

# LARGEST SUM

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## 1 Description

Given a triangle of **positive** integers, we want to find a largest possible sum along a path from top row to bottom row. A path can go down either directly south or directly south-east (Note, you can NEVER go EAST, WEST, or NORTH etc). For example, in the triangle

1				
2	3			
1	5	7		
9	1	1	2	
8	5	4	13	2

the path  $1 \rightarrow 3 \rightarrow 7 \rightarrow 2 \rightarrow 13$  is a legal path with sum 26. This path is “best” because 26 is the largest such sum. Generally, suppose that the triangle is stored in an array  $A[1..n, 1..n]$  with the relevant entries being on the diagonal and below. For  $1 \leq r \leq n$  and  $1 \leq c \leq r$  let  $B[r, c]$  be the sum along the best path that ends in row  $r$  and column  $c$  of the matrix  $A$ .

Example:  $B[1, 1] = 1$ ,  $B[2, 1] = 3$ ,  $B[2, 2] = 4$

## 2 Input

There are several sets of triangle data.

For each set of triangle data, the first number is the number of rows ( $n$ ) in the triangle. This is followed by  $n$  rows of data. Row  $i$  has  $i$  cols of data. All data is integer type.

## 3 Output

There are two lines of data for EACH set of triangle data. The first line states "Max is ???" where ??? is the largest path sum. The second line shows the path. (See the Sample).

## 4 Samples

INPUT

```
2
18
430 302
6
102
76 76
268 153 185
492 480 112 405
286 436 126 25 391
390 32 399 76 29 174
```

OUTPUT

```
Max is 448
18-->430
Max is 1773
102-->76-->268-->492-->436-->399
```