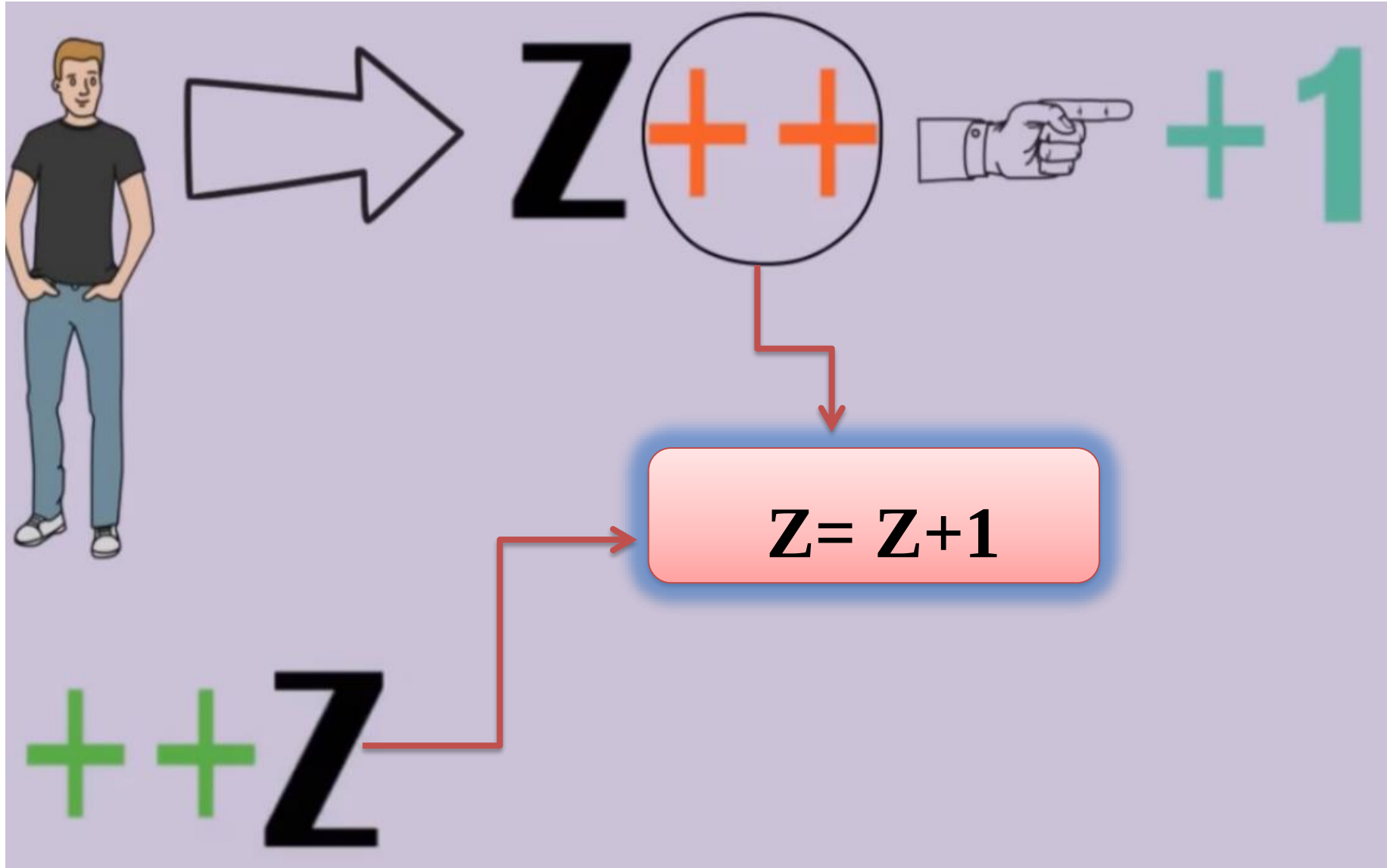


Lecture (3)

" Programming Essentials in C++ "

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Postfix & Prefix



Increment

1) Postfix increment

$Z++ \Rightarrow Z = Z + 1$

x gets **z's old value** $\rightarrow x = 5$

Then z increases by 1 $\rightarrow z = 6$

```
X=5;  
X= Z++;
```

2) Prefix increment

$++Z \Rightarrow Z = Z + 1$

z increases by 1 $\rightarrow z = 6$

x gets the **new value** $\rightarrow x = 6$

```
X =++ Z
```

Decrement

1) Postfix decrement

$Z-- \Rightarrow Z = Z - 1$

2) Prefix decrement

$--Z \Rightarrow Z = Z - 1$

Increment Postfix

```
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15     int x=1;
16     x++;
17     cout<<x<<endl;
18
19     return 0;
20 }
```



Decrement Postfix

```
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15
16      int x=1;
17      x--;
18      cout<<x<<endl;
19
20      return 0;
21  }
```



Increment Prefix

```
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15
16      int x=1;
17      ++x;
18      cout<<x<<endl;
19
20      return 0;
21  }
```



Decrement Prefix

```
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15
16     int x=1;
17     --x;
18     cout<<x<<endl;
19
20     return 0;
21 }
```


Example

```
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15
16      int y=3;
17      cout<<y<<endl;
18      y++;
19      cout<<y<<endl;
20
21      return 0;
22  }
```



3

4

Arithmetic Operation priorities

Symbol	Purpose	Priority
()	Brackets	1
++ or --	Increment or decrement one only	2
-	Negative sign	3
* or / or %	Multiplication or Division	4
+ or -	Addition or Subtraction	5
=	Equality	6

Simple arithmetic operations on C++ Program

```
int a=10, b=2, c=3, d;
```

1) $d = a + b - c;$

2) $d = a + b * c;$

3) $d = c + a / b;$

4) $d = (c * a) / b;$

```
7
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15
16      int a= 10,b=2, c=3,d;
17      d=a+b-c;
18      cout<<d;
19      return 0;
20  }
```



```
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15
16      int a= 10,b=2, c=3,d;
17      d=a+b*c;
18      cout<<d;
19      return 0;
20  }
```



16

```
8  ****  
9  #include <iostream>  
10  
11  using namespace std;  
12  
13  int main()  
14  {  
15  
16      int a= 10,b=2, c=3,d;  
17      d=c+a/b;  
18      cout<<d;  
19      return 0;  
20  }
```



```
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15
16     int a= 10,b=2, c=3,d;
17     d=(c*a)/b;
18     cout<<d;
19     return 0;
20 }
```



```

7
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15
16     int a= 2,b=-1, c=5,d;
17     d=a+b%c;
18     cout<<d;
19     return 0;
20 }

```

$$2-1\%5=2-1=1$$



Logical Operator

For variables comparison

>=

int x = 1



x >= y

int y = 1

<=

Logical Operator

and &&

or ||



//<>

// <=

// >=

// ==

```
int x=5;
```

```
int y=6;
```

```
cout<<x>y<<endl; // 10
```

```
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15     // Logic operator
16     int x=5;
17     int y=6;
18     cout<<(x>y)<<endl;
19
20     return 0;
21 }
```



And Logical Operator

```
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15      // Logic operator
16      int x=5;
17      int y=6;
18      int z=5;
19
20      cout<<((x>y && x>z))<<endl;
21
22      return 0;
23  }
```

(And) must all conditions are verified

```
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15      // Logic operator
16      int x=10;
17      int y=6;
18      int z=7;
19
20      cout<<(x>y && x>z)<<endl;
21
22      return 0;
23  }
```



```
8  ****
9  #include <iostream>
10
11  using namespace std;
12
13  int main()
14  {
15      // Logic operator
16      int x=10;
17      int y=6;
18      int z=11;
19
20      cout<<(x>y && x>z)<<endl;
21
22      return 0;
23  }
```



OR Logical Operator

```
8 *****
9 #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15     // Logic operator
16     int x=10;
17     int y=6;
18     int z=11;
19
20     cout<<(x>y || x>z)<<endl;
21
22     return 0;
23 }
```

(OR) at least one condition is verified

Not equal Logical Operator

```
8  ****
9  #include <iostream>
10
11 using namespace std;
12
13 int main()
14 {
15     // Logic operator
16     int x=10;
17     int y=6;
18     int z=11;
19
20     cout<<(x!=y)<<endl;
21
22     return 0;
23 }
```



```
8      ****
9      #include <iostream>
10
11     using namespace std;
12
13     int main()
14     {
15         // Logic operator
16         int x=10;
17         int y=10;
18         int z=11;
19
20         cout<<(x!=y)<<endl;
21
22         return 0;
23     }
```



Example

//Logical operator

```
int x=5;
```

```
int y=3;
```

//&& || !

```
cout<<(x > 3 && x < 10)<<endl;//1
```

```
cout<<(x > 3 || x < 4)<<endl;//1
```

```
cout<<(!(x < 3 && x < 10))<<endl;//1
```

*Thank
you*

