

EECS1022 Programming for Mobile Computing
(Winter 2021)

Q&A - Lectures W2

Monday, January 25

Are you actually a fan of heavy metal music?

(I ask because you used the ex of heavy music in
when talking about truth tables) (M)

Why do we use double, for example on the BMIapp, when float is sufficiently accurate in this case. Also, why isn't short used more frequently in Java?

Range of Floating-Point Types

Type	Minimum value	Maximum value
float	1.175494351 E - 38	3.402823466 E + 38
double	2.2250738585072014 E - 308	1.7976931348623158 E + 308

max1 max2

scientific notation.

upper bound.

float f = 3.14;

```
float f = (float) 1.7976931348623158E+308;
System.out.println(f);

double d = 1.7976931348623158E+308;
System.out.println(d);
```

floating-point number

↳ neutral

↳ integral . fractional

float or double data type.

↳ what's the maximum input

→ value to be stored?

error: float is too small to accommodate some double value.

float f = 3.14; X

fix: float f = (float) 3.14;

- ↳ 1. floating-point literal
- 2. By default, all fp literals are interpreted as double.

I am wondering what the formal definition of a unary operator is, from my understanding it is simply an operator that only affects one variable (e.g. $-$, $+$, $!$) is that correct?

Correct, but not complete

$2 \rightarrow$ binary

unary
logical

operator affecting one operand.

$2 \rightarrow$ unary.

3. boolean $b = 23 >= x;$

$!$ b operand of $!$

1. true
false
Boolean literals

- 1. literals
- 2. expressions
- 3. variables

2. $!(x >= 0)$
T or F
Rel. exp.

$!(0 <= x \&\& x < 10)$
T or F

Compound exp.

C x 2021

C#

AI ~~LOP~~

functional language

Jackp:

Python
logical
!b

Haskell

boolean b = ⇒

b

if (b == true) {

}

→ def !(b == true) ⇒

b == false

}

not b
not (b == true)

!b

Does the negation logical operator automatically categorize the operation it's in a compound boolean expression?

I.e. !isPositive or !(some relational expression)

```
public class ComputeArea {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter a radius value:");
        double radius = input.nextDouble();
        final double PI = 3.14159;
        if (radius < 0) { /* condition of invalid inputs */
            System.out.println("Error: Negative radius value!");
        }
        else { /* implicit: !(radius < 0), or radius >= 0 */
            double area = radius * radius * PI;
            System.out.println("Area is " + area);
        }
        input.close();
    }
}
```

Test Inputs:

radius = 9

radius = -5

```
public class ComputeArea2 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter a radius value:");
        double radius = input.nextDouble();
        final double PI = 3.14159;
        if (radius >= 0) { /* condition of valid inputs */
            double area = radius * radius * PI;
            System.out.println("Area is " + area);
        }
        else { /* implicit: !(radius >= 0), or radius < 0 */
            System.out.println("Error: Negative radius value!");
        }
        input.close();
    }
}
```

① radius < 0

② radius >= 0.

① = !②

② = !①

Build Unit Tests.

- naming convention -

Precedence

* higher precedence.

P T
 q T
 r F

① $(P \parallel q) \&\& r$

② $P \parallel (q \&\& r)$

$3 \oplus (4 \oplus 5)$
 $\approx \parallel$ $\approx \&\&$

Equivalent?

↳ given any values for

$P = q = r$

↳ evaluation result same.

$P \Rightarrow q \Rightarrow r$
 \hookrightarrow \hookrightarrow \hookrightarrow
 T T T
 F F F

2^3

$2 * 2 * 2 = 8$

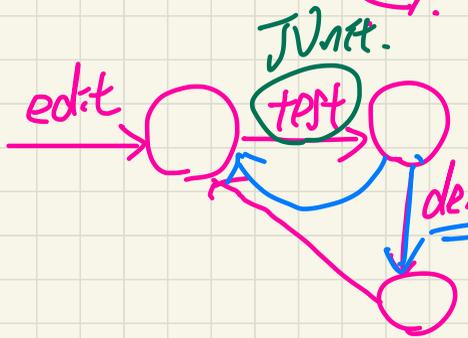
Debugging

known: there are errors
JUnit → find errors

↳ to find errors in code.

80%

1. console way. (System.out.println(...))



```
m(...){  
  _____  
  _____  
  _____  
}
```

polluting code

S.O.P(x)

variables
expressions

2. debugger.

- open-booked prog. test. (3)

Resources

- your own lab solution
- sample code made available by instructor
- tutorial video.

Forbidden Resources

- your friend fellow student.
- code found on internet

$M, N \rightarrow 0.$