S.No: 12	Exp. Name: ***Program to implement, 0/1 Knapsack problem using Dynamic Programming***	Date:

Aim:

Write a program to implement, 0/1 Knapsack problem using Dynamic Programming

Source Code:

Knapsack.c

```
#include<stdio.h>
#include<conio.h>
int max(int a,int b)
{
   return(a>b)?a:b;
}
int knapsack(int W,int v[],int w[],int n)
{
   if(n==0||W==0)

      return 0;
    if(w[n-1]>W)
     return knapsack(W,v,w,n-1);
      else
       return max(v[n-1]+knapsack(W-w[n-1],v,w,n-1),knapsack(W,v,w,n-1));
}
void main()
{
   int n,W;
   printf("Enter number of items:");
   scanf("%d",&n);
   int v[n],w[n];
   printf("Enter value and weight of items:");
   for(int i=0;i<n;i++)
   {
      scanf("%d %d",&v[i],&w[i]);
   }
   printf("Enter size of knapsack:");
   scanf("%d",&W);
   printf("Maximum value in 0/1 knapsack :%d",knapsack(W,v,w,n));
}
```

Execution Results - All test cases have succeeded!

Test Case - 1	
User Output	
Enter number of items: 3	
Enter value and weight of items: 100 20	
50 10	50 10
150 30	150 30
Enter size of knapsack: 50	
Maximum value in 0/1 knapsack :250	

Test Case - 2
User Output
Enter number of items: 4
Enter value and weight of items: 10 23

Test Case - 2	
20 5	20 5
30 6	30 6
40 9	40 9
Enter size of knapsack: 50	
Maximum value in 0/1 knapsack :100	