Today's agenda

- Problems
  - for loops
    - break / continue.

Q) Print Reverse

↳ Given an Integer N, Print all digits from Right to left.

ex: N = 3726

↳ 6

2

7

3

Ideal

↳ N : 253 → lastdigit = N % 10 = 3

N : 93725 → lastdigit : N%10 = 5

N = N/10 $\frac{93725}{10}$: 9372

```
p s v main() {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    if (n<0) { n = n*-1; }
    while (N>0) {
        int lastdigit = N%10;
        System.out.println(lastdigit);
        N = N/10;
    }
}
```

N : 93725

```
while (N>0) {
    int lastdigit : N%10;
    System.out.println(lastdigit);
    N: N/10;
}
```

N	lastdigit	Print
93725	5	5
9372	2	2
937	7	7
93	3	3
9	9	9
0		

Exit

~~lastdigit~~

⇒ A variable created inside loop gets deleted once the iteration is complete.

// for loop basics

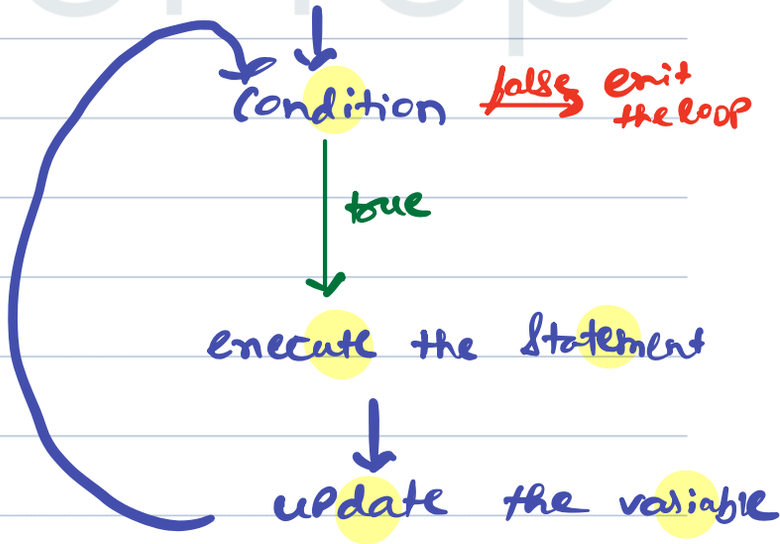
```
int i=0
while(i<=10){
    //Statement
    i++;
}
```

```
for(int i=0; i<=10; i++){
    //Statement
}
```

initialize

flow:

1 time: initialize i



Q) Print numbers from 1 to 5 using for loop.

```
for (int i=1; i<=5; i++) {
    System.out.println(i);
}
```

i	i<=5	
1	T	1
2	T	2
3	T	3
4	T	4
5	T	5
6	F	

Exit

Q) Count factors

↳ Given a positive number, Print all the factors of that number.

factors → numbers completely dividing N

Ex: N=12: 1 2 3 4 6 12

N=17: 1 17

Qui2 N=24: 1 2 3 4 6 8 12 24

Hidden

Minimum factor of N: 1

Maximum factor of N: N

N=10

i

1 ⟶ N%1 ⇒ 10%1 = 0 ✓

2 ⟶ N%2 ⇒ 10%2 = 0 ✓

3 ⟶ N%3 ⇒ 10%3 = 1 ✗✗

4 . . .

5

⋮

10 ⟶ N%10 ⇒ 10%10 = 0 ✓

//Pseudo code

```
P S V main ( ) {
    Scanner scn = new Scanner (System.in);
    int n = scn.nextInt();

    for(int i = 1; i <= N; i++) {
        if (n % i == 0) {
            System.out.println (i);
        }
    }
}
```

iteration count
N

↳ Reducing the iteration count is known as optimization.

Q) IsPrime

↳ Given a number N, Print "Prime" if the number is a Prime number else "Not Prime".

→ no. divisible by 1 & itself.

Ex: N: 3 → {1, 3} → Prime

N: 13 → {1, 13} → Prime

N: 30 → {1, 2, 3 ... 30} → Not Prime

Quiz: N: 1: Neither Prime nor Composite.

1° Idea

↳ Count the factors of N == 2 → Prime

else → Not Prime

//Pseudo code

```
P S V main ( ) {
    Scanner scn = new Scanner (System.in);
    int n = scn.nextInt();
    int count = 0;
    for (int i = 1; i <= N; i++) {
        if (n % i == 0) {
            System.out.println(i);
            count ++;
        }
    }
    if (count == 2) { S.O.P ("Prime"); }
    else { S.O.P ("not Prime"); }
}
```

iteration count
N

Break till 10:40 Pm

While vs For

⇓

both are same

```
int N= Sch.nextInt();
while(N<=10){
//Statement
N++;
}
```

+

loop variable is one of the input variable.

```
int N= Sch.nextInt();
for(int i=0; i<=10; N++){
//Statement
}
```

+

loop variable is being created.

// Break Statement

↳ The moment you execute break statement you exit the current loop.

```
for (int i=1; i<=5; i++){
    if (i==3){
        break;
    }
    System.out.println(i);
}
```

i	i<=5	Print
1	T	1
2	T	2
3	T	

Quiz 3:

```
for (int i=0; i<5; i++){
    if (i>2) {break;}
    System.out.print(i+" ");
}
```

i	i<5	print
0	T	0
1	T	1
2	T	2
3	T	

→

Quiz 4:

```
for (int i=0; i<5; i++){
    break;
    System.out.print(i+" ");
}
```

i	i<5	print
0	T	

→

//Continue Statement

↳ Skip and go to next iteration.

Ex:

```
for (int i=0; i<5; i++){
    if (i==2){
        continue;
    }
    System.out.println(i);
}
```

i	i<5	Print
0	T	0
1	T	1
2	T	
3	T	3
4	T	4
5	F	

↳ exit

Quiz 5:

|| → true dominated

```
for (int i=0; i<=5; i++){
        if (i==2 || i==3)
            continue;
        }
        System.out.println(i);
}
```

i	i<=5	print
0	T	0
1	T	1
2	T	-
3	T	-
4	T	4
5	T	5
6	F	

Exit

Quiz 6:

&& → false dominated

```
for (int i=0; i<=5; i++){
        if (i==2 && i==3)
            continue;
        }
        System.out.println(i);
}
```

i	i<=5	print
0	T	0
1	T	1
2	T	2
3	T	3
4	T	4
5	T	5
6	F	

Exit