

0-1 Knapsack

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#include<bits/stdc++.h>
using namespace std;
#define ll long long
const int N = 1e6+10;
int wt[105],val[105];
ll dp[105][100005];

ll func(int idx, int wt_left){
    if(wt_left == 0) return 0;
    if(idx < 0) return 0;
    if(dp[idx][wt_left] != -1) return dp[idx][wt_left];
    ll ans = func(idx-1, wt_left);
    if(wt_left - wt[idx] >= 0){
        ans = max(ans,func(idx-1, wt_left-wt[idx])+val[idx]);
    }
    return dp[idx][wt_left] = ans;
}

int main(){
    memset(dp,-1,sizeof(dp));
    int n,w;    cin >> n >> w;
    for(int i=0;i<n;i++){
        cin >> wt[i] >> val[i];
    }
    cout << func(n-1, w) << endl;
}
```