

LAB-10

Knap sack-

CODE-

```
#include<stdio.h>
```

```
int n,m,o[10],p[10],v[10][10],w[10],i,j,op,ob[10];
```

```
int max(int A,int B)
```

```
{
```

```
    if(A>B)
```

```
        return A;
```

```
    else
```

```
        return B;
```

```
}
```

```
int knapsack()
```

```
{
```

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

```
    {
```

```
        for(j=0;j<=m;j++)
```

```
        {
```

```
if(i==0 || j==0)
{
    v[i][j]=0;
}
else
if(w[i]>j)
{
    v[i][j]=v[i-1][j];
}
else
if(w[i]<=j)
{
    v[i][j]=max(v[i-1][j],v[i-1][j-w[i]]+p[i]);
}

}

}
```

```
return v[i-1][j-1];
```

```
}
```

```
void objects()
```

```
{ int k=0;
```

```
i=n;
```

```
j=m;
```

```
printf("the objects are ");
```

```
while(i>=0&& j>=0)
```

```
{
```

```
    if(v[i][j]!=v[i-1][j])
```

```
    {
```

```
        //ob[k]=i;
```

```
        //    k++;
```

```
        printf("%d ",i);
```

```
        j=j-w[i];
```

```
    }
```

```
        i=i-1;
    }
}

void main()
{
    printf("Enter the number of objects\n");
    scanf("%d",&n);
    printf("Enter the object number and their weight and profit\n");
    for(i=1;i<=n;i++)
    {
        scanf("%d%d%d",&o[i],&w[i],&p[i]);
    }
    printf("Enter the capacity of knapsack\n");
    scanf("%d",&m);
    knapsack();
    for(i=0;i<=n;i++)
    {
        for(j=0;j<=m;j++)
```

```

        {
            printf("%d ",v[i][j]);
        }
        printf("\n");
    }
    printf("The optimal solution is %d \n",v[n][m]);
    objects();
}

```

OUTPUT-

```

Enter the number of objects
4
Enter the object number and their weight and profit
1 2 12
2 1 10
3 3 20
4 2 15
Enter the capacity of knapsack
5
0 0 0 0 0 0
0 0 12 12 12 12
0 10 12 22 22 22
0 10 12 22 30 32
0 10 15 25 30 37
The optimal solution is 37
the objects are 4 2 1

...Program finished with exit code 0
Press ENTER to exit console.

```