import java.util.Scanner;

public class Knapsack {

public static int knapsack(int W, int[] weights, int[] values) {

int n = weights.length;

int[][] dp = new int[n + 1][W + 1];

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

for (int w = 1; w <= W; w++) {

if (weights[i - 1] <= w) {

dp[i][w] = Math.max(dp[i - 1][w], dp[i - 1][w - weights[i - 1]] + values[i - 1]);

} else {

dp[i][w] = dp[i - 1][w];

}

}

}

return dp[n][W];

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter knapsack capacity: ");

int W = scanner.nextInt();

System.out.print("Enter the number of items: ");

int n = scanner.nextInt();

int[] weights = new int[n];

int[] values = new int[n];

System.out.println("Enter the weight and value of each item:");

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

int weight = scanner.nextInt();

int value = scanner.nextInt();

weights[i] = weight;

values[i] = value;

}

int result = knapsack(W, weights, values);

System.out.println("Maximum value: " + result);

}

}

output:-

Enter knapsack capacity: 50

Enter the number of items: 3

Enter the weight and value of each item:

10 60

20 100

30 120

Maximum value: 220