Pattern 1
Q.1

i	O/P					j	
1	1					1	1
2	2					1	2
3	2	3				1	3
4	2	3	4			1	4
5	2	3	4	5		1	5

for(int i=1, i<=5, i++)   for(int j=1, j<=i, j+

Code

```
for(int i=1, i<=5, i++)
for(int i=1, i<=5, i++)
{
    for(int j=1, j<=i, j++)
    {
        S.O.P(j);
    }
    S.O.P.ln("")
    S.O.Pln("  ")
}
```

Pattern 4
Q.2

				O/P
1				
2	2			
3	3	3		
4	4	4	4	
5	5	5	5 · 5	

Code

```
for(int i=1, i<=5, i++){
    for(int j=1, j<=i+0, j++)
    {
        S.O.P(i);
    }
    S.O.Pln("  ");
}
```

Pattern 3.

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

Code
```
for (int i=1 ; i<=5 ; i++)
{
    for (int j=1 ; j<=i ; j++)
    {
        S.O.P (" * ");
    }
    S.O.Pln("  ");
}
```

Pattern 14

i	j					i — j
5	1	2	3	4	5	1 - 5
4	1	2	3	4		1 - 4
3	1	2	3			1 - 3
2	1	2				1 - 2
1	1					1 - 1

Code
```
for (int i=5 ; i>=1 ; i--)
{
    for (int j=1 ; j<=i ; j++)
    {
        S.O.P (i);
    }
    S.O.Pln("  ");
}
```

Pattern 2

```
0
1 | A
2 | A B
3 | A B C
4 | A B C D
5 | A B C D E
```

```
j
1 - 1
1 - 2
1 - 3
1 - 4
1 - 5
```

1st Method

```
for ( int i=1 ; i<=5 ; i++ )
{
    for ( int j=1 ; j<=i ; j++ )
    {
        S.O.P ( (char) (64+j) );
    }
    S.O.Pln ("  ");
}
```

using typecasting

2nd method

```
for ( char i=A ; i=E ; i++ )
{
    for ( char j=A ; j<=i ; j++ )
    {
        S.O.P (j);
    }
    S.O.Pln ("  ");
}
```

using character

Pattern 5

i					j
(1)	A				(ii) 1-1
2	B B				1-2
3	C C C				1-3
4	D D D D				1-4
(5)	E E E E E				1-5

code i)
```
for (int i=1; i<=5; i++)
{
    for (int j=1; j<=i; j++)
    {
        S.O.P( (char) (64+j));
    }
    S.O.Pln("  ");
}
```

code ii)
```
for (char i=A; i=E; i++)
{
    for (char j=A; j<=i; j++)
    {
        S.O.P(i);
    }
    S.O.Pln("  ");
}
```

Pattern 6

```
i                              j
①      - - - - - *         ①  1 1
2      - - - - * *         1 - 2
3      - - - * * *         1 - 3
4      - - * * * *         1 - 4
⑤      - * * * * *         1 - 5
        k-space
```

```
for (int i=1; i<= 5; i++)
{
    for(int k=1; k<=5-i ; k++)
    {
        S.O.P ( "    " );
    }
    for (int j=1; k=i; j++)
    {
        S.O.P ("*");
    }
    S.O.Pln (" ");
}
```

Pattern 7

```
i                              j
①      - - - - - 1         ①  1
2      - - - - 1 2         1 - 2
3      - - - 1 2 3         1 - 3
4      - - 1 2 3 4         1 - 4
⑤      - 1 2 3 4 5         1 - 5
            k loop for space
```

```
for(int i=1; i<= 5; i++)
{
    for (int k=1; k=5-i; k++)
    {
        S.O.P ("  ");
    }
    for (int j=1; j<=i; j++)
    {
        S.O.P (j+ " ");        S.O.Pln(" ");
    }
}
```

Pattern 12

```
    i
   (1) | - - - - 1              j
    2  | - - - 2  2         (1) - 1
    3  | - - 3  3  3         1 - 2
    4  | - 4  4  4  4        1 - 3
   (5) | 5  5  5  5  5       1 - 4
                            (1 - 5)
```

```java
import java.lang.*;

class Pattern
{
    Public static void main (String args[])
    {
        for (int i=1; i<=5; i++)
        {
            for (int k=1; k<=5-i; k++)
            {
                System.out.print(" ");
            }
            for (int j=1; j<=i; j++)
            {
                System.out.print(i + " ");
            }
            System.out.println();
        }
    }
}
```

Pattern 8

```
i   i
1  |- - - - 5        0 |=5  1-5
2  |- - - 4  5              4-5
3  |- - 3  4  5             3-5
4  |- 2  3  4  5            2-5
5  |1  2  3  4  5           1-5


⑤ |5                   |5
4 |4  5                 |4-5
3 |3  4  5              |3-5
2 |2  3  4  5           |2-5
① |1  2  3  4  5        |1-⑤
```

1)

```java
for(int i=5; i>=1; i--)
{
    for(int k=1; k<=5+i; k++)
    {
        S.O.P("  ");
    }
    for(int j=i; j<=5; j++)
    {
        S.O.P(j+ "  ");
    }
    S.O.Pln();
}
```

```
5 |- - - - - 5        |5
4 |- - - - 4  5       |4-5
3 |- - 3  4  5        |3-5
2 |- 2  3  4  5       |2-5
1 |1  2  3  4  5      |1-⑤
```

Pattern 9.

1	A					↓
2	A	B				1-2
3	A	B	C			1-3
4	A	B	C	D		1-4
5	A	B	C	D	E	1-5

```
for (int i=1; i<=5; i++)
{
    for (int k=1; k<=5-i; k++)
    {
        System.out.print(" ");
        for(int j=1; j<=i; j++)
        {
            System.out.print((char) (64+j) +" ");
        }
        System.out.println();
    }
}
```

Pattern 10.

5	-	-	-	-	E		5
4	-	-	-	D	E		4-5
3	-	-	C	D	E		3-5
2	-	B	C	D	E		2-5
1	A	B	C	D	E		1-5

```
for (int i=5; i>=1; i--)
{
    for (int k=1; k<=5+i; k++)
    {
        S.O.P(" ");
    }
    for (int j=i; j<=5; j++)
    {
        S.O.P((char)(64+j) + " ");
    }
    S.O.P();
}
}
```

5 >= 1

$R = 5 + 5$

$4 < 2 5 + 5$

Pattern II.

----*	1
* * *	3
* * * * *	5
* * * * * * *	7
* * * * * * * * *	9

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

Pattern 13

	A	
1		1
2	B B	1-2
3	C C C	1-3
4	D D D D	1-4
5	E E E E E	1-5

```
for (int i=1; i<=5; i++)
{
    for (int k=1; k<=5-i; k++)
    {
        S.O.P (" ");
    }
    for (int j=1; j<=i; j++)
    {
        S.O.P ((char) (64+i) + " ");
    }
    S.O. Pln();
}
```

Pattern 18

5	A	B	C	D	E	1 - 5
4	A	B	C	D .		1 - 4
3	A	B	C			1 - 3
2	A	B				1 - 2
1	A					1 - 1

```java
import java.lang.*;
class  Pattern
{
    ____*____

    {
        for (int i=5; i>=1; i--)
        {
            for (int j=1; j<=i; j++)
            {
                S.O.P ((char)(64+j) + " ");
            }
            S.O.Pln();
        }
    }
}
```

Pattern 15

1		5	4	3	2	1	5-1
2		5	4	3	2		5-2
3		5	4	3			5-3
4		5	4				5-4
5		5					5-0

```
for (int i=1; i<=5; i++)
{
    for (int j=5; j>=1; j--)
    {
        S.O.P(j+ "  ");
    }
    S.O.Pln();
}
```

Pattern 16

5	5						5
4	5	4					5-4
3	5	4	3				5-3
2	5	4	3	2			5-2
1	5	4	3	2	1		5-1

```
for (int i=5; i>=1; i--)
{
    for(int j=5; j>=i; j--)
    {
        S.O.P(j+ "  ");
    }
    S.O.Pln();
}
```