>(k[j+1].v/k[j+1].w))
         {
            temp=k[j].v;
            k[j].v=k[j+1].v;
            k[j+1].v=temp;
            temp=k[j].w;
            k[j].w=k[j+1].w;
            k[j+1].w=temp;
            flag=1;
         }
      }
      if(flag==0)
         break;
   }
   orderofvw(TW,n);
/*for(i=0;i<n;i++)
{
   printf("\nEnter value & Weight for i+1\n",i);
   printf("%d\t%d",k[i].v,k[i].w);


}
```