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Object Oriented Programming (IT-321) 2nd Semester Section A & B

Lecture #5: Operators in OOP

Assignment Operator (=)

```
w = 10;
x = w;
z = (x - 2)/(2 + 2);
```

Mathematical/Arithmetic Operators

- ***Addition*** *+*
- ***Subtraction*** *-*
- ***Multiplication*** ***
- ***Division*** */*
- ***Modulus*** *%*

Shorthand Operators

*+=, -=, *=, /=, %=*

Common	***Shorthand***
a = a + b;	***a += b;***
a = a - b;	***a -= b;***
a = a * b;	***a *= b;***
a = a / b;	***a /= b;***
a = a % b;	***a %= b;***

Shorthand Increment and Decrement ++ and –

Common	*Shorthand*
a = a + 1;	***a++; or ++a;***
a = a - 1;	***a–; or –a;***

Relational Operators

> < >= <= == !=

Primitives

- ***Greater Than*** **>**
- ***Less Than*** **<**
- ***Greater Than or Equal*** **>=**
- ***Less Than or Equal*** **<=**

Primitives or Object References

- ***Equal (Equivalent)*** **==**
- ***Not Equal*** **!=**

The Result is Always true or false

Logical Operators (boolean)

&& || !

- ***Logical AND*** **&&**
- ***Logical OR*** **||**
- ***Logical NOT*** **!**

Which Operators Operate On What

Operators	Floating Point		Integral					Logical	Any Object
	double	float	long	int	short	char	byte	boolean	
Unary + - ++ --					Automatic Promotion Except ++ --	Automatic Promotion Except ++ --	Automatic Promotion Except ++ --	⊘	⊘
+ - * / %					Automatic Promotion Except ++ --	Automatic Promotion Except ++ --	Automatic Promotion Except ++ --	⊘	+ with String Only
> < >= <=								⊘	⊘
== !=									Reference Only Not Content
= op= etc.									
<< >> >>> & | ^ ~	⊘	⊘			Automatic Promotion	Automatic Promotion	Automatic Promotion	⊘	⊘
&& || !	⊘	⊘	⊘	⊘	⊘	⊘	⊘		⊘

Ternary Operator

? :

Any expression that evaluates to a boolean value.

boolean_expression ? expression_1 : expression_2

*If **true** this expression is evaluated and becomes the value entire expression.*

*If **false** this expression is evaluated and becomes the value entire expression.*

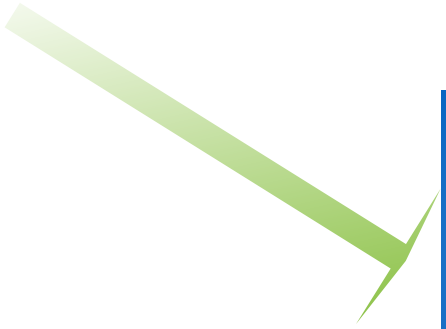
Ternary Example

- *public **class** TernaryOperator {*
- *public static **void** main(**String**[] args) {*
- ***int** a = 10;*
- ***int** b = 20;*
- ***String** result = a > b ? "a is greater" : "b is greater";*
- *System.out.println(result);*
- *}*
- *}*

Ternary (? :) Operator Examples

```
public class Example {
    public static void main(String[] args) {
        boolean t = true;
        boolean f = false;

        System.out.println("t?true:false "+(t ? true : false ));
        System.out.println("t?1:2 "+(t ? 1 : 2 ));
        System.out.println("f?true:false "+(f ? true : false ));
        System.out.println("f?1:2 "+(f ? 1 : 2 ));
    }
}
```



```
> java Example
t?true:false true
t?1:2 1
f?true:false false
f?1:2 2
>
```

String (+) Operator

String Concatenation

"Now is " + "the time."

"Now is the time."

String (+) Operator

Automatic Conversion with Primitives

"The number is " + 4

"The number is " + "4"

"The number is 4"