Problem 2

Test Case 1

—----------

```
6
0 14 14 3  6 13
0  0  0 0  0  2
0  0  0 2  5 11
0  0  0 0 13  1
2  7 12 4  1  0
0  0 10 7  9 12
10
1 0 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 1
15
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 1 0 0 0 0 0 0 0 0 0 0 0 0 0
1 1 1 0 0 0 0 0 0 0 0 0 0 0 0
1 1 1 1 0 0 0 0 0 0 0 0 0 0 0
1 1 1 1 1 0 0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1 1 0 0 0 0 0 0
1 1 1 1 1 1 1 1 1 1 0 0 0 0 0
1 1 1 1 1 1 1 1 1 1 1 0 0 0 0
1 1 1 1 1 1 1 1 1 1 1 1 0 0 0
1 1 1 1 1 1 1 1 1 1 1 1 1 0 0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
7
1 1 1 1 1 1 1
1 1 1 1 1 1 1
1 1 1 1 1 1 1
1 1 1 1 1 1 1
```

```
1 1 1 1 1 1 1
1 1 1 1 1 1 1
1 1 1 1 1 1 1
17
0 0 0 130 681 600 543 633 844 973 440 92 509 348 412 494 213
0 0 0 0 0 152 218 161 217 473 621 342 106 674 364 248 946
0 0 0 0 0 0 0 56 405 784 639 625 988 547 885 15 144
0 0 0 0 0 0 0 0 0 590 60 98 427 937 905 455 557
0 0 0 0 0 0 0 0 0 0 0 0 0 127 251 255 992
0 0 0 0 0 0 0 0 0 0 0 0 0 0 944 361 93
981 834 628 563 450 153 813 138 17 136 807 439 45 943 309 292 811
0 29 701 464 400 977 4 806 805 415 842 695 997 242 619 541 394
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 486
0 0 0 0 0 0 0 0 67 210 547 21 310 377 269 287 966
0 0 0 0 949 105 286 603 657 394 330 816 699 128 576 314 325
0 0 257 678 554 150 322 49 745 745 191 654 257 117 981 126 52
0 0 0 0 0 0 0 0 0 0 0 0 907 783 229 862 174
0 0 0 0 0 0 0 0 0 0 0 639 768 748 971 900 185
0 0 0 0 0 0 0 0 0 0 0 0 0 0 935 663
0 0 0 0 0 0 213 383 91 344 174 5 499 513 835 496 63
0 0 0 0 0 0 0 0 0 0 734 578 673 678 207 76 956
```

Expected output (Test Case 1)

—----------

```
2 7 12 4 1 0
0 14 14 3 6 13
0 0 10 7 9 12
0 0 0 2 5 11
0 0 0 0 13 1
0 0 0 0 0 2
1 0 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 1
Not upper triangular
Not upper triangular
981 834 628 563 450 153 813 138 17 136 807 439 45 943 309 292 811
0 29 701 464 400 977 4 806 805 415 842 695 997 242 619 541 394
0 0 257 678 554 150 322 49 745 745 191 654 257 117 981 126 52
```

```
0 0 0 130 681 600 543 633 844 973 440 92 509 348 412 494 213
0 0 0 0 949 105 286 603 657 394 330 816 699 128 576 314 325
0 0 0 0 0 152 218 161 217 473 621 342 106 674 364 248 946
0 0 0 0 0 0 213 383 91 344 174 5 499 513 835 496 63
0 0 0 0 0 0 0 56 405 784 639 625 988 547 885 15 144
0 0 0 0 0 0 0 0 67 210 547 21 310 377 269 287 966
0 0 0 0 0 0 0 0 0 590 60 98 427 937 905 455 557
0 0 0 0 0 0 0 0 0 0 734 578 673 678 207 76 956
0 0 0 0 0 0 0 0 0 0 0 639 768 748 971 900 185
0 0 0 0 0 0 0 0 0 0 0 0 907 783 229 862 174
0 0 0 0 0 0 0 0 0 0 0 0 0 127 251 255 992
0 0 0 0 0 0 0 0 0 0 0 0 0 0 944 361 93
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 935 663
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 486
```

Test Case 2

```
1
1
1
0
5
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
5
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
1 1 0 0 0
19
0 0 29 6 29 7 27 23 6 18 28 14 10 28 5 20 0 13 14
0 0 0 18 4 22 13 19 14 3 1 24 19 17 0 15 27 1 22
0 0 0 0 0 0 19 28 10 1 12 9 9 21 9 26 29 10 5
0 0 0 0 0 0 0 0 0 0 0 0 0 6 2 0 0 29 10
0 0 0 0 0 0 0 0 0 0 0 0 0 0 26 29 5 20 20
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 26 11 2 16
0 0 0 0 0 0 0 27 24 12 8 15 4 27 25 15 17 27 6
```

```
29 1 3 0 13 23 9 16 15 24 25 16 28 18 12 13 2 14 14
0 8 24 21 15 28 10 27 30 25 4 21 4 18 18 20 0 4 24
0 0 0 0 0 0 0 0 18 5 19 29 27 27 18 12 3 3 15
0 0 0 0 0 0 0 0 0 26 2 18 26 3 21 22 30 16 28
0 0 0 0 0 0 0 0 0 0 0 0 26 10 15 11 17 19 29
0 0 0 0 21 9 10 27 15 18 11 7 30 29 18 13 4 28 17
0 0 0 0 0 24 25 5 14 1 19 18 16 28 27 23 4 22 23
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 15 5 6
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 19 4
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5
0 0 0 0 0 0 0 0 0 0 7 21 21 25 0 1 18 25 0
0 0 0 0 0 0 0 0 0 0 0 19 7 7 26 4 8 7 26
```

Expected output (Test Case 2)

```
1
0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
1 1 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
29 1 3 0 13 23 9 16 15 24 25 16 28 18 12 13 2 14 14
0 8 24 21 15 28 10 27 30 25 4 21 4 18 18 20 0 4 24
0 0 29 6 29 7 27 23 6 18 28 14 10 28 5 20 0 13 14
0 0 0 18 4 22 13 19 14 3 1 24 19 17 0 15 27 1 22
0 0 0 0 21 9 10 27 15 18 11 7 30 29 18 13 4 28 17
0 0 0 0 0 24 25 5 14 1 19 18 16 28 27 23 4 22 23
0 0 0 0 0 0 19 28 10 1 12 9 9 21 9 26 29 10 5
0 0 0 0 0 0 0 27 24 12 8 15 4 27 25 15 17 27 6
0 0 0 0 0 0 0 0 18 5 19 29 27 27 18 12 3 3 15
0 0 0 0 0 0 0 0 0 26 2 18 26 3 21 22 30 16 28
0 0 0 0 0 0 0 0 0 0 7 21 21 25 0 1 18 25 0
0 0 0 0 0 0 0 0 0 0 0 19 7 7 26 4 8 7 26
0 0 0 0 0 0 0 0 0 0 0 0 0 26 10 15 11 17 19 29
0 0 0 0 0 0 0 0 0 0 0 0 0 6 2 0 0 29 10
0 0 0 0 0 0 0 0 0 0 0 0 0 0 26 29 5 20 20
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 26 11 2 16
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 15 5 6
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 19 4
```

```
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5
```

Test Case 3

—----------

```
4
1 0 0 0
0 1 0 0
0 0 0 0
0 0 0 0
15
27 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11 28 0 0 0 0 0 0 0 0 0 0 0 0 0
1 13 13 0 0 0 0 0 0 0 0 0 0 0 0
3 13 14 29 0 0 0 0 0 0 0 0 0 0 0
14 3 4 27 23 0 0 0 0 0 0 0 0 0 0
16 16 28 13 14 3 0 0 0 0 0 0 0 0 0
10 10 11 17 9 14 30 0 0 0 0 0 0 0 0
4 4 27 11 7 7 28 28 0 0 0 0 0 0 0
20 27 10 12 12 21 21 24 21 0 0 0 0 0 0
14 28 10 14 22 1 11 3 2 17 0 0 0 0 0
8 24 29 25 5 29 15 1 30 23 13 0 0 0 0
17 19 29 1 9 7 1 5 0 27 17 9 0 0 0
4 4 28 22 19 25 25 22 28 3 25 15 7 0 0
16 4 10 12 4 5 30 6 20 0 20 19 5 11 0
22 26 19 24 9 29 1 0 15 28 8 26 8 11 28
18
16 22 23 0 23 20 24 17 28 2 4 11 17 2 27 6 21 23
22 17 16 16 24 8 6 11 18 5 28 30 2 1 28 25 30 14
23 16 7 1 14 30 7 6 23 7 26 30 16 25 1 8 30 13
0 16 1 17 4 30 6 16 9 0 23 6 26 4 20 4 23 29
23 24 14 4 4 18 7 29 17 4 2 26 18 11 3 17 15 25
20 8 30 30 18 20 27 18 3 20 13 25 8 23 6 30 14 23
24 6 7 6 7 27 13 5 2 6 20 23 10 22 5 0 15 19
17 11 6 16 29 18 5 16 14 29 12 6 15 24 29 30 0 23
28 18 23 9 17 3 2 14 7 7 4 22 4 30 24 2 2 15
2 5 7 0 4 20 6 29 7 5 8 6 0 27 3 4 9 2
4 28 26 23 2 13 20 12 4 8 21 14 29 1 28 18 4 23
11 30 30 6 26 25 23 6 22 6 14 23 1 16 22 13 15 4
17 2 16 26 18 8 10 15 4 0 29 1 28 4 9 6 3 3
2 1 25 4 11 23 22 24 30 27 1 16 4 16 13 13 5 22
27 28 1 20 3 6 5 29 24 3 28 22 9 13 15 24 19 3
6 25 8 4 17 30 0 30 2 4 18 13 6 13 24 3 2 29
21 30 30 23 15 14 15 0 2 9 4 15 3 5 19 2 4 11
```

```
23 14 13 29 25 23 19 23 15 2 23 4 3 22 3 29 11 8
13
22 1 28 22 6 22 16 11 17 7 16 19 18
1 27 29 0 5 5 15 12 28 18 19 5 9
28 29 8 22 28 20 0 21 30 9 26 29 18
22 0 22 24 17 18 24 27 20 29 10 9 10
6 5 28 17 12 0 11 13 23 8 26 21 21
22 5 20 18 0 15 5 25 29 15 2 12 26
16 15 0 24 11 5 21 24 6 16 10 5 5
11 12 21 27 13 25 24 4 11 11 15 3 24
17 28 30 20 23 29 6 11 15 18 30 24 17
7 18 9 29 8 15 16 11 18 26 19 21 16
16 19 26 10 26 2 10 15 30 19 20 28 25
19 5 29 9 21 12 5 3 24 21 28 29 8
18 9 18 10 21 26 5 24 17 16 25 8 14
13
0 0 0 0 0 0 0 0 0 0 0 0 22
0 0 0 0 0 0 0 6 30 23 0 28 19
0 0 0 0 0 0 0 0 0 0 0 0 7
0 0 0 0 0 0 0 1 0 20 4 7 6
0 0 0 0 0 0 0 0 11 3 21 13 7
0 0 0 0 0 0 0 0 0 13 20 28 14
0 0 0 0 0 0 0 0 0 0 30 28 29
5 25 1 15 10 0 21 8 8 2 140 15 18
0 2 29 29 29 28 13 7 19 15 19 1 25
0 0 22 14 17 26 13 18 2 24 11 1 20
0 0 0 0 19 27 27 13 24 11 11 24 1
0 0 0 0 0 28 21 11 25 12 9 28 0
0 0 0 1 4 27 18 26 16 18 23 11 16
```

Expected Output (Test Case 3)

—----------

```
1 0 0 0
0 1 0 0
0 0 0 0
0 0 0 0
Not upper triangular
Not upper triangular
Not upper triangular
5 25 1 15 10 0 21 8 8 2 140 15 18
0 2 29 29 29 28 13 7 19 15 19 1 25
0 0 22 14 17 26 13 18 2 24 11 1 20
0 0 0 1 4 27 18 26 16 18 23 11 16
0 0 0 0 19 27 27 13 24 11 11 24 1
```

0 0 0 0 0 28 21 11 25 12 9 28 0
0 0 0 0 0 0 0 1 0 20 4 7 6
0 0 0 0 0 0 0 6 30 23 0 28 19
0 0 0 0 0 0 0 0 11 3 21 13 7
0 0 0 0 0 0 0 0 0 13 20 28 14
0 0 0 0 0 0 0 0 0 0 30 28 29
0 0 0 0 0 0 0 0 0 0 0 0 7
0 0 0 0 0 0 0 0 0 0 0 0 22