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Problem Set #1	Date: 08/18/2011

1 Finding Prime Numbers

Description

You want to find n-th prime number, given a positive integer n. For your information, the first ten prime numbers are: $2, 3, 5, 7, 11, 13, 17, 19, 23, 29$.

Input Format

A single integer n is given. You may assume that $1 \leq n \leq 1,000$.

Output Format

Output a single integer, which is the n-th prime number.

Sample Input 1

```
1
```

Sample Output 1

```
2
```

Sample Input 2

```
5
```

Sample Output 2

```
11
```

2 Number Tornado

Description

Given an odd number n, you want to output all natural numbers from 1 to n^2, inclusive, in a particular pattern, an n by n grid.

You want to have 1 at the very middle of the grid, and then you are going to have the following numbers in a tornado-like pattern, clockwise. See the sample output for more information.

Input Format

You are given a single integer n, where $3 \leq n \leq 13$, and n is always odd.

Output Format

You output the numbers as if they were put in n by n grid.

Note

As in sample outputs, you may need to add an extra whitespace in front of smaller numbers as their lengths are shorter. You can specify how long each decimal number should be in characters, including the white-spaces, by using %#d where # is the length you specify. For instance, if you used %3d and output value 3, then it will first print two white-spaces and then 3, to make its total length 3 bytes long.

Sample Input 1

```
3
```

Sample Output 1

```
9 2 3
8 1 4
7 6 5
```

Sample Input 2

```
5
```

Sample Output 2

```
25 10 11 12 13
```

```
24  9  2  3 14
23  8  1  4 15
22  7  6  5 16
21 20 19 18 17
```

3 Pascal's Triangle

Description

Given an integer n, output the first n lines of Pascal's triangle.

Input Format

A single integer n is given. You may assume that $1 \leq n \leq 20$.

Output Format

Output Pascal's triangle.

Sample Input

```
5
```

Sample Output

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
```