Revision.

for loop with char.

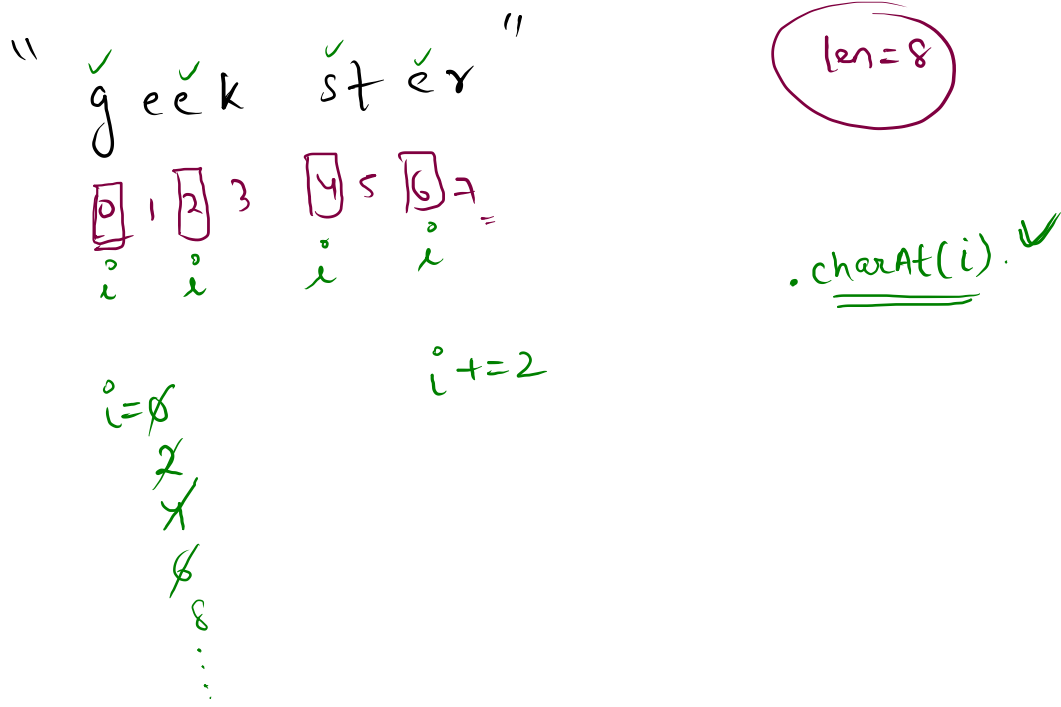
for loop with String

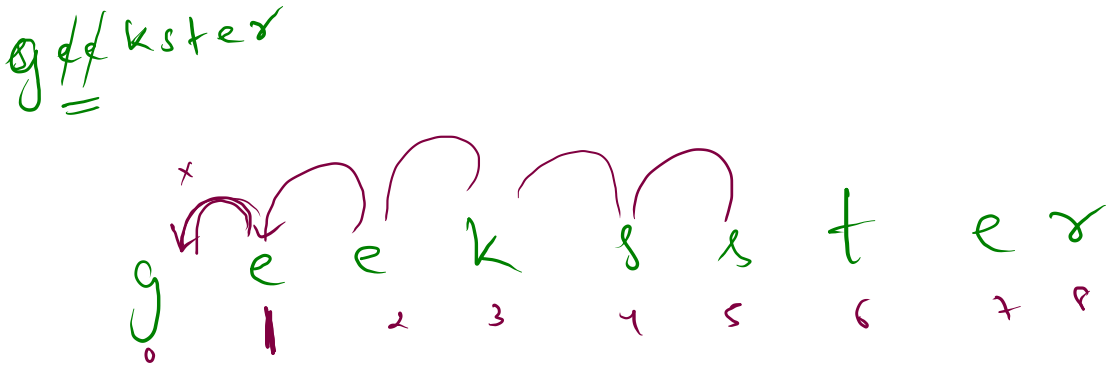
Sample Input 0

```
geekster
```

Sample Output 0

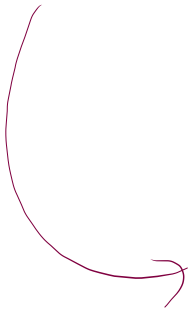
```
gese
```





g eks

'a' to 'z'



```
for ( char ch = 'a' ; ch <= 'z' ; ch++)
{
    Sysо(ch)
}
```

```java
public class Main
{
    public static void main(String[] args) {

        for(int i  = 1; i <= 3; ){
            System.out.println(i);
            i++;
        }

    }
}
```

i = 1 2 3 4

i ≤ 3

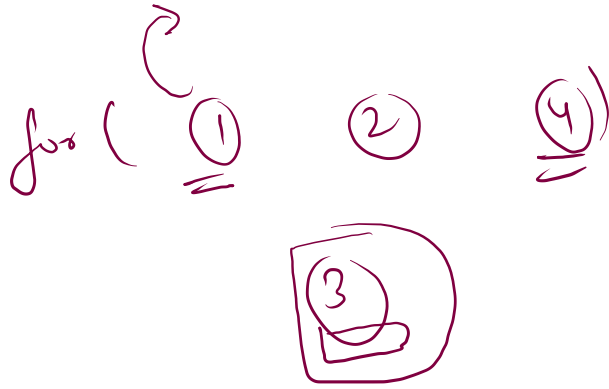
1 ≤ 3 ✓

2 ≤ 3 ✓

3 ≤ 3 ✓

4 ≤ 3 ✗

```java
public class Main
{
    public static void main(String[] args) {
        int i  = 1;

        for(  ; i <= 3; ){
            System.out.println(i);
            i++;
        }

        System.out.println(i);

    }
}
```



nth power of 2

i/p { n

n = 3

↳ (8) $= 2^3$

n = 4

$2^4 = (16)$

n = 0

$2^0 = 1$

n = 2

$2^n = 2^2 = (4)$

n = 3 → (8)

print once.

[2 x 2 x 2]

= (8)

n = 4 → (16)

[2 x 2 x 2 x 2] ✓

= (16)

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();// n=3

    int ans = 1;
    for(int i = 1; i <= n; i++){
        ans *= 2;
    }
    System.out.println(ans);

}
}
```

ans = 1 2 4 8

1 2 3 .... n

ans = ans * 2

= 1 * 2 = 2

ans = 1

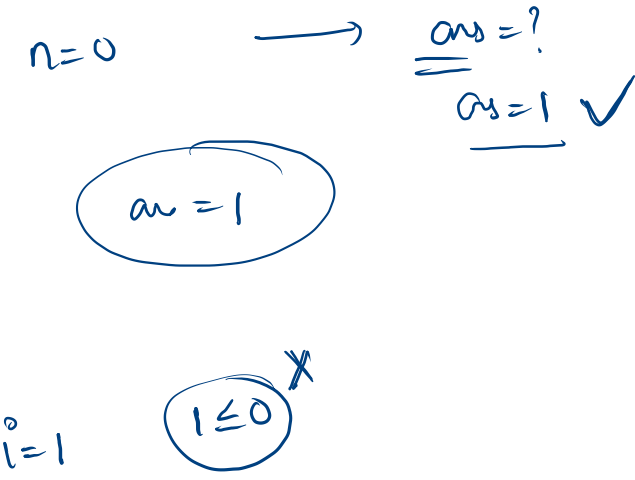
1 * x = x

ans = 4 * 2

= 8

ans = 2 * 2

```java
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int ans = 1;
        for(int i = 1; i <= n; i++){
            ans *= 2;
        }
        System.out.println(ans);

    }
}
```



n = 1

ans = 1 ← n = 0

$2^1 = ?$ → 2

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int ans = 1;
        for(int i = 1; i <= n; i++){
            ans *= 2;
        }
        System.out.println(ans);

    }
}
```

ans = 1 2

ans *= 2

i = 1 2

i ≤ n

2 ≤ 1 ✗

1 ≤ 1 ✓

i = 1st → 2

ans *= 2 = 2

n=2

```
6   public static void main(String[] args) {
7       Scanner scn = new Scanner(System.in);
8       int n = scn.nextInt(); //2
9
10      int ans = 1;
11      for(int i = 1; i <= n; i++){
12          ans *= 2;
13
14      }
15      System.out.println(ans);
16
17
18  }
```

$2^2 = 4$? ✓

ans = ✗ ✗ 4

i = ✗ ✗ 3

1 ≤ 2 ✓

2 ≤ 2 ✓

3 ≤ 2 ✗

n = 0

$2^0 = 1$ ✓

ans = 1

i = 1

1 ≤ 0 ✗

```
6   public static void main(String[] args) {
7       Scanner scn = new Scanner(System.in);
8       int n = scn.nextInt();// 0
9
10      int ans = 1;
11      for(int i = 1; i <= n; i++){
12          ans *= 2;
13
14      }
15      System.out.println(ans);
16
17
18  }
```

$n = 3$

$2^3 = 8$

```
6   public static void main(String[] args) {
7       Scanner scn = new Scanner(System.in);
8       int n = scn.nextInt();
9
10      int ans = 1;
11      for(int i = 1; i <= n; i++){
12          ans *= 2;
13
14      }
15      System.out.println(ans);
16
17
18  }
```

ans = 1 2 4 8

i = 1 2 3 4

$2^1 = 2$

$2^2 = 4$

$1 \leq 3$ ✓

$2 \leq 3$ ✓

$3 \leq 3$ ✓

$4 \leq 3$ ✗

Print powers of 2 less than n

Imagine you are a computer science teacher and one of your students, Ben, is learning about loops and control structures. You decide to give him a problem to work on as practice.

The problem is as follows: Ben needs to write a program that takes in an integer (n) as input and prints out all the powers of 2 that are less than n. For example, if **n** is **10**, the program should print out `1, 2, 4, and 8`.

Sample Input 0

```
20
```

Sample Output 0

```
1 2 4 8 16
```

i/p n

2^0 2^1 2^2 .... < n

n = 10

2^0 2^1 2^2 2^3

1 2 4 8

n = 20

1 2 4 8 16

n=10

i = 1 2 4 8 16 ; i < n ; i *= 2

System (i)

1 2 4 8

```
6       public static void main(String[] args) {
7           Scanner scn =  new Scanner(System.in);
8           int n = scn.nextInt();
9
10          for(int i = 1; i < n; i *= 2){
11              System.out.print(i + " ");
12          }
13      }
14  }
```

1 < 10 ✓

2 < 10 ✓

4 < 10 ✓

8 < 10 ✓

16 < 10 ✗

i = 1 2 4 8 16

pen or paper.

i *= 2

i = i * 2

Print n/3

Problem | Submissions | Leaderboard | Discussions

Imagine Alice is a computer science student and she is trying to understand a concept related to loops. Her friend Bob, who is a computer science professor, gives her the following problem:

"Write a program that takes an integer input from the user. The program should keep dividing the integer by **3** and printing the resultant value on each iteration until the value is greater than **0**.

Can you write a solution for this problem?"

Note: Start printing from **n**, keep on updating **n** by dividing **n** by **3** each time, and print the the updated value of **n** each time.

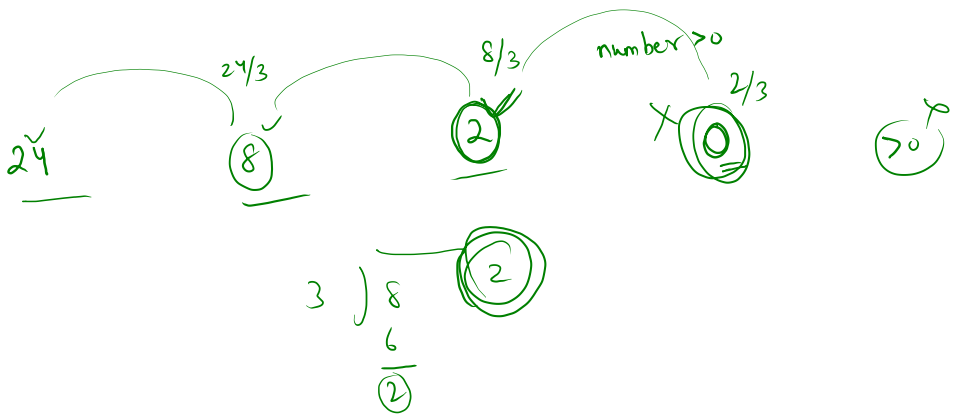
Sample Input 0

```
24
```

Sample Output 0

```
24 8 2
```

i/p { n = 24



n = 16

n = 8

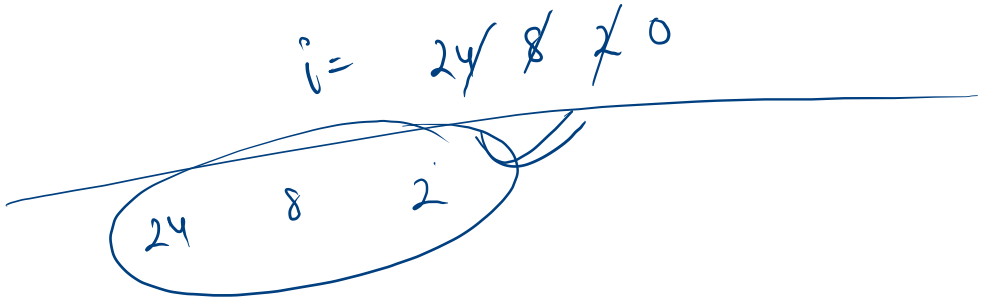
n = 14

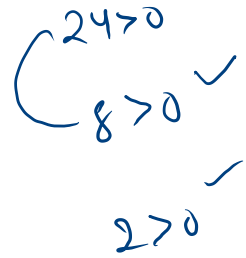
n = 7 0

starting pt. = n

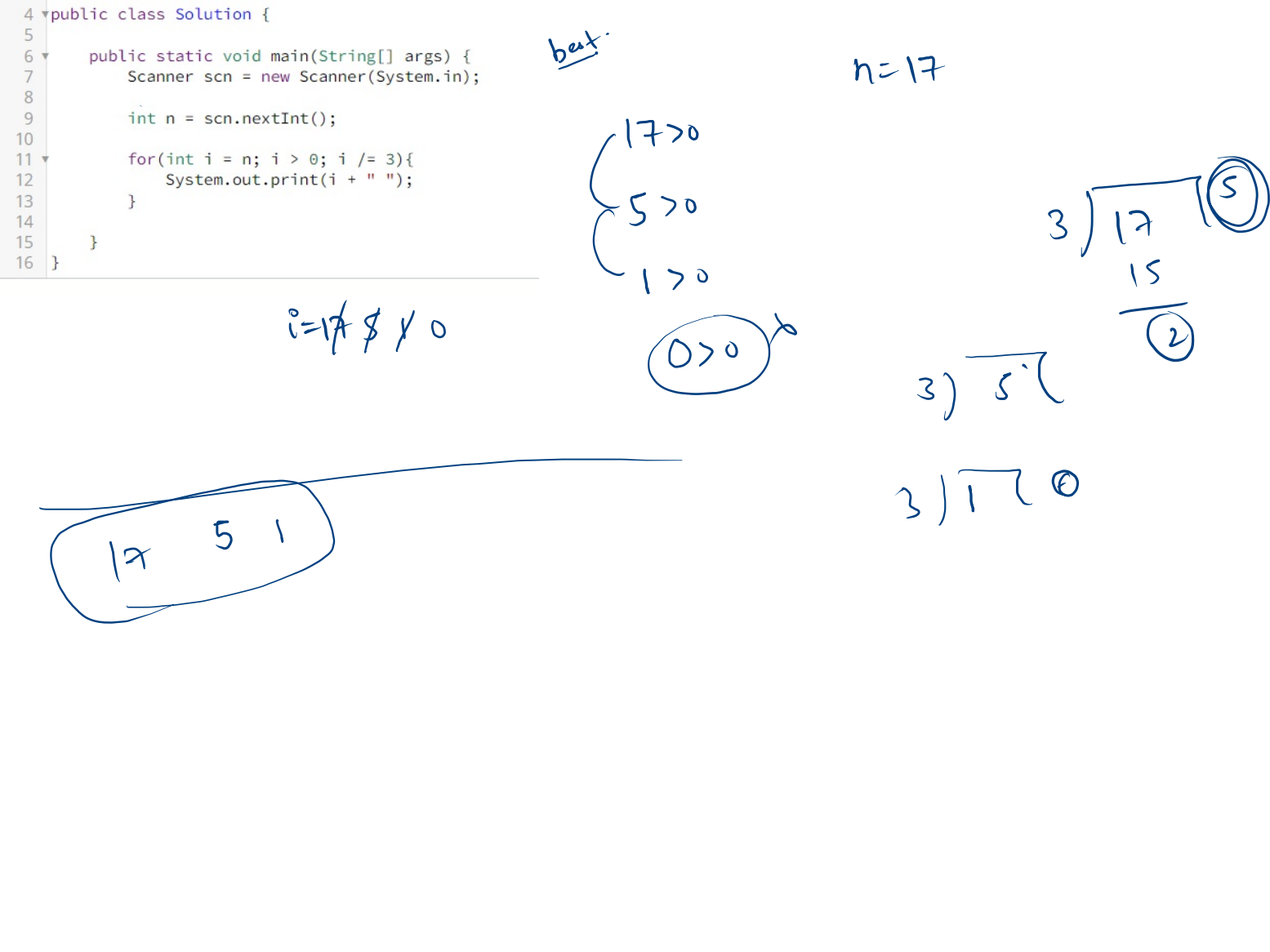
number > 0 ; i/3

```java
public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);

        int n = scn.nextInt();

        for(int i = n; i > 0; i /= 3){
            System.out.print(i + " ");
        }

    }
}
```





```java
public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);

        int n = scn.nextInt();

        for(int i = n; i > 0; i /= 3){
            System.out.print(i + " ");
        }

    }
}
```



Multiples of 3, 5 and Both 3 and 5

Meet Maria, a math teacher who is preparing a lesson plan for her students. One of the activities she wants to include is a challenge for her students to find all the multiples of 3, 5, and both 3 and 5 within a given range. She has decided to use a program to generate the list of multiples for her students. Can you help Maria write a program that takes in an integer **n** and returns a list of all the multiples of 3, 5, and both **3** and **5**, starting from 1 and going up to **n**?

n = 25

i/p : n

n=25

[1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25]

3
5
both(3,5)

5 % 3 == 0

20 % 5 == 0

5 % 5 == 0

Sample Input 0

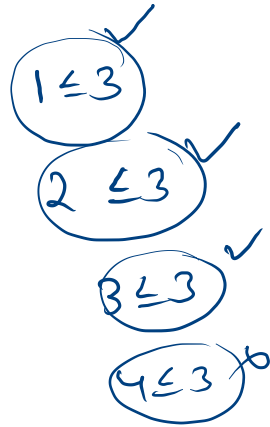
```
15
```

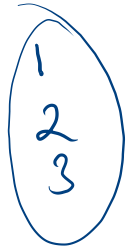
Sample Output 0

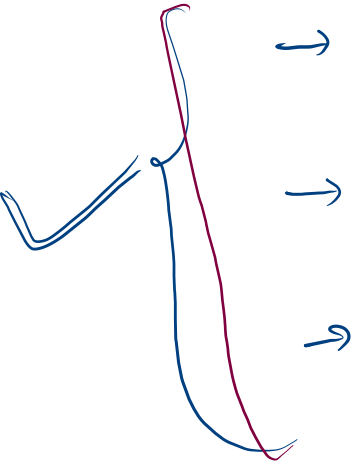
```
3 5 6 9 10 12 15
```

```java
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        for(int i = 1; i <= n; i++){
            if(i % 3 == 0 || i % 5 == 0){
                System.out.print(i + " ");
            }
        }


    }
}
```

```java
public class Main
{
    public static void main(String[] args) {
        int i  = 1;

        for(  ; i <= 3; ){
            System.out.println(i);
            i++;
        }


    }
}
```







→ which is better for / while ?

→ when to we while / for ?

→ Why we are using while loop?

loop.

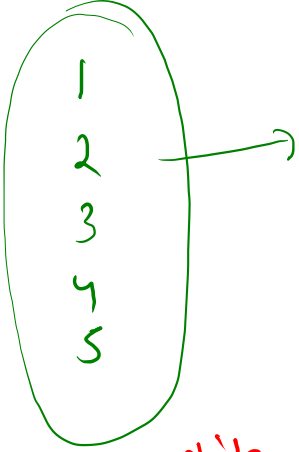
↳ while.

1. Syntax.

```
while ( condition )
{
    body.
}
```

(1) (2)

for (① ; ② , ④)
{
③
}



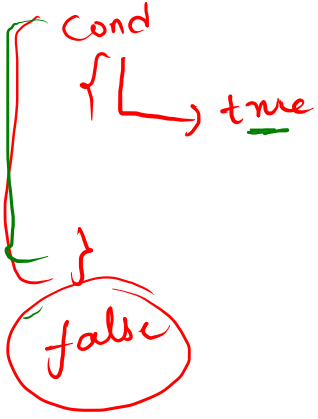
for.

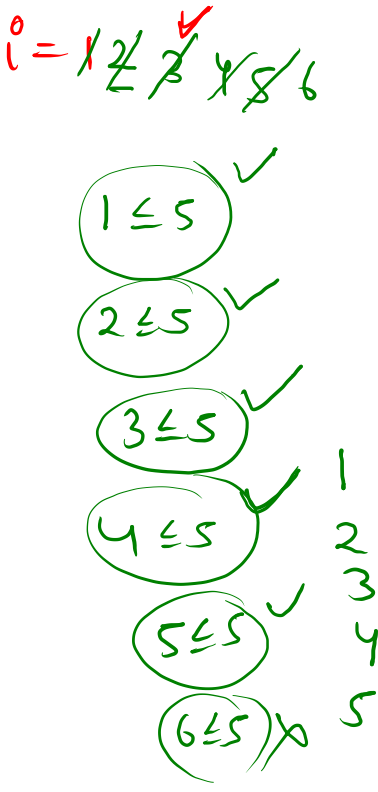
```
5
6       for(int i  = 1  ; i <= 5;i++; ){
7           System.out.println(i);
8
9       }
10
```

while. — 2 condith

body.

```java
int i  = 1;

while( i <= 5){
    System.out.println(i);
    i++;
}
```





```java
public static void main(String[] args) {
    int i  = 1;

    while( i <= 5){
       System.out.println(i);

    }
```

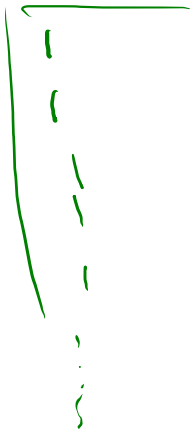
i=1

1 ≤ 5 ✓

1 ≤ 5 ✓

1 ≤ 5 ✓

1 ≤ 5 ✓



```java
public class Main{
    public static void main(String [] args){
        // System.out.println("Aman");

        int i = 1;
        int a = 40;
        while(i <= 3){


            System.out.println(a);
            a = a + 5;
            System.out.println(i);

            i++;

        }
    }
}
```