

Knapsack Program

```
#include <stdio.h>
#include <conio.h>
int n, m, w[10], p[10], v[10][10];
int max(int a, int b)
{
    if (a > b)
        return a;
    else
        return b;
}

int knapsack()
{
    for (int i = 0; i <= n; i++)
    {
        for (int j = 0; j <= m; j++)
        {
            if (i == 0 && j == 0)
            {
                v[i][j] = 0;
            }
            else if (w[i - 1] > j)
            {
                v[i][j] = v[i - 1][j];
            }
            else
            {
                v[i][j] = max(v[i - 1][j], v[i - 1][j - w[i - 1]] + p[i - 1]);
            }
        }
    }
    return v[n][m];
}

void object_selected()
{
    int i = n, j = m;
```

```

int x[10];
for (int k = 1; k <= n; k++)
{
    x[k] = 0;
}
while (i != 0 && j != 0)
{
    if (v[i][j] != v[i - 1][j])
    {
        x[i] = 1;
        j = j - w[i - 1];
    }
    i = i - 1;
}
for (i = 1; i <= n; i++)
{
    if (x[i] == 1)
    {
        printf("Object %d selected \n", i);
    }
}
}
void main()
{
    printf("Enter the number of objects\n");
    scanf("%d", &n);
    for (int i = 0; i < n; i++)
    {
        printf("Enter the weight of object %d ", i + 1);
        scanf("%d", &w[i]);
    }
    for (int i = 0; i < n; i++)
    {
        printf("Enter the profit of object %d ", i + 1);
        scanf("%d", &p[i]);
    }
    printf("Enter the maximum limit\n");
    scanf("%d", &m);
    int profit = knapsack();
}

```

```
    object_selected();  
    printf("Maximum profit %d\n", profit);  
}
```

OUTPUT:

```
Enter the number of objects  
4  
Enter the weight of object 1 2  
Enter the weight of object 2 1  
Enter the weight of object 3 3  
Enter the weight of object 4 2  
Enter the profit of object 1 12  
Enter the profit of object 2 10  
Enter the profit of object 3 20  
Enter the profit of object 4 15  
Enter the maximum limit  
5  
Object 1 selected  
Object 2 selected  
Object 4 selected  
Maximum profit 37
```