

Code:

#include<stdio.h>

#include<conio.h>

void knapsack();

int max(int,int);

int i,j,n,m,p[10],w[10],v[10][10];

void main()

{

printf("\nenter the no. of items:\t");

scanf("%d",&n);

printf("\nenter the weight of the each item:\n");

for(i=1;i<=n;i++)

{

scanf("%d",&w[i]);

}

printf("\nenter the profit of each item:\n");

for(i=1;i<=n;i++)

{

scanf("%d",&p[i]);

}

printf("\nenter the knapsack's capacity:\t");

scanf("%d",&m);

knapsack();

getch();

}

void knapsack()

{

```

int x[10];

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

{

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

{

if(i==0 || j==0)

{

v[i][j]=0;

}

else if(j-w[i]<0)

{

v[i][j]=v[i-1][j];

}

else

{

v[i][j]=max(v[i-1][j],v[i-1][j-w[i]]+p[i]);

}

}

}

printf("\nthe output is:\n");

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

{

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

{

printf("%d\t",v[i][j]);

}

}

```

```

printf("\n\n");

}

printf("\nthe optimal solution is %d",v[n][m]);

printf("\nthe solution vector is:\n");

for(i=n;i>=1;i--)
{
if(v[i][m]!=v[i-1][m])

{

x[i]=1;

m=m-w[i];

}

else

{

x[i]=0;

}

}

for(i=1;i<=n;i++)
{

printf("%d\t",x[i]);

}

}

int max(int x,int y)
{

if(x>y)

{

return x;

}

```

else

{

return y;

}

}

Output:

```
enter the no. of items: 5
enter the weight of the each item:
2
3
6
1
4
enter the profit of each item:
20
40
30
15
18
enter the knapsack's capacity: 2
the output is:
0      0      0
0      0      20
0      0      20
0      0      20
0      0      20
0      15     20
0      15     20
the optimal solution is 20
the solution vector is:
1      0      0      0      0
...Program finished with exit code 0
```