Problem C
The Little Red Riding Hood
and the Raspberry Pie

Input File: *testdata.in*
Time Limit: 10 seconds

Problem Description

The Little Red Riding Hood plans a visit to her grandmother. The field is
ripe with raspberries and she decides to pick up some on her way so that she
can make a raspberry pie at Grandmother's house.

You are given a map of size N_R rows by N_C columns to help The Little
Red Riding Hood find her best route. The Little Red Riding Hood lives at
the north-west corner of the map with coordinate being $(0,0)$ and Grand-
mother live at the south-east corner of the map with the coordinate being
$(N_R - 1, N_C - 1)$. The map is given as a matrix of integers representing
the amount (in some unspecified units) of expected raspberries to be found
at each location. Assuming that the Big Bad Wolf is not a concern in our
problem, the route is determined according to the following constraints:

1. The Little Red Riding Hood would rather not make any detour. That
   is, in each of her move, she always goes eastward one nit or southward
   one unit, making a total of exactly $N_R + N_C - 2$ moves before she arrives
   at Grandmother's house.

2. She would like to collect the largest possible amount of raspberries.

3. Of all richest routes (as determined by the previous condition), she
   would like to pick the route that "burdens" her least. Carrying 3 extra
   units of raspberries and making 7 moves, for example, adds a burden
   of 21 units. In other words, if she can pick up the maximum amount

of raspberries along two or more different routes, she would prefer the one that picks up heavy loads at the later stages of the trip.

4. She prefers the scenery of the northeast part of the map. That is, of all richest routes of equally least burden, she always prefers going eastward first.

Please help The Little Red Riding Hood find her best way to her grandmother's house.

Technical Specifications

1. There are no more than 20 test cases.

2. The size of the map is no larger than 100 by 100 and is at least 1 by 1.

3. Each entry of the map is an integer between 0 and 99, inclusive.

4. The northwest corner and the southeast corner of the map are always 0.

Input Format

There are multiple test cases in the input file. A pair of 0 and 0 ends the input. The first line of each test case contains two integers N_R and N_C indicating the number of rows and the number of columns, respectively, of the map. Then N_R rows of input follows, each containing N_C integers representing the amount of raspberries at each location.

All numbers are separated by spaces. Each line may be prefixed by zero or more spaces.

Zero or more empty lines separate test cases.

Output Format

For each test case, output the amount of total raspberries collected, the amount of total burden, and a binary string indicating the best route. These three outputs should be separated by spaces.

A '0' in the best route means moving eastward and a '1' means moving southward.

Sample Input

```
2 5
0 2 0 3 5
6 3 4 2 0

5 5
0 0 0 5 0
0 0 0 0 2
0 0 0 0 0
2 0 0 0 0
0 5 0 0 0

5 5
0 0 0 2 0
0 0 0 0 5
0 0 0 0 0
2 0 0 0 0
0 5 0 0 0

6 8
0 3 0 5 0 5 3 2
3 2 5 1 3 4 1 6
1 6 1 0 4 2 4 1
0 2 2 3 3 0 3 5
2 1 0 3 5 1 5 2
5 0 5 4 1 5 1 0

0 0
```

Sample Output

```
15  43  10000
7  25  11101000
7  25  00001111
34  198  010000101011
```