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

//idea 1

N : 1 4 2 → lastdigit = N % 10 = 2

N = 2 6 3 4 8 → lastdigit = N % 10 = 8

N = 2 6 3 4 8

```
psv 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 = 26348

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

| N | lastdigit | |
|---|---|---|
| 26348 | ~~8~~ | 8 |
| 2634 | 4 | 4 |
| 263 | 3 | 3 |
| 26 | 6 | 6 |
| 2 | 2 | 2 |
| 0 | | |

Exit

5 times

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

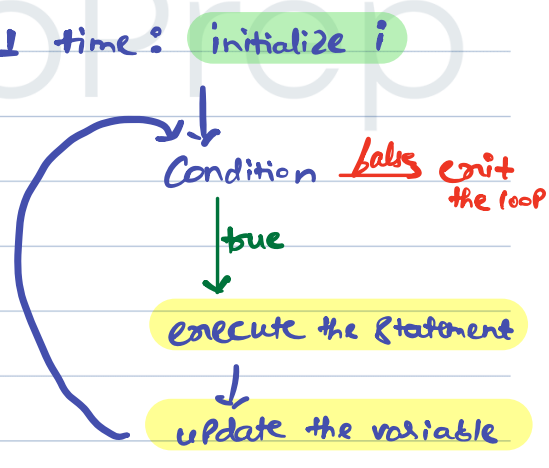
// For loop basics

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

    i++;
}
```

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

}
```

initialization
condition

flow:



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

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

(cond^n) (updation)

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

limit

3

1 5

2

3

4

Q) Count factors

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

↳ Numbers completely dividing N

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

N=17: 1 17

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

Minimum factor of N: 1

Maximum factor of N: N



//Idea1

N=10

1 ⟶ N%1 ⇒ 10%1 = 0 ✓

2 ⟶ N%2 ⇒ 10%2 : 0 ✓

3 ⟶ N%3 ⇒ 10%3 = 1

4 ⟶ N%4 ⇒ 10%4 = 2

5 ⟶ N%5 ⇒ 10%5 = 0 ✓

6 ⟶ N%6 ⇒ 10%6 = 4

7 ⟶ N%7 ⇒ 10%7 = 3

8 ⟶ N%8 ⇒ 10%8 = 2

9 ⟶ N%9 ⇒ 10%9 = 1

10 ⟶ N%10 ⇒ 10%10 = 0 ✓

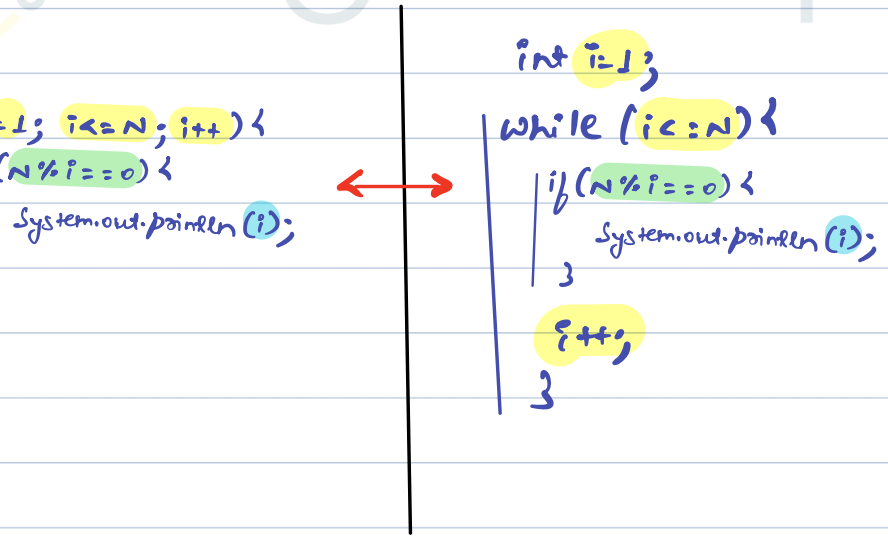
//Psuedo code

```
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 ↓

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



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

Break till 9:38 PM

**Q) IsPrime**

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

"Prime" → no. divisible by 1 & itself

Eg: N : 3 → {1, 3} → Prime

N : 13 → {1, 13} → Prime

N : 30 → {1, 2, ..... 30} → Not Prime

**Qui2:** N : 1 : Neither Prime nor Composite.

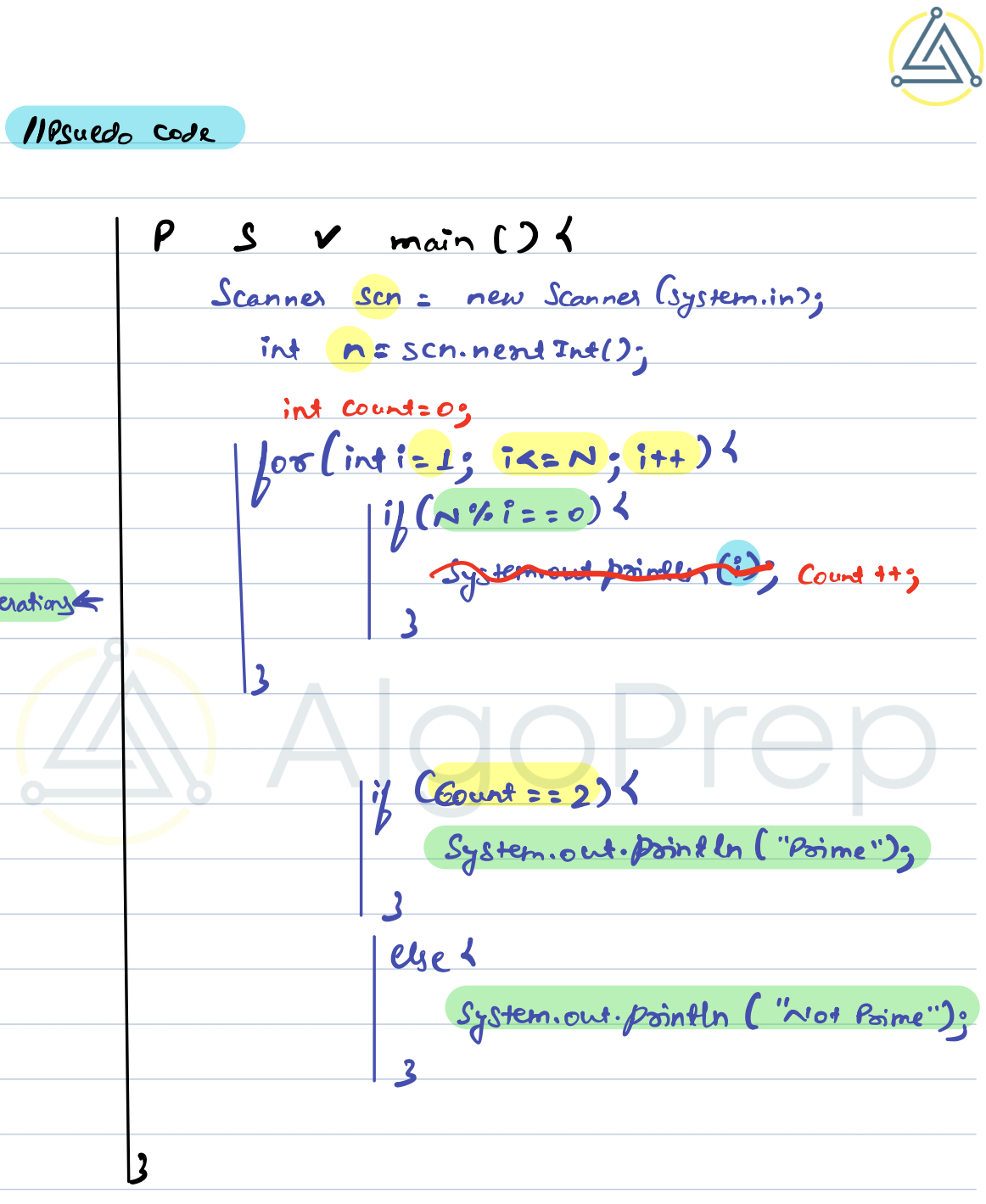
**Idea**

↳ Count the factors of N == 2 → Prime

else → Not Prime

N : 13 → Count of factor = 2 → Prime no.

N : 10 → Count of factor : 4 → 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++;
}
}
N iterations
if (count==2){
System.out.println("Prime");
}
else{
System.out.println("Not Prime");
}
}

## //Break Statement

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

(i: 1, 2, 3, 4, 5)

(1, 2, 3)

not allowed to change

**break:** The moment you **execute break** statement you **exit** the **current loop.**

**Ex:**

```
for (int i=1; i<10; i++) {

    System.out.println(i);
    if (i==2){break;}
}
```

| i | i<10 | |
|---|---|---|
| 1 | T | 1 |
| 2 | T | 2 |
| | | |
| | | |
| | | |

Quiz 3:

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

| i | i<5 | if |
|---|---|---|
| 0 | t | f |
| 1 | t | f |
| 2 | t | f |
| 3 | t | t |
| | | exit |

→ 0 1 2

Quiz 4:

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

| i | i<5 |
|---|---|
| 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 | if |
|---|---|---|
| 0 | t | f |
| 1 | t | f |
| 2 | t | t |
| 3 | t | f |
| 4 | t | f |
| 5 | f | |

exit

```
0
1
3
4
```

## Quiz 5:

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

| i | i<=5 | if |
|---|---|---|
| 0 | t | f |
| 1 | t | f |
| 2 | t | t |
| 3 | t | t |
| 4 | t | f |
| 5 | t | f |
| 6 | f | |

exit

```
0
1
4
5
```



## Quiz 6:

&& → false dominated

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

| i | i<=5 | if |
|---|---|---|
| 0 | t | f |
| 1 | t | f |
| 2 | t | f |
| 3 | t | f |
| 4 | t | f |
| 5 | t | f |
| 6 | f | |

exit

```
0
1
2
3
4
5
```