2 Factors : 1, No. itself

Integer (N) → Prime

(N)

~~1~~	1	→ 1
2	1, 2	→ 2
3	1, 3	→ 2
~~4~~	1, 2, 4	→ 3
5	1, 5	→ 2
~~6~~	1, 2, 3, 6	→ 4

cnt = 0;

Using loops

count++;

N%i==0

N

i : 1 ...... N

2

1 ...... N

Cnt == 2

1 * (x) = 36

N/i

i

N/i

36

1 2 3 4 6 9 12 18 36

a 36/1 b

1 * 36 = 36

2 * 18 = 36

3 * 12 = 36

4 * 9 = 36 cnt += 2

Basic

6 6 → count++

a*b = N

a*b = N

b = N/a

a ≤ b

a ≤ N/a

$a^2 \le N$

$a \le \sqrt{N}$

10^7..

Optimisation

1 2 3 ..... 10^7

1 ...... $10^{3.5}$

```
i: 1 .... √N

if (n % i == 0)
{
    count++;
    int f2 = n/i;
    if (f2 != i)
    {
        count++;
    }
}
```

Cnt == 2 Prime

1 36

1 N

1

Not Prime

2 18
3 12
4 9
6 6

Cnt > 2

1.... 10

n → Prime

N = 10

N 1........ N

2 3 5 7

Pattern Printing

N=5

i stars

N=7

```
1  *
2  * *
3  * * *
4  * * * *
5  * * * * *
```

```
*
* *
* * *
* * * *
* * * * *
* * * * * *
* * * * * * *
```

```
for(int i=1; i<=N; i++)
{
    for(int j=1; j<=i; j++)
    {
        cout << "*";
    }
    cout << endl;
}
```

-2, -1, 0

N=5

```
5  * * * * *
4  * * * *
3  * * *
2  * *
1  *
```

```
for i: 1.... N
{
    // spaces (N-i)
    for k: 1... N-i
        cout << " ";
    // i stars
    for j: 1 ... i
        cout << "*";
}
```

n-i

```
1  _ _ _ _ *
2  _ _ _ * *
3  _ _ * * *
4  _ * * * *
5  * * * * *
```

i stars

N×N

i stars

```
1  * * * * *  5
2    * * * *  4
3      * * *  3
4        * *  2
5          *  1
```

Reverse

2

```
A
AB
ABC
ABCD
ABCDE
```

```
1
12
123
1234
12345
```

```
1  A
2  B C
3  C D E
   D E F G
   E F G H I
```

'A' + i - 1

1...N

N-1 ... 1

```
1  _ _ _ _ *
2  _ _ _ * * *
3  _ _ * * * * *
4  _ * * * * * * *
5  * * * * * * * * *
4    * * * * * * *
3      * * * * *
2        * * *
1          *
```

Space: N-1, N-2, N-3, N-4, N-5

Stars: 1 3 5 7 9

N-1

$2i-1$

1. Direct (i, j)
2. Space (i, k, j)
3. Row - Col
4. 2D-Array

10 Questions

N=5

	1	2	3	4	5
1	*	_	_	_	*
2	_	*	_	*	_
3	_	_	*	_	_
4	_	*	_	*	_
5	*	_	_	_	*

```
for i: 1... N
    for j: 1 ... N
        if( i == j or i + j == N+1)
            star
        else
            space
```

1

5-5