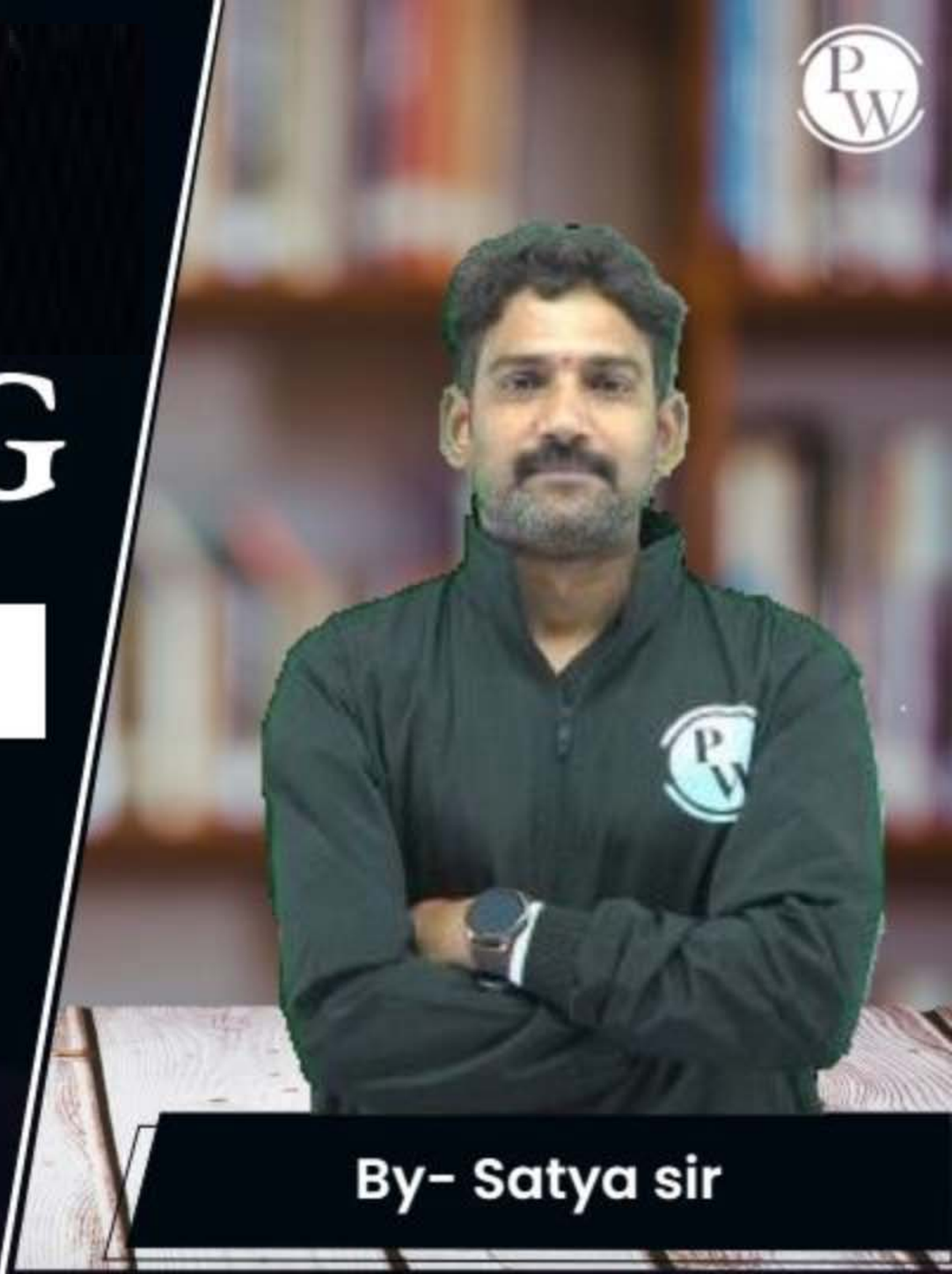
CS & IT ENGINEERING

'C' Programming

Pre Processor Directives

Lecture No.- 02



By- Satya sir

Recap of Previous Lecture

- What is Pre-Processor Directive?
- Types of Directives
- File Inclusion Directive
- Macro Substitution*

Topics to be Covered

- Macro Substitution Directives
- Conditional Compilation
- Miscelleneous Directives

Topic : Pre Processor Directives

Macro Substitution : #define

⇒ True (As it is) Substitution

⇒ ① Define Code / function as Macro

② Define Object / Variable as Macro

Ex:

```
#define x 3+5

Void main( )
{
  int i;
  i = x * x;
  Printf("%d", i);
}
```

Expression

3+5 * 3+5

5*3 = 15

3+15+5 = 23

o/p : 23

Topic : Pre Processor Directives

Ex:2

```
#define x 4+5*2
#define y 5+2*4
#define z 2+4*5
void main( )
{
  Printf(" %d", x+y-z);
}
```

o/p: 45

$$4+\frac{5*2}{10}+5+\frac{2*4}{8}-2+\frac{4*5}{20}$$

$$4+10+5+8-2+20$$

$$= 45$$

Topic : Pre Processor Directives

Ex:3

```
#define X Printf("GATEEXAM")
#define Y 7<5+2
#define Z Printf("%d\n", Printf("C LANGUAGE"));

void main( )
{
    int i;
    i= X+Y*Z;    i=0
    Printf(" %d", i);
}
```

o/p: C LANGUAGE10
GATEEXAM

i Value = 0

i= Printf("GATEEXAM") + 7<5+2 * Printf("%d\n", Printf("C LANGUAGE"));

8, 15, 3, 10, 6, 11

2*3=6
8+7=15
5+6=11
15<11 ⇒ 0

Topic : Pre Processor Directives

Ex: 4

```
#define  i  15 ! 12 & 7
#define  j  4 << 2 + 1
#define  k  10 == 4 + 6 !0 = 6

Void main( )
{
  int  x ;
  x = k * j + i - k ;
  Printf ("%d", x);
}
```

x = 1

$6 * 4 = 24$

$4 + 6 = 10$

$2 + 1 + 15 = 18$

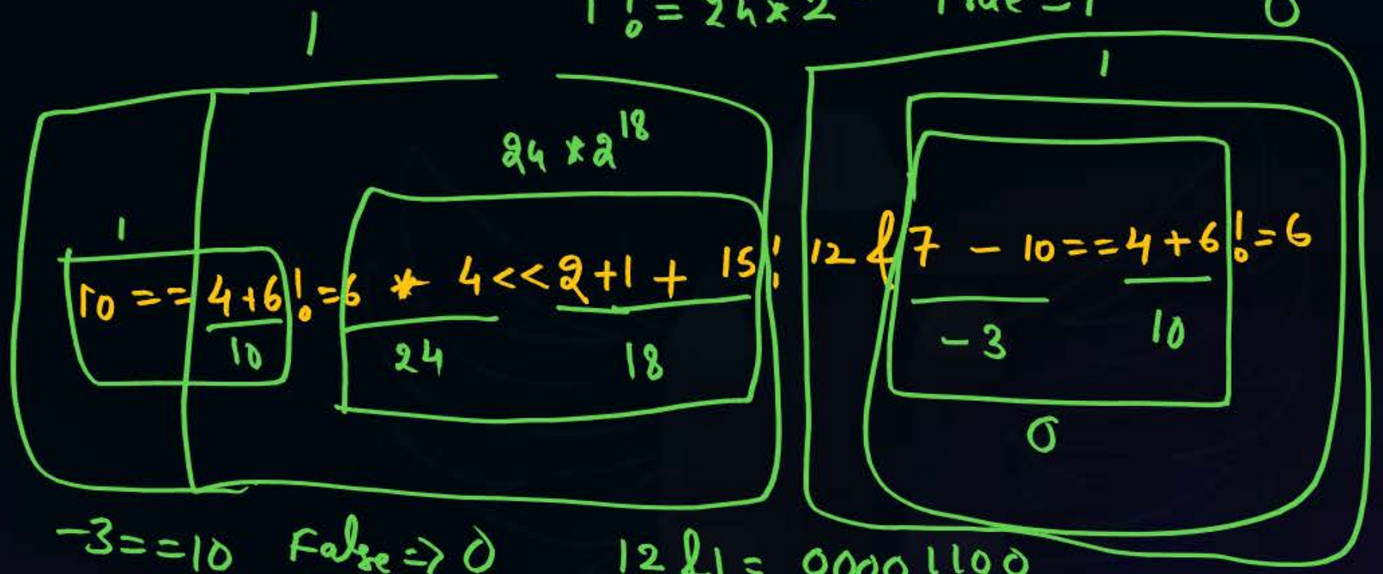
$7 - 10 = -3$

$4 + 6 = 10$

$24 << 18 \Rightarrow 24 * 2^{18}$

$10 == 10 \Rightarrow$ True

$1 !_0 = 24 \times 2^{18}$ True = 1



$-3 == 10$ False $\Rightarrow 0$

$0 !_0 = 6$ True $\Rightarrow 1$

12 & 1 = 0000 1100
0000 0001
0000 0000 = 0

$1 !_0 \Rightarrow 1$

Topic : Pre Processor Directives

```
#define x 5+3          // Macro is a constant        // Error

Void main( )
{
    int i;
    x = x * x;          // Cannot Modify x.
    i = x * x;
    Printf("%d", i);
}
```

x = 5+3 * 5+3

i = 23 * 23

i = 529

x = 23

o/p: ~~23~~ 29

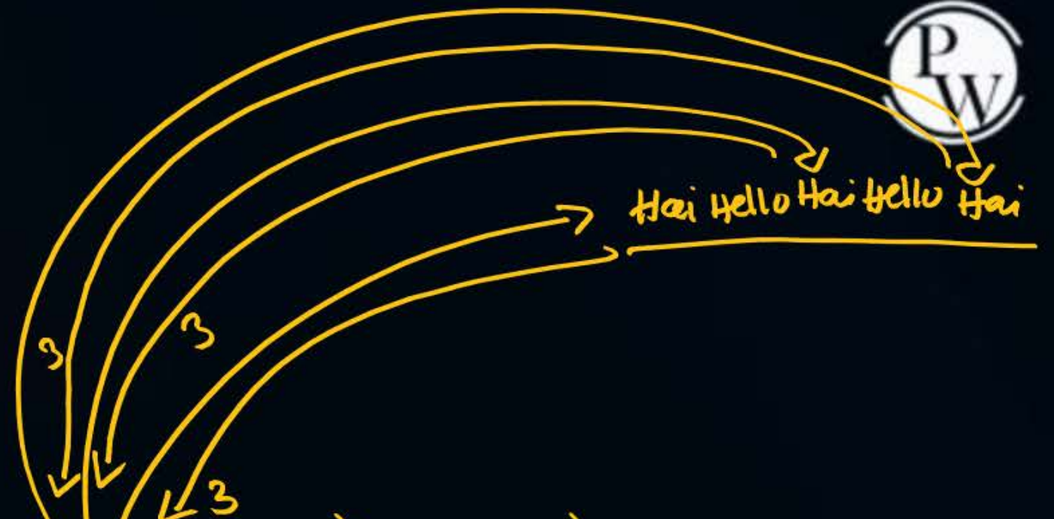
Topic : Pre Processor Directives

```
#define x  Printf("Hai")

Void main( )
{
  int i;

  for( i=1 ; i < x ; i++)
  {
     Printf(" Hello");
  }
}
```

o/p: Hai Hello Hai Hello Hai



i=1	1 < 3 True	Print Hello
i=2	2 < 3 True	Print Hello
i=3	3 < 3 False	

Topic : Pre Processor Directives

Conditional Compilation*

#if

#else

#elif

#endif

#ifdef

#ifndef

Ex:

```
if ( Condition )
{
    ----
    ----   } 1000000 Expressions
    ----
}
else
{
    Exp;  /// Expression
}
}
```

2 mins Summary

- Macro Substitutions

- List of Conditional Compilation Directives

To be Contd . . .

THANK - YOU