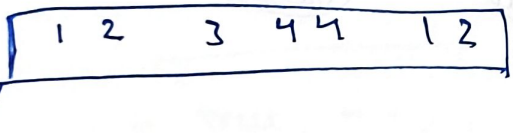
Week2 – Connect

Operator

- Arithmetic → +, −, *, /, %.
- Relational → <, >, >=, <=, ==, != } conditionals → T/F
- Logical → (&&, ||,)
- Bitwise → &, |, ^, ~ (bit level pe)
- Assignment → int a = 5; variable name → address → value
- Conditional ✓
- Pre/Post
- Left shift / Right shift .

Q)



unique no. jo ek baar aae ?

$1 \wedge 2 \wedge 3 \wedge 4 \wedge 4 \wedge 1 \wedge 2 = 3$

Conditional Operator (Ternary) :-

```
if (age >= 18)
    cout << "can vote";
else
    cout << "cannot ";
```

```
cond ? start1 : start2;
```

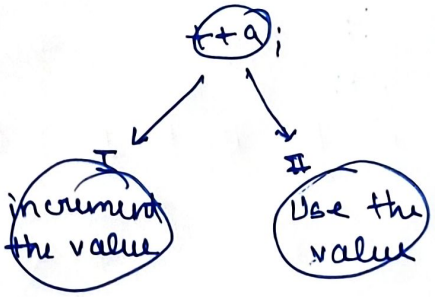
true → start1 ; false → start2

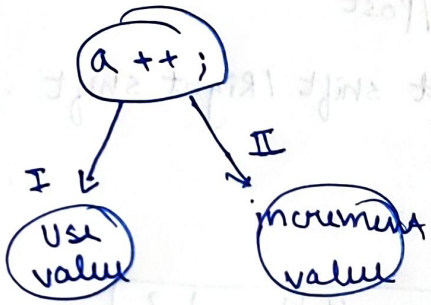
```
int main(){
    int age=15;
    (age>=18)? cout<<"can vote": cout<<"cannot vote "<<endl;
    return 0;
}
```

O/P

cannot vote

Pre - increment



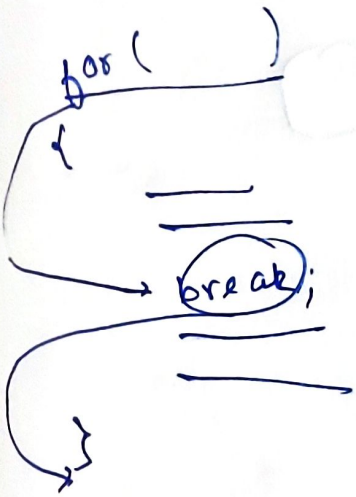


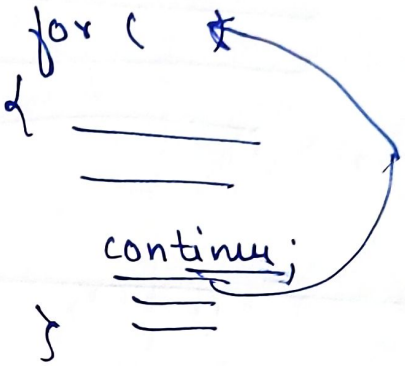

```
int a=5;
int b=10;

int ans1 = (++a)* (--b)
         = 6 * 9 = 54

int ans2 = (++a) * (b--)
         = 7 * 9
         = 63

int ans3 = (a++)* (--b).
         = 7 * 9 = 49

int ans3 = (a++)* (--b)
         =

int ans4 = (a++)* (b--)
         = 8 * 9 = 72
```

left shift / Right shift :

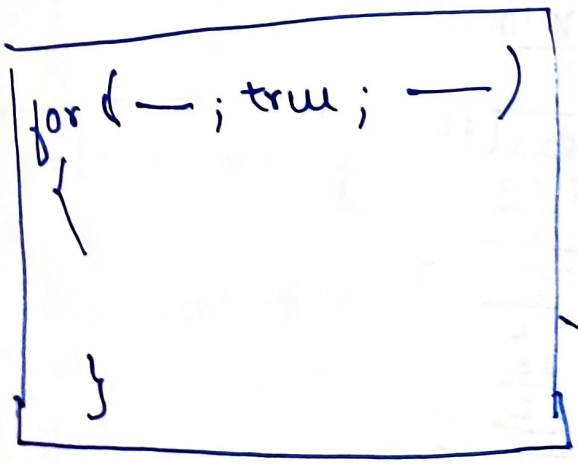
Next class

Break & continue





iteration skip krwa skta hai.

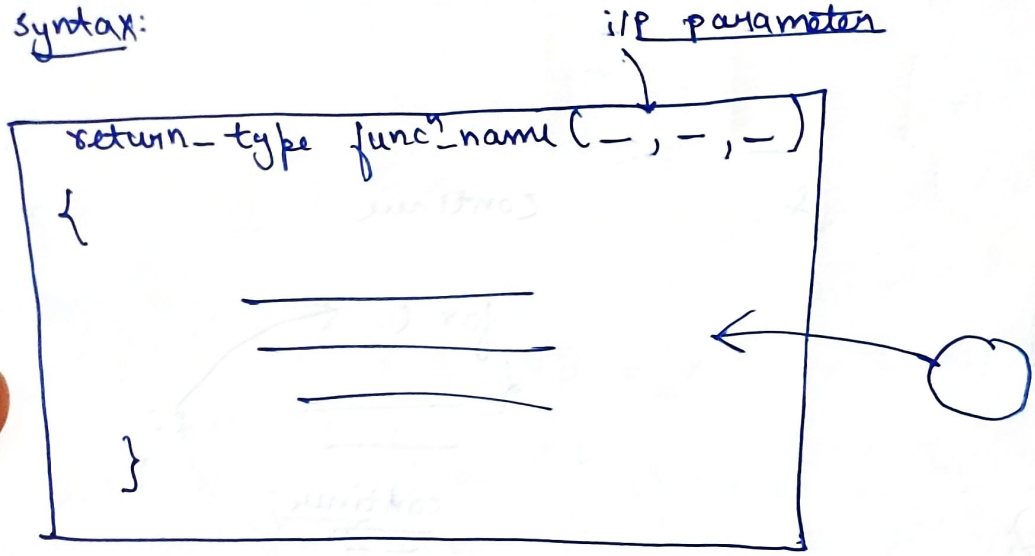


never ending loop
or
infinite loop

→ Functions:-

well defined task

Syntax:



① Print digits of a number

i/p → n = 623

o/p → 6, 2, 3

623 % 10

10 | 623 | 62
620
3

6
10 | 62
60
2

0
10 | 6
0
6

623 → 623 % 10 → 3 ✓

÷10 ↓

62 → 62 % 10 → 2 ✓

÷10 ↓

6 → 6 % 10 → 6 ✓

623

623 % 10 → 3
↓ / 10
62 % 10 → 2
↓ / 10
6 % 10 → 6
↓ / 10
0 → ruk gaya

524

524 % 10 → 524
↓ / 10
52 % 10 → 2
↓ / 10
2 % 10 → 5
↓
0 → ruk gaya

```
for (int i = 0; i <= 5; i++)
{
    cout << i;
}
```

or

```
int i = 0;                    ← initialisation
while (i <= 5)                ← cond
{                               ↑ True
    cout << i;
    i++;                      ← updation
}
```

```
int i=1
while (i<=10){
    cout<<"AKSHAT";
    i++;
}
```

→

```
for(int i=1; i<=10; i++)
{
    cout<<"AKSHAT";
}
```

```
int n=624
while(n!=0)
{
    int rem = n%10;
    cout<<rem;
    n=n/10;
}
```

528 →

528 %. 10 → 8

↓ /10

52 %. 10 → 2

↓ /10

5 %. 10 → 5

↓ /10

0 → ruk jao

n==0

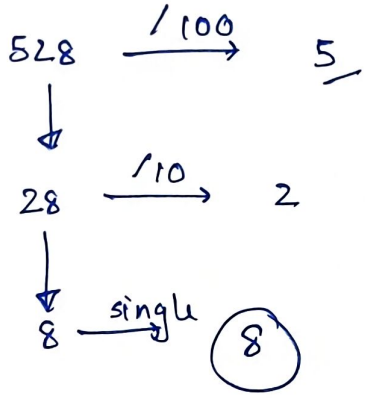
↓ loop se bahar aana hai!

```
int n = 528;
while(n != 0)
{
    int rem = n % 10;
    cout << rem;
    n = n / 10;
}
```

o/p

8 2 5

528 % 10 → 8
↓ /10
52 % 10 → 2
↓ /10
5 % 10 → 5
↓ /10
0 → rak jao



5, 2, 8 ⟶ 528

5 2 8
↓ ↓ ↓
$5 \times 10^2 + 2 \times 10^1 + 8 \times 10^0$

formula

= ans

ans × 10 + digit

thousand hundreds tens ones

9 7 6 9

9×10^3 7×10^2 6×10^1 9×10^0

9, 7, 6, 9

9 × 10

90 + 7

97 × 10

970 + 6

= 976 × 10

9760 + 9

= 9769

6, 7, 7

0 × 10 + 6

67 × 10 + 7

= 677

67 × 10 + 9

= 679

8, 7, 6

0 × 10 + 8

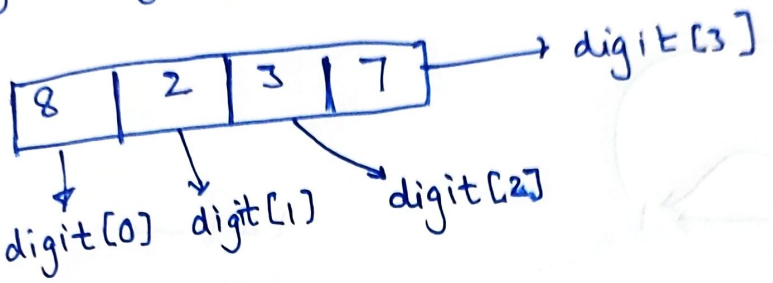
8 × 10 + 7

87 × 10 + 6

Formula

$$ans \times 10 + digit$$

Using arrays :-

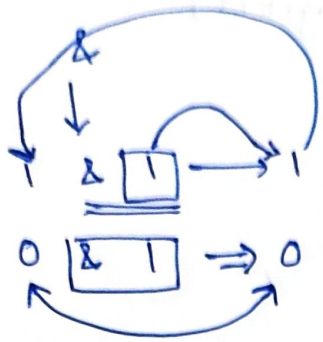



```
int main() {

    // create array
    int digit = {8, 2, 3, 7};
    int ans = 0;

    for (int i=0; i<4; i++){
        ans = ans * 10 + digit[i];
    }

    cout << ans << endl;

}
```

2. count no. of set bits. → bit = 1

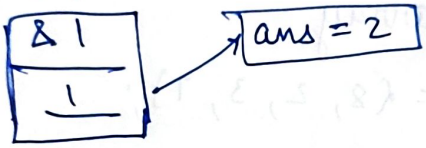
n = 3

bit → 1 yes or no



1 & 1 → 1
0 & 1 → 0

0 0 0 0 1 1



>> right shift

0 0 0 0 0 1 ⟶ >>

& 1

1

```
int main() {
    int n = 7;
    int ans = 0;
    while (n != 0) {
        if (n & 1) {
            ans++;
        }
        // right shift
        n = n >> 1;
    }
    cout << ans << endl;
```

O/P

number of set bits : 3

- cmd slash for multiple comments.

3) convert km into miles.

1 mile = 1.609 km

$$1\,km = \frac{1}{1.609}\ miles$$

```
int main(){
    int km;
    cout<<"Enter value in km"<<endl;
    cin>>km;
    cout<<"value in miles: "<<(1/1.609)*km<<endl;
    return 0;
}
```

O/P

Enter value in km

31

value in miles 19.2625