For Loop

Yoga Nand Sattvik	Shaik Lal Jan Basha
Mohona Paul	jeevanantham
Nikhil D	Deepshikha Arora
Naveen	Anil
Hemanth T	Shivanand Patil
Manohar A N	Induja
Bhushan Ganesh Shelar	Subhash
Vishnu Kumar P	Dhasthagiri Reddy
Hemant Verma	Sai Kiran JNR
Prasanna Kumar D R	Iti
Chandra Shekhar Bhatt	Pushpa
Ved Verma	Pranjul Kesharwani
ANUBHAV RAMNANI	Amreshwar
Srikant Kumar Pratihary	Dhanashree Sagane
Dev Raj Gaur	Praveen Kumar
Saurabh	Dhruv
Bhavesh Pandey	Manisha
Chirag	Shambhavi Belligatti
Arvind Venugopal	Rahul
Nutan	M S Haseeb Khan
Ayush Singh Sengar	Rishav Ghosh
Farzana kauser	Brajesh Mishra
Mahesh	Shivam Shiv

Rules

→ Q to QT

→ A to Private chat

→ Hands always on keyboard


```
// 1.        Initialisation
while ( // 2. ) {      condition
// 3.    Loop work
// 4.    Update
```

For loop

```
for ( Initialisation ; condition ; Update ) {
        Loop work
}
```

Q1> Given N as input, Print from 1 to N

```
public static void main (.... ) {
    // Initialise Scanner .....
    int n = scanner.nextInt();
    // while loop
    int num = 1;

    while (num <= n) {
        System.out.print (num + " ");
        num = num + 1;
    }
}
```

```
public static void main (.... ) {
    // Init scanner
    int n = scanner.nextInt();

    for (int num = 1; num <=n ; num += 1) {
        System.out.println (num + " ");
    }
}
```

// Print odd no. from 1 to N

```
public static void main (.... ) {
    // Init scanner
    int n = scanner.nextInt();

    for (int odd = 1; odd <=n ; odd +=2) {
        System.out.println (odd + " ");
    }
}
```

n = 5

odd	enter
1	✓
3	✓
5	✓
7	X

Q2> Given n, Print the factors of positive no. n

Factor of 4 ⟶ 1 2 ~~3~~ 4

divide a no. w/o leaving any remainder

Factors of 10 ⟶ 1 2 ~~3~~ ~~4~~ 5 ~~6~~ ~~7~~ ~~8~~ ~~9~~ 10

Factors of 24 ⟶ 1 2 3 4 6 8 12 24

How to know if f is a factor of number n

n % f == 0 ⟶ f is a factor of n
or f divides n w/o leaving remainder

```
public static void main(....) {
    // initialise scanner .....
    int n = scanner.nextInt();

    for (int f = 1; f <= n; f += 1) {
        // check if f is a factor of n
        if (n % f == 0) {
            System.out.print(f + " ");
        }
    }
}
```

n = 6

f	enter	6 % f
1	✓	✓
2	✓	✓
3	✓	✓
4	✓	✗
5	✓	✗
6	✓	✓
7	✗	

If a no. N is divisible by 1 and itself only is called Prime Number

1 ⟶ 1 and itself only are factors

Is 1 a prime no.? no

A prime no. has factors count exactly == 2 { natural no}

Q3> How to check if a number is prime or not ?

n > 0

```
public static void main (.... ) {
    // Initialise Scanner .....
    int n = scanner.nextInt();
    int count = 0;
    for (int f = 1 ; f <= n ; f += 1) {
        // check if f is a factor of n
        if (n % f == 0) {
            count += 1;
        }
    }
    if (count == 2) {
        System.out.println ("YES");
    } else {
        System.out.println ("NO");
    }
}
```

n = 7

f	n % f	
1	7 % 1	✓
2	7 % 2	X
3	7 % 3	X
4	7 % 4	X
5	7 % 5	X
6	7 % 6	X
7	7 % 7	✓

n = 8

f	n % f	
1	8 % 1	✓
2	8 % 2	✓
3	8 % 3	X
4	8 % 4	✓
5	8 % 5	X
6	8 % 6	X
7	8 % 7	X
8	8 % 8	✓


```
public static void main (.... ) {
    // Initialise Scanner .....
    int n = scanner.nextInt();
    int count = 0;
    for (int f = 1 ; f <= n ; f += 1) {
        // check if f is a factor of n
        if (n % f == 0) {
            count += 1;
        }
    }
    if (count == 2) {
        System.out.println ("YES");
    } else {
        System.out.println ("NO");
    }
}
```

break and continue

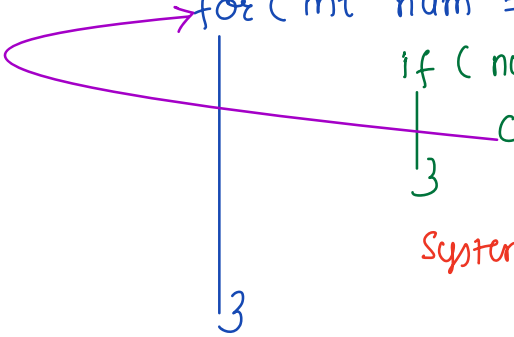
break ⟶ break keyword exits the loop

```
public static void main (.... ) {
    // initialise scanner .....
    int n = scanner.nextInt();
    int count = 0;
    for (int f = 1 ; f <= n ; f += 1) {
        if (n % f == 0) {
            count += 1;
        }
        if (count > 2) break;
    }
    if (count == 2) {
        System.out.println ("YES");
    } else {
        System.out.println ("NO");
    }
}
```

continue ⟶ continue skips the rest of the code inside loop {current iteration}

Q> Print all the even no. from 1 to N

```
int N = 10;
for(int num = 1; num <= N; num += 1) {
    if(num % 2 == 1) {// odd
        continue;
    }
    System.out.println(num);
}
```



Break ⟶ 22:37

How to solve questions with T test cases ?

Take input from the user T times and print the no. given by user

T = 3

1
2
3

output 1 2 3

```
public static void main (.... ) {
    // Initialise Scanner .....
    int T = scanner.nextInt();

    for (int t = 1 ; t <= T ; t++) {
        int n = scanner.nextInt();
        System.out.println(n);
    }
}
```

```
class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int T = scanner.nextInt();

        for (int t = 1; t <= T; t++) {
            int n = scanner.nextInt();
            // sum all the digits of n;
            int sum = 0;
            for (; n > 0; n /= 10) {
                int digit = n % 10;
                sum += digit;
            }
            System.out.println(sum);
        }
    }
}
```

Block

Scope of variables

→ Region of code in which the variable is accesible.

Block ⟶ region of code inside curly braces.

Case 1

```
public static void main (....) {
    int x = 10;
    int y = 15;
    {
        System.out.println (x + " " + y);
    }
}
```

Block

10 15

Case 2

```
public static void main (....) {
    int x = 10;
    {
        int y = 15;
        System.out.println (x + " " + y);
    }
    {
        System.out.println (x + " " + y);
    }
}
```

unable to find y

A) 10 15 / error

B) 10 15 / 10 error

C) error

Case 3

```
public static void main (....) {
    int x = 10;
    int y = 15;
    {
        y = 10;
        System.out.println( x + "  " + y);
    }
    {
        System.out.println( x + "  " + y);
    }
}
```

error	10 10	10 10
A	10 15	10 10
	B	C

Problem Solving Framework

Question ⟶ Understand the question { Input and Output }
⟶ Try to formulate any approach
⟶ Code it

25 mins

Got stuck anywhere in the above steps
⟶ Hints
⟶ Video solution
⟶ TA Help { video call }

⟶ WA group

⟶ Reach out to me