**PROGRAM-12**

**Implement 0/1 Knapsack problem using dynamic programming**

**Code:**

#include<stdio.h>

#define MAX 50

int p[MAX],w[MAX],n;

int knapsack(int,int);

int max(int,int);

void main()

{

int m,i,optsoln;

printf("1/0 Knapsack problem\n");

printf("Enter no. of objects: ");

scanf("%d",&n);

printf("\nEnter the weights and profits:\n");

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

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

printf("\nEnter the knapsack capacity:");

scanf("%d",&m);

optsoln=knapsack(1,m);

printf("\nThe optimal soluntion is:%d",optsoln);

getch();

}

int knapsack(int i,int m)

{

if(i==n)

return (w[n]>m) ? 0 : p[n];

if(w[i]>m)

return knapsack(i+1,m);

return max(knapsack(i+1,m),knapsack(i+1,m-w[i])+p[i]);

}

int max(int a,int b)

{

if(a>b)

return a;

else

return b;

}

**Output:**

