Print all digits from end

% → extract the last digit

/ → remove the last digit

7654 → 4
5
6
7

n

init i = n

7654%10 ⇒ 4

7654/10 = 765

765%10 = 5

765/10 = 76

76%10 = 6

76/10 = 7

7%10 = 7

7/10 = 0.7

0 → stop

```java
Scanner s = new Scanner(System.in);
int n = s.nextInt();

int i = n;  // initialization
while(i != 0){  //condition
    int digit = i % 10;
    System.out.println(digit);
    i /= 10; // update
}
```

o/p → 4
3
2
1

n = 1234

i = 1234 != 0 T

d = 1234 % 10 = 4

1234 / 10 = 123

i = 123 != 0 T

d = 123 % 10 = 3

123 / 10 = 12

i = 12 != 0 T

d = 12 % 10 = 2

12 / 10 = 1

i = 1 != 0 T

d = 1 % 10 = 1

1 / 10 = 0

i = 0 != 0 F

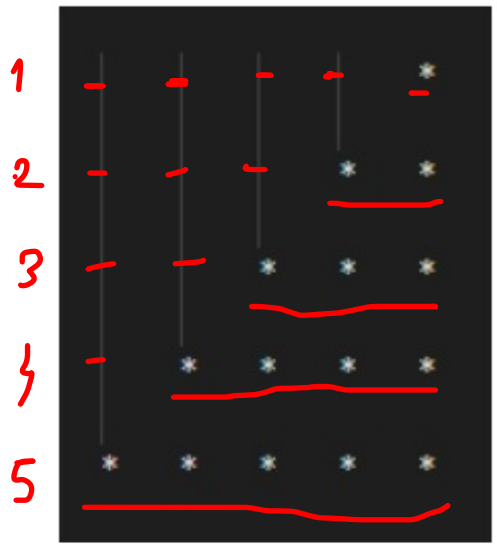
```java
int n;

int digits = 0;
int i = n;
while(i != 0){
    i =/ 10;
    digits++;
}
syso(digits);
```

↗ no. of digits

GKSTR20 Pattern_5

n = 5



n - i => 5 - 1 = 4

5 - 2 = 3

5 - 5 = 0

```
Row: for(int i=1; i<=n; i++){
    Spaces for(int j=1; j<=n-i; j++){
        Syso(" ");
    }
    Star for(int k=1; k<=i; k++){
        Syso("*");
    }
}
```

*

* *

* * *

1 (1<=1) T

k = 2 <= 2

```java
Scanner s = new Scanner(System.in);
int n = s.nextInt();

// for rows
for(int i = 1; i <= n; i++){
    // print spaces
    for(int j = 1; j <= n - i; j++){
        System.out.print(" ");
    }

    // print stars
    for(int k = 1; k <= i; k++){
        System.out.print("*");
    }
    System.out.println();
}
```

n = 3

i = 1 ≤ 3 T

j = 1 ≤ 3-1 = 2 T

2 ≤ 2 T

3 ≤ 2 F

k = 1 ≤ 1 T

2 ≤ 2 F

i = 2 ≤ 3 T

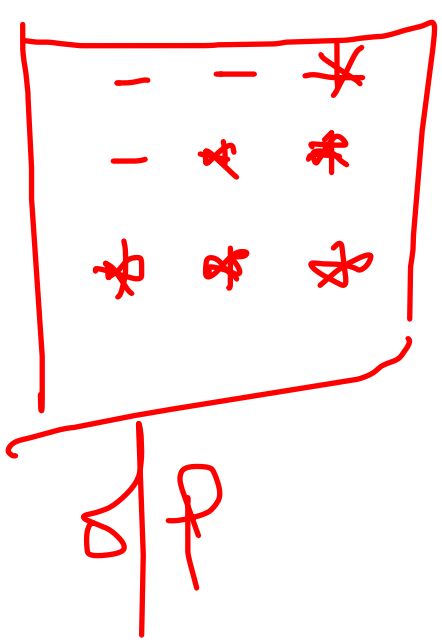
j = 1 ≤ 1 T

2 ≤ 1 F

k = 1 ≤ 2 T

2 ≤ 2 T

3 ≤ 2 F



i = 3 ≤ 3 T

j = 1 ≤ 0 F

k = 1 ≤ 3 T

2 ≤ 3 T

3 ≤ 3 T

4 ≤ 3 F

i = 4 ≤ 3 F

Pattern 8 - Print a hollow square without top

n = 5

```
0 *   *
1 *   *
2 *   *
3 *   *
4 *****
  01234
```

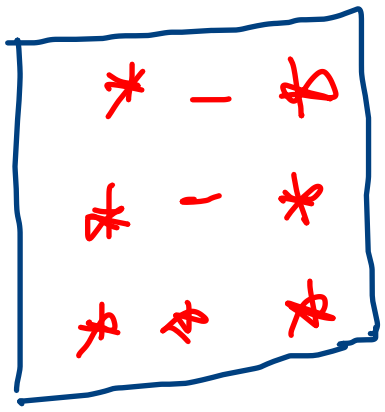
```
for(int i=0; i<n-1; i++){
    sysout("*");
}
for(int i=0; i<n-2; i++){
    for(int j=0; j<n; j++){
        sysout(" ");
    }
    sysout("*");
    sysout();
}
Last line
for(int i=0; i<n; i++){
    sysout("*");
}
```

n = 5 - 2 = 3

```java
Scanner s = new Scanner(System.in);
int n = s.nextInt();

// for rows
for(int i = 0; i < n - 1; i++){
    // first col star
    System.out.print("*");
    // print spaces
    for(int j = 0; j < n - 2; j++){
        System.out.print(" ");
    }
    System.out.println("*");
}

// print last row with all stars
for(int i = 0; i< n; i++){
    System.out.print("*");
}
System.out.println();
}
```



→ o/p

n = 3

i = 0 < 2 T

j = 0 < 1 T

1 < 1 F

i = 1 < 2 T

j = 0 < 1 T

1 < 1 F

i = 2 < 2 F

i = 0 < 3 T

1 < 3 T

2 < 3 T

3 < 3 F