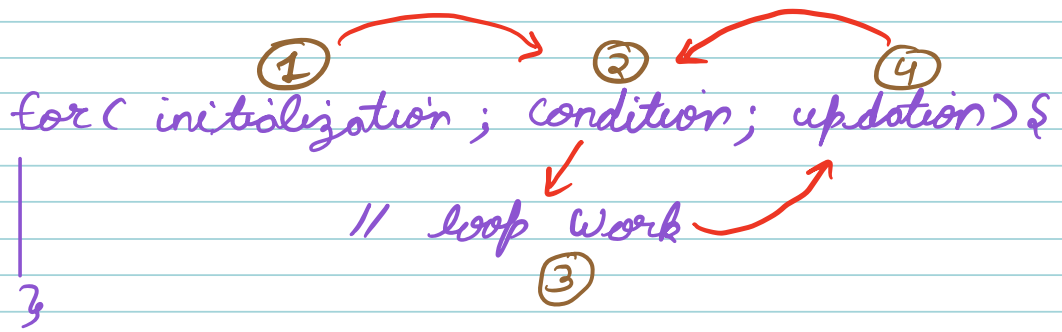
For Loop

Syntax Of While Loop

```
intialization (1)
while ( condition ) (2) {
    // loop work (3)
    // updation (4)
}
```

Syntax Of For Loop



Note :- For loop & while can be used interchangably.
It's like Water ↔ Jal

EXAMPLES

Ex1 :- Given N as input , print from 1 to N.

Ex :- N = 5 ↦ 1, 2, 3, 4, 5

CODE :-

```
N = input ;
for ( int i=1 ; i<=N ; i++){
    SOP( i);
}
```

★ In For loop, we can skip any Statement

```
N = input ;
for ( int i=1 ; i<=N ; ){
    SOP( i);
    i++;
}
```

Ex2 :- Given an input N, print odd Number

Ex N = 10 ↦ 1 3 5 7 9

Using while loop

```
int count = 1 ;
while (count <= N){
    SOP (count );
    count = count+2;
}
```

⟹

For loop

```
for ( int i=1 ; i<=N; i=i+2){
    SOP ( i);
}
```

FACTORS

↳ If X is a factor of N, then N should be multiple of X.

Example

6 → 1, 2, 3, 6

10 → 1, 2, 5, 10

QUIZ ⇒ 24 → 1, 2, 3, 4, 6, 8, 12, 24

Q Print all the factors of N.

Ex :- 10 → 1, 2, 5, 10

OBSERVATION :- ① It always within the Range of [1 N]

② N % x == 0

CODE

```
for (i=1; i<=N; i++){
    if (N%i==0) {
        sop(i+" ");
    }
}
```

PRIME NUMBER

WRONG → If a Number is divisible by 1 & itself then its prime

→ If this Statement is true then 1 is also prime.

CORRECT DEFINATION :- A prime no has only 2 Factors.

Ex = 1 → 1 ✗

2 → 1 2 ✓

6 → 1 2 3 6 ✗

11 → 1 11 ✓

Q Given a no. N, check if it is prime or not.

Ex → 2 ⟼ Yes

4 ⟼ No

OBSERVATION :- ① Exactly 2 Factors

int count = 0

```
for (i=1; i<=N; i++){
    if (N%i==0) {
        count = count+1;
    }
}
if (count==2){
    SOP ("Yes");
} else {
    SOP ("No");
}
```

BREAK

↳ It helps in Stoping the loop pre-maturely

(Note :- It breaks the immediate parent loop)

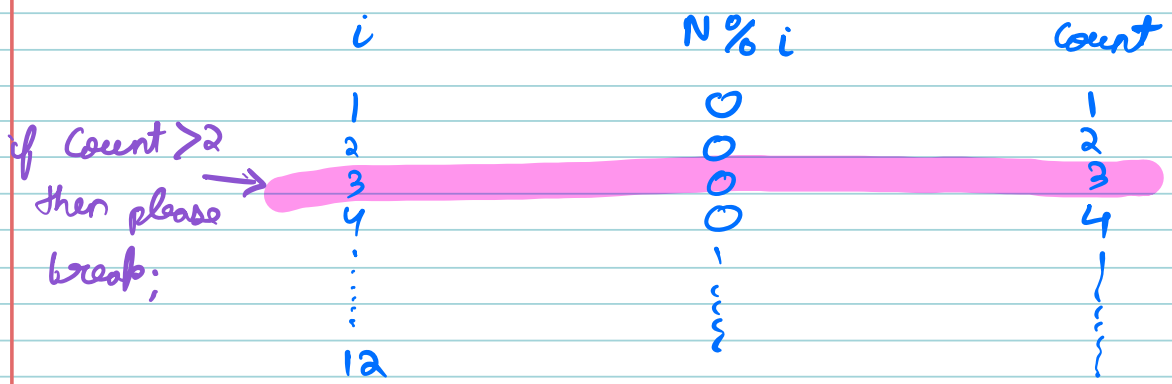
Ex 1

```
for (i=1; i<=4; i++) {
    SOP (i);
    break;
}
```

```
① for() {
    ② for() {
        ③ for() {
            break;
        }
    }
}
```

Q How break can help in improving the prime code ??

Ex = N = 12




```
int count = 0
for (i=1; i<=N; i++){
    if (N%i == 0) {
        count = count + 1;
    }
    if (count > 2) { break; }
}
if (count == 2) {
    SOP ("Yes");
} else {
    SOP ("No");
}
```

CONTINUE

↳ It helps in skipping the remaining lines of loop for particular iteration

Ex:- Print odd Nos from 1 to N.

Ex:- 10 ↦ 1 3 5 7 9

CODE :-

```
for ( i=1 ; i <= N ; i++ ) {
    if ( i%2 == 0 ) {
        continue ;
    }
    SOP ( i + " " );
}
```

Online IDE Notes

https://www.scaler.com/topics/java/online-java-compiler/?snippet_slug=313f02abf45491e1bf41