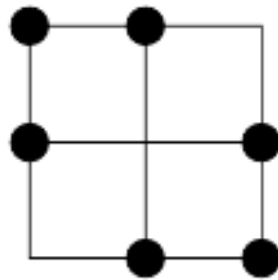


Consider a grid such as the one shown. We wish to mark k intersections in each of n rows and n columns in such a way that no 4 of the selected intersections form a rectangle with sides parallel to the grid. Thus for $k = 2$ and $n = 3$, a possible solution is:



It can easily be shown that for any given value of k , $k^2 - k + 1$ is a lower bound on the value of n , and it can be shown further that n need never be larger than this.

Write a program that will find a solution to this problem for $k \leq 32$, $k - 1$ will be 0, 1 or prime.

Input

Input will consist of some values for k , one per line.

Output

For each value of k , output will consist of n lines of k points indicating the selected points on that line.

Print a blank line between two values of k .

Sample Input

```
2
1
```

Sample Output

```
1 2
1 3
2 3

1
```