KNAPSACK PROGRAM :-

PROHRAM :-

```c
#include<stdio.h>
int max(int,int);
int m,i,j,n,p[10],w[10],v[10][10], x[10],op_soln;
int knapsack();
void object_selected();
void main()
{
printf("Enter the number of objects\n");
scanf("%d", &n);
printf("Enter the weights of N objects\n");
for(i=1;i<=n;i++)
scanf("%d", &w[i]);
printf("Enter the profits of N objects\n");
for(i=1;i<=n;i++)
scanf("%d", &p[i]);
printf("Enter the capacity of Knapsack\n");
scanf("%d", &m);
op_soln=knapsack(n,w,m,v,p);
printf("The output is\n");
for(i=0;i<=n;i++)
{
for(j=0;j<=m;j++)
{
printf("%d\t", v[i][j]);
}
printf("\n");
}
printf("Optimal Solution=%d\n",op_soln);
object_selected();
}
```

```
int max(int a, int b)
{
return(a>b?a:b);
}

int knapsack()
{
int i,j;
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
v[i][j]=max(v[i-1][j],v[i-1][j-w[i]]+p[i]);
}
}
}
return v[n][m];
}

void object_selected()
{
i=n;
```

```
j=m;
while(i!=0 && j!=0)
{
if(v[i][j]!=v[i-1][j])
{
x[i]=1;
j=j-w[i];
}
i--;
}
printf("Objects Selected\n");
for(i=1;i<=n;i++)
{
if( x[i]==1)
printf("%d\t",i);
}
}
```

OUTPUT:-

```
Enter the number of objects
4
Enter the weights of N objects
2
1
3
2
Enter the profits of N objects
12
10
20
15
Enter the capacity of Knapsack
5
The output is
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
Optimal Solution=37
Objects Selected
1       2       4

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