

# Maximizing Conductivity

During chip manufacturing often the chip created is rectangular  $m \times n$  and contains lot of holes which are non-conductive. A laser could be used to flip an entire column. A flip operation will make all holes conductive and all conductive cells become holes. Laser could be applied any number of times on a given column. For every chip 'k' number of operations are mandatory. Each conductive cell is represented by a 1 and each hole by a zero (0). End goal is to achieve maximum number of rows which have all 1's so that the chip is most conductive. For a given chip of dimension  $m \times n$  and given k number of laser operation write a program which finds out the maximum number of conductive rows.

$1 \leq m \leq 30$     $1 \leq n \leq 128$     $1 \leq k \leq 30$

Test cases are given in below format

m n

k

Followed by  $m \times n$  chip

5 3

2

0 1 0 1 0

1 1 0 1 1

1 0 1 0 1

TC2:

5 6

3

1 0 0 1 0

1 1 0 1 0

1 0 0 1 0

1 1 0 1 0

1 1 1 1 0

1 1 0 1 0

# Solution

- Laser cannot convert more holes than the number of operations it has. So ignore such numbers

TC 1:  $m = 5, n = 2, k = 2$

Laser operations are 2, so ignore values which have more than 2 zeros

1 1 0 1 1

1 0 1 0 1

If  $k$  is even then it cannot convert odd zeros to 1's and vice versa. So apply this.  $K = 2$ , even

1 0 1 0 1

Convert data as single number for easy comparison

1 0 1 0 1  $\rightarrow$  21

Highest repeat of any number is the answer. Here 21 is the only number. So 1 is the answer

TC 2:  $m = 5, n = 6, k = 3$

Laser operations are 3, so ignore values which have more than 3 zeros (Nothing ignored)

1 0 0 1 0

1 1 0 1 0

1 0 0 1 0

1 1 0 1 0

1 1 1 1 0

1 1 0 1 0

If  $k$  is even then it cannot convert odd zeros to 1's and vice versa. So apply this.  $K = 3$ , odd

1 0 0 1 0

1 0 0 1 0

1 1 1 1 0

Convert data as single number for easy comparison

1 0 0 1 0  $\rightarrow$  18

1 0 0 1 0  $\rightarrow$  18

1 1 1 1 0  $\rightarrow$  30

Highest repeat of any number is the answer. Here 18 is repeating 2 times. So 2 is the answer

# Solution

- Laser cannot convert more holes than the number of operations it has. So ignore such numbers

TC 3:  $m = 6, n = 10, k = 5$

```
1 0 0 1 0 1
1 1 0 1 0 0
1 0 0 1 0 1
1 1 0 1 0 1
1 1 1 1 0 0
0 1 0 0 0 1
1 1 1 1 1 0
0 1 1 1 1 1
1 1 1 1 1 1
1 0 0 1 0 1
```

Laser operations are 5, so ignore values which have more than 5 zeros

```
1 0 0 1 0 1
1 1 0 1 0 0
1 0 0 1 0 1
1 1 0 1 0 1
1 1 1 1 0 0
0 1 0 0 0 1
1 1 1 1 1 0
0 1 1 1 1 1
1 1 1 1 1 1
1 0 0 1 0 1
```

If  $k$  is odd, ignore even zero values

```
1 0 0 1 0 1
1 1 0 1 0 0
1 0 0 1 0 1
1 1 1 1 1 0
0 1 1 1 1 1
1 1 1 1 1 1
1 0 0 1 0 1
```

Convert data as single number for easy comparison

```
1 0 0 1 0 1 -> 37
1 1 0 1 0 0 -> 52
1 0 0 1 0 1 -> 37
1 1 1 1 1 0 -> 62
0 1 1 1 1 1 -> 31
1 1 1 1 1 1 -> 63
1 0 0 1 0 1 -> 37
```

Highest repeat of any number is the answer. Here 37 is repeating 3 times. So 3 is the answer