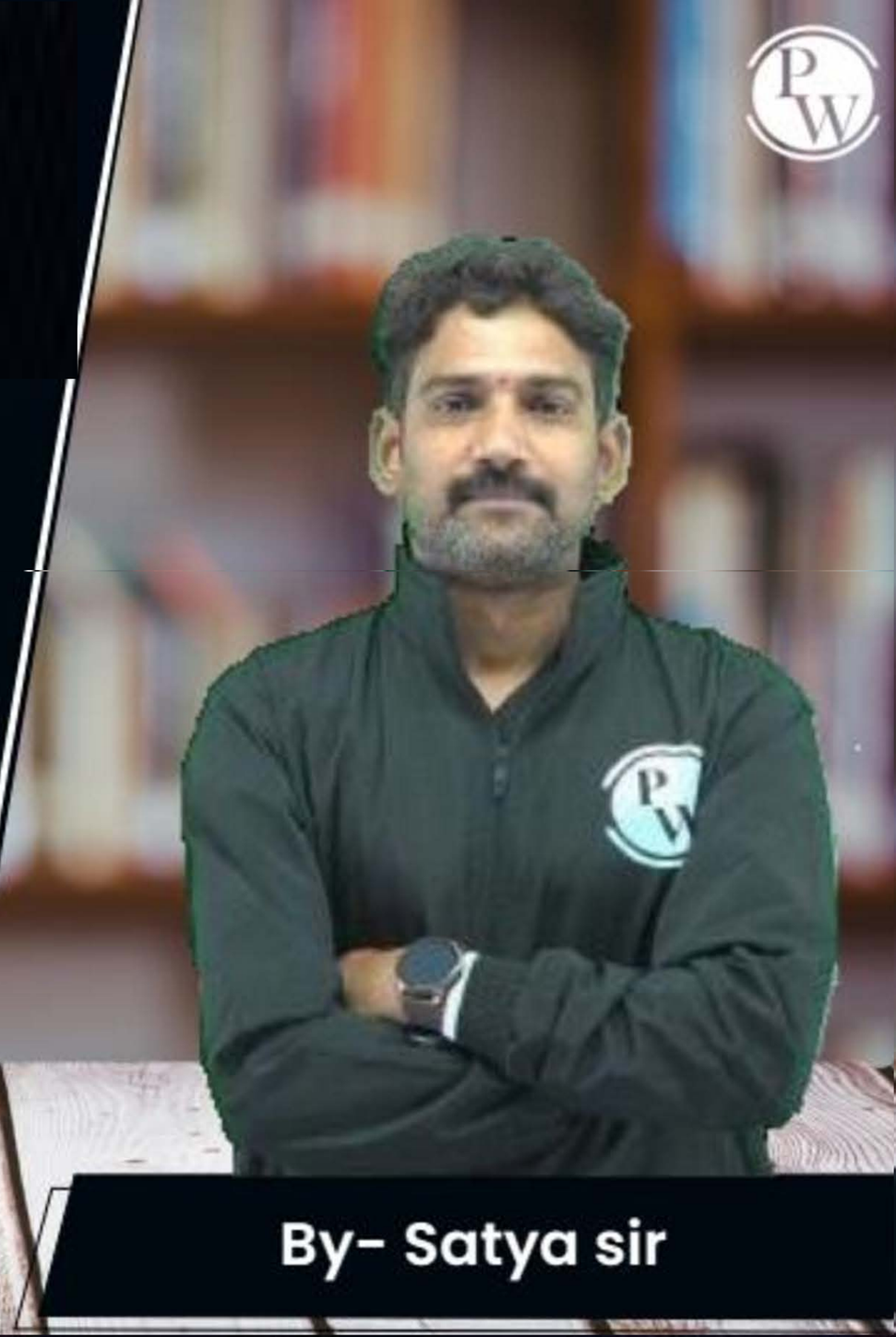
CS & IT ENGINEERING

C Programming

Control Statements

Lecture No.- 02



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Recap of Previous Lecture

- Control Statement ?
- Types of control Statements
- Conditional Control Statement
  - if
  - if-else

Topics to be Covered

- Nested if
- Nested if-else
- if-else-if ladder
- Switch

Topic : Conditional Control Statements - 2

Nested - if

- if block in another if block, that in another and so on is termed as Nested if.

- Syntax:

```
if (Expression1)
{       Statement;
        if (Expression2)
          { Statement;
            if (Expression3)
              { Statement;
                :
              }
          }
}
```

Example :

```
int a=1, b=0, c=2;
if(a)                    if(1) TRUE
{   Printf(" HELLO");
    if(c)                if(2) TRUE
    { Printf(" HAI");
      if(b)              if(0) False
      { if( Printf(" BYE"))
          Printf(" Good BYE");
      }
    }
}
```

o/p: HELLO HAI

Topic : Conditional Control Statements - 2

Example-2

Output ?

a	b	c
-x0-1	x1	x0

```
int a=-1, b=0, c=1;
if(a,b,c)                          if(-1,0,1) ≅ if(1) TRUE
{   Printf(" A");✓
    if(c--, a++, ++b)              if(1,-1,1) ≡ if(1) TRUE
    {  Printf(" B");✓
       if(--a, b, c)               if(-1,1,0) ≡ if(0) False
       {  if(a, c, ++b)
          {   Printf("C");
              Printf("D");
          }
    }
    Printf("%d %d %d", a,b,c);
}
```

op: AB-1 1 0

Topic : Conditional Control Statements - 2

Nested if-else : One if-else block, Inside another if-else block, that Inside another and so on, is termed as Nested if-else.

Syntax:

```
if (Expression1)
{     statement;
      if (Expression2)
      {     statement;
            if (Exp3)
                  Stmt;
            else
                  Stmt;
      }
      else
      {     if (Exp4) Stmt;
            else Stmt;
      }
}
else
{     if (Exp5)
      {     if (Exp6) Stmt;
            else Stmt;
      }
      else
      {     Stmt;
      }
}
```

Topic : Conditional Control Statements - 2

Example :

```
// Program to Print biggest of 3 Numbers

Void main ( )
{  int  a, b, c;
   Printf (" Enter any 3 Numbers");
   Scanf (" %d %d %d", &a, &b, &c);
   if (a>b)
      if (a>c) → Printf (" a is big");
         else  ⟶ Printf (" c is big");
   else ⟶ if (b>c) → Printf (" b is big");
            else ⟶ Printf (" c is big");
}
```

i/p: 7 3 9

7 > 3 True

7 > 9 False

o/p: c is big

i/p: 17 3 12

17 > 3 True

17 > 12 True

a is big

i/p: 7 15 11

7 > 15 False

b > c ⇒ 15 > 11 True

b is big

i/p: 10 10 10

a > b
10 > 10 False

b > c
10 > 10 False

c is big

Topic : Conditional Control Statements - 2

NOTE: Printf never Print NULL character

Example

what will be the output ?

```
{   int i, j, k;
    if( i=Printf("A") ) ≡ if(1) TRUE
    {   Printf("A");
        if( j=Printf("\0") )   → NULL character → will not Print anything
        X Printf("B");
        else
        {   if( k=Printf("") )   → Not Printing anything
            X Printf("C");
            else if( Printf("D") , Printf("E") );   ≡ if(1) TRUE
        }
    }
    else
        Printf("ABCD"); X
    }
```

False if(0)

if(0) False

o/p: AADE

Topic : Conditional Control Statements - 2

if-else-if Ladder :

NOTE: if() only can be written or if-else can be written. But, only 'else' is invalid.

Syntax :

```
if(Exp1)
  { stmts;
    :
  }
else if(Exp2)
  { - - -
    - - -
  }
else if(Exp3)
  { - - -
    - - -
  }
else
  { - - -
  }
```

Example :

```
{ int marks;
  scanf("%d", &marks);
  if(marks >= 70)   Printf("Distinction");
else if(marks>=60)  Printf("FIRST CLASS");
else if(marks>=50)  Printf("SECOND CLASS");
else if(marks>=40)  Printf("JUST PASSED");
else                Printf("FAIL");
}
```

Topic : Conditional Control Statements - 2

Switch Statement : multi-way selection statement.

- When, multiple options of Execution are available, among which, any one option or few options or all to Execute, Switch is Preferred.
- Switch can be replaced with if-else-if ladder. But, Switch gives more readability, understandability of the code.

Syntax:

```
Switch ( Expression )
{
    Case option1 :  Stmts; break;
    Case option2 :  Stmts; break;
        .              .      .
        .              .      .
    default      :  Stmts;
}
```

Ex:

```
int i;
Scanf("%d", &i);
Switch(i)
{
Case 1 : Printf("HAI"); break;
Case 2 : Printf("HELLO"); break;
Case 3 : Printf("HEY"); break;
default : Printf("BYE");
}
```

Important Points about Switch Control statement:

1. Switch, case, break, default are Keywords. (Lower Case only)
2. break, default are optional
3. default Can be any Case (First / middle / last)
4. Cases Can be Empty
5. Cases Can be in Random order.
6. Cases Can be Non-Contiguous
7. Only Integer and character Cases are Valid.
8. Duplicate Cases are Not allowed.

To be Contd ...

2 mins Summary

- Nested if
- Nested if-else
- if-else-if ladder
- Switch Syntax
- Rules in Switch.

THANK - YOU