L4
Intermediate loops

Loops Continued

$$\frac{12}{10} = \textcircled{1}$$

$\cancel{1.2}$

Count the number of digits of a positive number.

digits = 2

$$10 \overline{\smash{\big)}\, 12} \; 1$$
$$\underline{-10}$$
$$2 \longrightarrow \text{Remainder}$$

$N = 12$

int last Digit = $n \% 10$

Remove last Digit $\longrightarrow$ n = $\boxed{\textcircled{n/10}}$

n = $\textcircled{n/10}$ $\boxed{n \geq 1}$

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int count = 0;

12

Digits → while

int x = number;

while (x > 0)
{
    x = x / 10;
    count = count + 1;
}

last digit
removed

x = 0

count = 2

Loops Continued

A sum of digits of a positive number.

$$1 \quad 2 \quad 7$$
$$\downarrow \quad \downarrow \quad \downarrow$$
$$1 + 2 + 7$$
$$\downarrow$$
while loop

```
int sum = 10;          N = 1        10

while ( N > 0 )
{
  int lastDigit = N % 10;
  sum = sum + lastDigit;
  N = N/10;
}
```

12.7̶

127
——
10   ↓

(12)

10 | 1 | 0
  − 0
  ——
    1

        10 | 127 | 12
           − 120
           ————
               7 ——— last
                      digit

1 % 10

127 % 10
————
   ↓
  (7)

Prefix / Postfix

Increment Operator

int a = 5;

int b = a ++;

S.O.Pln (a + " " + b);

↓   ↓

6   5
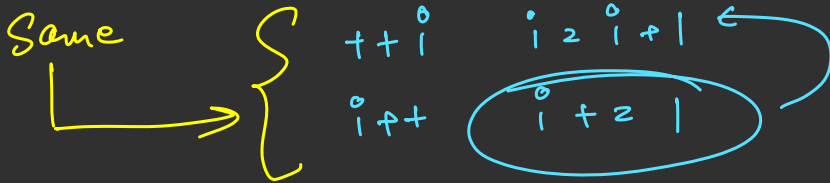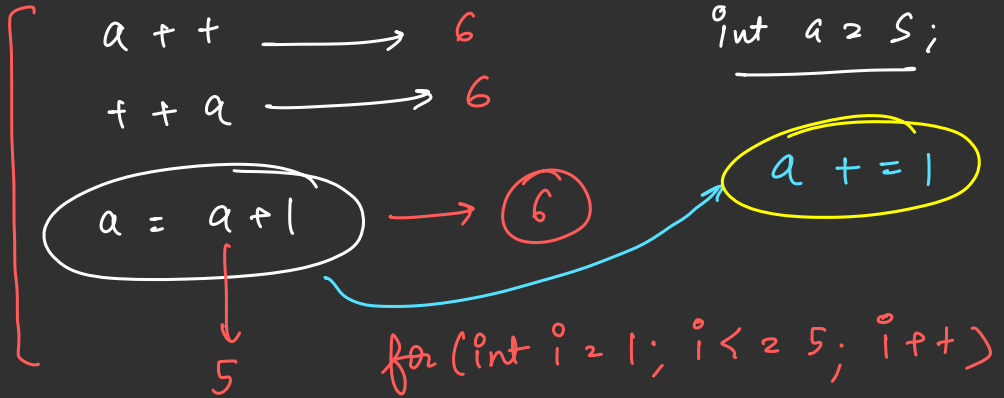
Postfix / Prefix

Inc Baad me

6

int a = 5; ⟶ 6 ⟶ 7

int b = 6; ⟶ 7

int c = ++a + a++ + b++;

$$\downarrow \qquad \downarrow \qquad \downarrow$$

6   6   6

18

$$a++ \longrightarrow 6$$

$$++a \longrightarrow 6$$

int a = 5;

$$\boxed{a = a+1} \longrightarrow \text{\textcircled{6}}$$

$$\boxed{a += 1}$$

5

for (int i = 1; i <= 5; i++)

Same $\left\{ \begin{array}{l} ++i \quad i = i+1 \\ i++ \quad \boxed{i + = 1} \end{array} \right.$

Postfix

a - -
   ↳ Use
   ↳ Dec

- - a
   ↳ Dec
   ↳ Use

int a = 5;

int b = - - a;

a = 4

b → ④

Decrement

   ↳ Prefix
   ↳ Postfix

a = 5

int c = a - -;

c → ⑤
a → ④

Loops Continued

Sum of digits of all numbers from 1 to N.

for

$N = 10$

$1 \_ \_ \_ \_ \_$ 10

$1 \rightarrow 1$
$2 \rightarrow 2$
$3 \rightarrow 3$
$\vdots$
$9 \rightarrow 9$
$10 \rightarrow \textcircled{1}$
$11 \rightarrow 2$

for (int i = 1; i <= N; i = i + 1)
{
  logic $\longrightarrow$ int copyOf I = i;

  while (

Infinite loop

```
int i = 5;
while ( i >= 0)
{
  S.O.Pln ("Hello");
  i = i+1;
}
```

STOP

User

```
for (int i = 1; i >= 0; i++)
```

break;

STOP the loop

While Loop Question
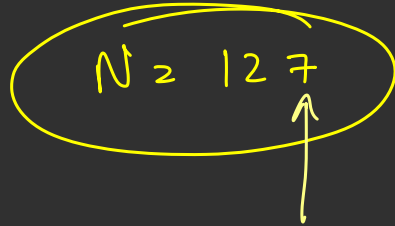
Check whether a number is palindrome or not

$\longrightarrow$ N input $\longrightarrow$ Scanner Class

$\longrightarrow$ Reverse Number

$N = 127$

int rev = 0;

int x = N;

while (x > 0)   → STOP

{

   int lastDigit = x % 10;

   rev = rev * 10 + lastDigit;

   x = x / 10;

}

$\boxed{N == rev}$ → Palindrome

↓

Not Palindrome

x = 0

rev = 721

Practice and Homework Questions

- Check if a given number is a power of 2 or not
  - https://leetcode.com/problems/power-of-two/
- Check if a given number is prime or not?
- Print all prime numbers from 1 to N.
- Calculate product of all digits
- Print all factors of a number
- Print first and last digit of a number

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Thank You!

Please practice more questions and examples as above !!

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