Fundamentals of Object Oriented Programming

CSN- 103

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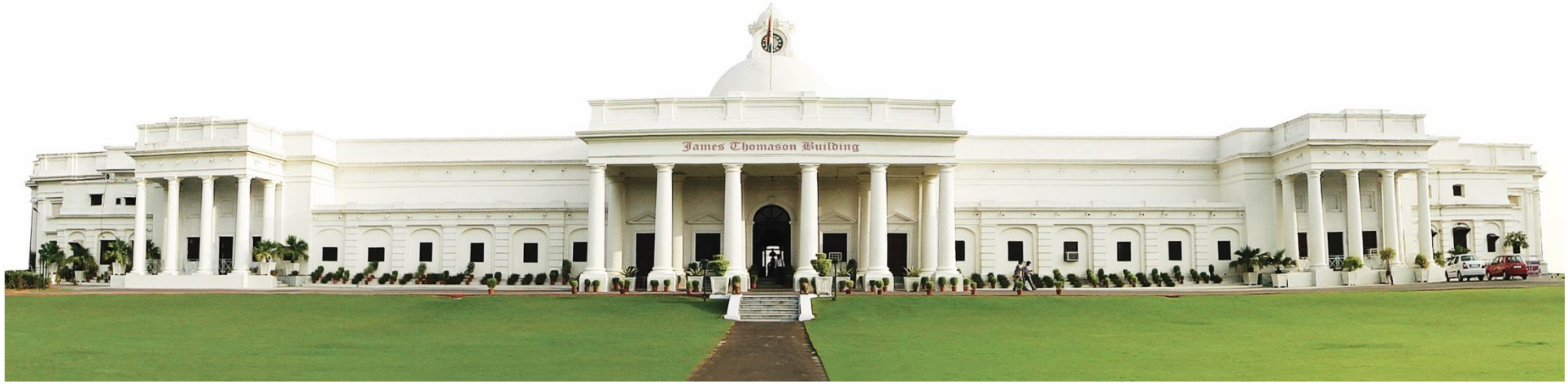


Operators and Expressions

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Assignment Operators
- Increment and Decrement Operators
- Conditional Operators
- Bitwise Operators
- Special Operators

Arithmetic Operators

Operator	Use of Operator
+	Use to Add Two Numbers and Also used to Concatenate two strings
-	Used for Subtraction
*	Used to multiply numbers
/	Used for Division
%	Used for Finding Mod (Remainder Operator)

c = a % b

25 % 3

↳ 1

- Write a JAVA program to find the reverse of 4 digit numbers

```java
import java.util.Scanner;

class ReverseNumber
{
   public static void main(String args[])
   {
      int n, reverse;

      System.out.println("Enter the number to reverse");
      Scanner in = new Scanner(System.in);
      n = in.nextInt();
      reverse=n;
      int a=reverse%10;
      reverse=reverse/10;
      int b=reverse%10;
      reverse/=10;
      int c=reverse%10;
      reverse/=10;
      reverse=a*1000+b*100+c*10+reverse;
      System.out.println("Reverse of given 4 digti number :" + reverse);
   }
}
```

4532 → 4532 → 453 → 45 → 4

a → 2

b → 3

c → 5

2354

Terminal

```
sh-4.3$ javac ReverseNumber.java
sh-4.3$ java ReverseNumber
Enter the number to reverse
4532
Reverse of given 4 digti number :2354
sh-4.3$
```

Relational Operator

Operator	Result
==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

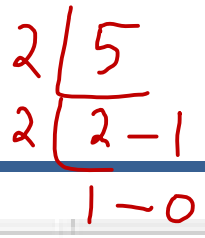
Relational Operator

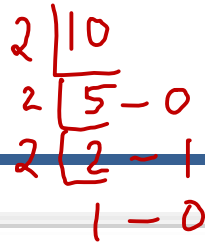
```java
public class Test {

   public static void main(String args[]) {
      int a = 10;
      int b = 20;
      System.out.println("a == b = " + (a == b) );
      System.out.println("a != b = " + (a != b) );
      System.out.println("a > b = " + (a > b) );
      System.out.println("a < b = " + (a < b) );
      System.out.println("b >= a = " + (b >= a) );
      System.out.println("b <= a = " + (b <= a) );
   }
}
```

Terminal

```
sh-4.3$ javac Test.java
sh-4.3$ java Test
a == b = false
a != b = true
a > b = false
a < b = true
b >= a = true
b <= a = false
sh-4.3$
```

Bitwise Operator





10 → 1010

```
1  public class Test {
2
3    public static void main(String args[]) {
4      int a = 10;
5      int b = 5;
6      System.out.println("a & b = " + (a & b) );
7      System.out.println("a | b = " + (a | b) );
8    }
9  }
```

bitwise and

bitwise or

Truth table

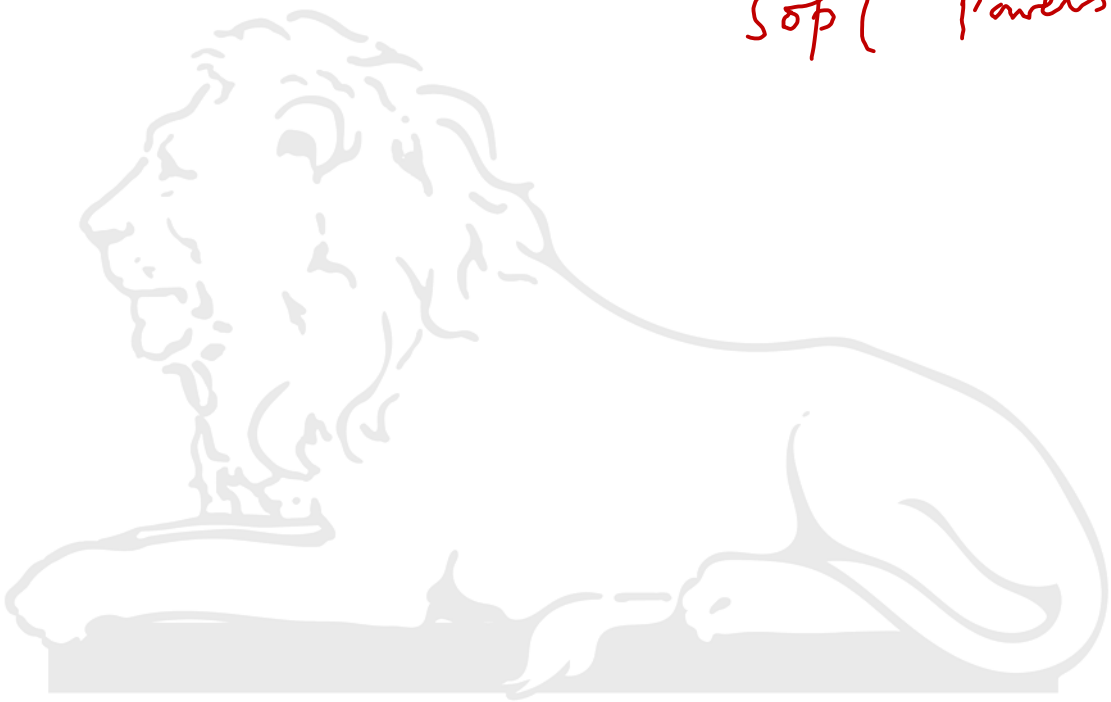
	1	0
1	1	0
0	0	0

&	1	0
1	1	0
0	0	0

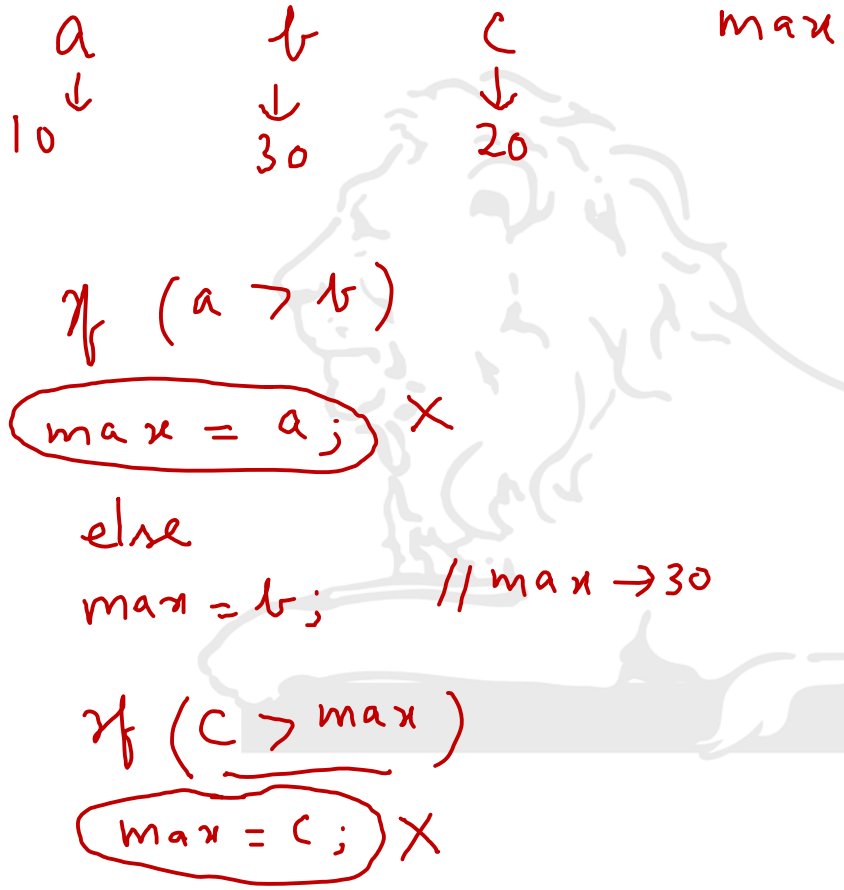
```
Terminal
sh-4.3$ javac Test.java
sh-4.3$ java Test
a & b = 0
a | b = 15
sh-4.3$
```

Powers of 2

```
if (a & (a-1) == 0)
    cout("Powers of 2");
```

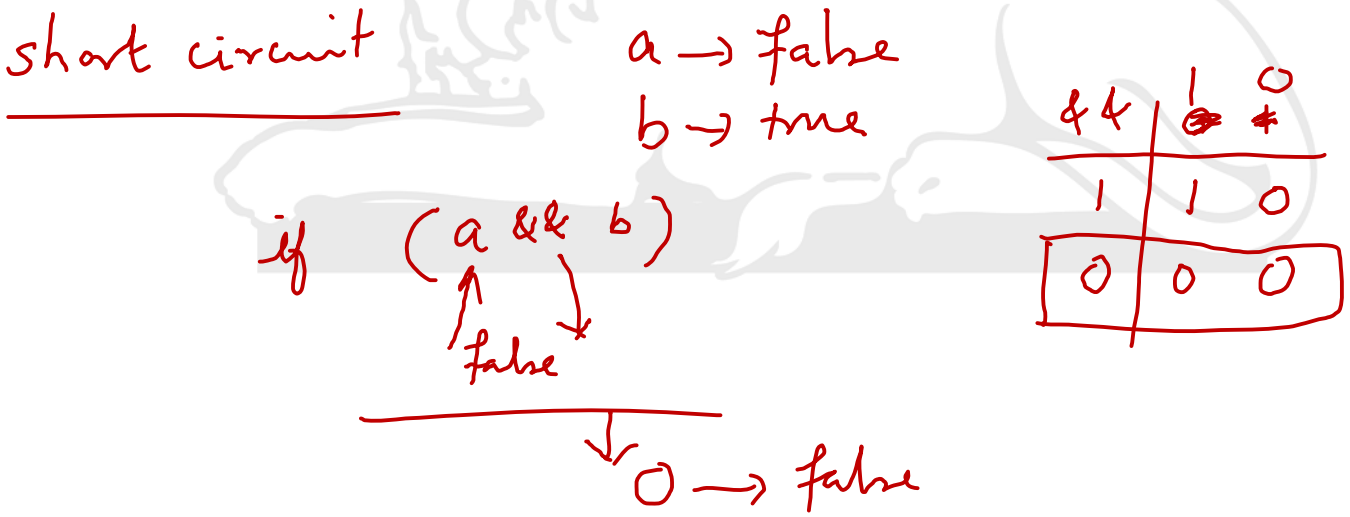


Write a JAVA program to find the maximum of three numbers.



Logical (Conditional) Operators

Operator	Use of Operator
&&	Logical-AND
||	Logical-OR
!	Logical- NOT



Logical (Conditional) Operators

```
1  public class Test {
2
3     public static void main(String args[]) {
4        boolean a = true;
5        boolean b = false;
6
7        System.out.println("a && b = " + (a&&b));
8
9        System.out.println("a || b = " + (a||b) );
10
11       System.out.println("!(a && b) = " + !(a && b));
12    }
13 }
```

false

true

true

false

Terminal

```
sh-4.3$ javac Test.java
sh-4.3$ java Test
a && b = false
a || b = true
!(a && b) = true
sh-4.3$
```

!false → true

!true → false