Conditional and Loops

→ Decision Box in flowcharts ⟺ To take a condition and check that condition

If-else block

if → for condition true

else → otherwise

```
int main(){
    int a,b;
    cout<<"Enter two numbers";
    cin>>a>>b;
    if(a==b){
        cout<<"Hey they are equal";}
    else{
        if(a<b){
            cout<<"a is smaller";}
        else{
            cout<<"b is smaller";}
    }
}
```

Variations of If-else

1) Only if block → only for true block

```
if( ){
}
```

2)
```
if( ){ } → output
if( ){ }
else{ } → output
```
They are separate statements

Note point

* Comments are written in the code to make it more readable & understandable to the user/developer.
* It is basically not printed on the screen basically written to give an edge to the developers regarding the info about the code what we are doing in it.
* Single line comment → //
* Multiline comment → /* */

WOW!

if-else if-else

```
if () { }
else if () { }
else { }
```

As many else if statements are there that means any no. of else if statements could be written.

```
if (a==b) { cout<<"They are equal"; }
else if (a<b) { cout<<" a is smaller"; }
else { cout<<" a is greater"; }
```

Even-Odd

```
int main(){
    int num;
    cin>>num;
    if (num%2==0) { cout<<" Even"; }
    else { cout<<" Odd"; }
}
```

MCQs

1) Hello Hi

2) Inside if 15

3) var1 = 5
   var2 = ~~6~~ 1
   Cout << (2)

4) a<=b evaluates to true but !b evaluates to false (! operator negates the value, b is non-zero and hence !b is non-zero makes 0 which is false)

Dt.
Pg.

Check Case

```
int main(){
    char ch;
    cin>>ch;
    if(ch>='A' && ch<='Z'){
        cout<<"1"; }
    else if(ch>='a' && ch<='z'){
        cout<<"0"; }
    else{
        cout<<-1; }
}
```

Understanding While Loop

```
while(){
}
```

N → 1 .... N

```
int i=1;          → initialisation
while(i<=N){      → condition
    cout<<i;
    i++;          → update
}
```

More on while loop

Prime No Code

```
int n; cin>>n;
int d=2; bool divided=false;
while(d<n){
    if(n%d==0){
        divided=true; }
    d++; }
if(!divided){
    cout<<"Prime"; }
else{ cout<<"Not Prime"; }
```

Procedure for the above

1 → divided

N=7

d = 2 to 6
↓+1
3 to 6
↓+1 to 6
4 to 6
↓+1
5 to 6
↓+1
6 to 6

WOW!

Print Sum of Even Numbers from 1 to N

```
int n; cin>>n;
int sum=0, i=1;
while(i<=n){
    if(i%2==0){
        sum+=i; }
    i++; }
cout<<sum<<endl;
```

Start, End, Step → ((f-32)*5)/9 = C

Patterns

```
1
1 2
1 2 3
1 2 3 4
```

i^th row has i columns

```
int n;
cin>>n;
int i=1;
while(i<=n){
    int j=1;
    while(j<=i){
        cout<<j<<" ";
        j++;
    }
    cout<<endl;
    i++;
}
```

```
i=1
while(i<=n){
    j=1
    while(j<=i) → printing
    {cout<<j;}
    j++;}
}
```

N = 3

3<=3

j=1 2<=1 j=2 3<=2 3<=3

i<=1 3<=2 j=1

4>3 j<=3

```
1
1 2
1 2 3
```

WOW!

Dt
Pg

→	1
→	2 3
→	4 5 6
→	7 8 9 10

N	i	j	val(k)
3	~~1~~ 2 3	~~1~~ 2 ~~1~~ 2 3	~~1~~ 2 ~~3~~ 4 ~~5~~ 6

```
int n;
cin>>n;
int i=1; int k=1;
while(i<=n){
    int j=1;
    while(j<=i){
        cout<< k ; k++;
        j++; }
    cout<<endl;
    i++;
}
```

1
2 3 2
4 5 6

#

- - - 1	→ spaces + text code code
- - 2 3	
- 4 5 6	
7 8 9 10	

```
int n; cin>>n;
int i=1; int val=1;
while(i<=n){
    int j=1;
    while(j<= n-i){
        cout<<" ";
        j++; }
    int k=1;
    while(k<=i){
        cout<<val;
        val++;
        k++; }
    cout<<endl;
    i++;
}
```

WOW!

Dt
Pg

Return Statement is a special keyword when encountered ends the main. That means, no statement after it will be executed when it is encountered.

Power of Number

25 → n

x {

```
int count = 1; int ans = 1;
while (count <= n){
    ans *= x;
    count++;
}
cout << ans;
}
```

END OF TOPIC