#include <stdio.h>

int max(int x, int y) {

if(x>y)

return x;

else

return y;

}

void knapSack(int W, int w[], int v[], int n) {

int i, wt,result,temp[n];

int K[n + 1][W + 1];

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

for (wt = 0; wt <= W; wt++) {

if (i == 0 || wt == 0)

K[i][wt] = 0;

else if (w[i - 1] <= wt)

K[i][wt] = max(v[i - 1] + K[i - 1][wt - w[i - 1]], K[i - 1][wt]);

else

K[i][wt] = K[i - 1][wt];

}

}

result = K[n][W];

printf("\nMaximum Profit is : %d",result);

wt=W;

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

temp[i]=0;

}

printf("\nWeights are : ");

for(i=n ; i>0 && result > 0 ;i--){

if( result == K[i-1][wt])

continue;

else {

temp[i-1]=1;

result = result - v[i-1];

wt=wt-w[i-1];

}

}

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

printf("%d ",temp[i]);

}

}

int main() {

printf( "Enter the number of items in a Knapsack : ");

int n, W;

scanf("%d",&n);

int v[n], w[n];

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

printf("Enter value and weight for item %d : ",i+1);

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

}

printf("Enter the capacity of knapsack : ");

scanf("%d",&W);

knapSack(W, w, v, n);

return 0;

}

