CSE 121 Lesson 8:
Conditionals

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sli.do #cse121

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Announcements, Reminders

- Programming Project 1 is due **tomorrow** (7/18) **at 11:59 pm**

- R2 due this Friday at 11:59 pm
  - Note: this is the last time C0 is eligible for resubmission!

- Your second quiz, Quiz 1, is *next week in section*
  - **Topics:** Math + Random **(no Turtle),** Methods (including returns and parameters), Conditionals
  - Quiz 0 grades will be released by this Friday night
  - We'll talk more about quiz grading on Friday

Last Time... (1/2)

```java
public static void main(String[] args) {
    int x = 9;
    int y = 2;
    int z = 5;

    mystery(z, y, x);

    mystery(y, x, z);
}

public static void mystery(int x, int z, int y) {
    System.out.println(z + " and " + (y - x));
}
```

Reminders:
- When passing an argument as a parameter, the **order** that you pass the values (not name) matters

- Parameters create a copy* of the value for local method use

Last Time… (2/2)

Scope: The part of a program where a variable exists (and can thus be referenced/modified/used).

- From its **declaration to the end of the { } braces**
- Ex: a variable declared in a method exists only in that method!

```java
public static void example() {
    System.out.println("hello");
    int x = 3;
    for (int i = 1; i <= 10; i++) {
        System.out.print(x);
    }
}
```
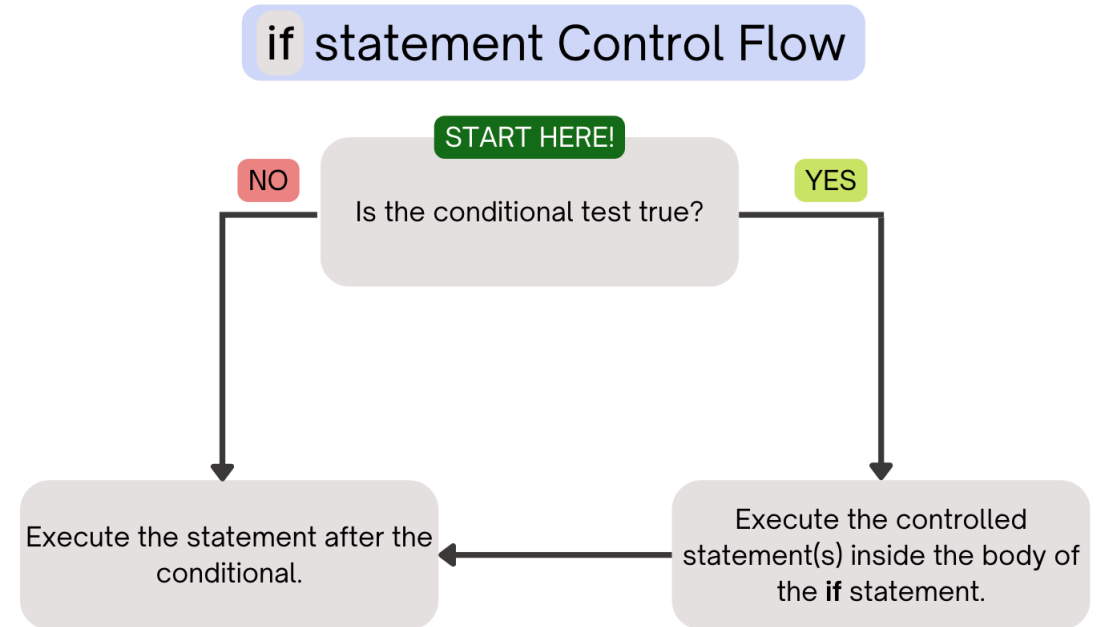
i's scope

x's scope

(PCM) Conditionals (1/4)

if (test) {

    body (statements to be executed)

}

Executes a block of statements
if and only if the test is true

if statement Control Flow

START HERE!

NO   Is the conditional test true?   YES

Execute the statement after the conditional.

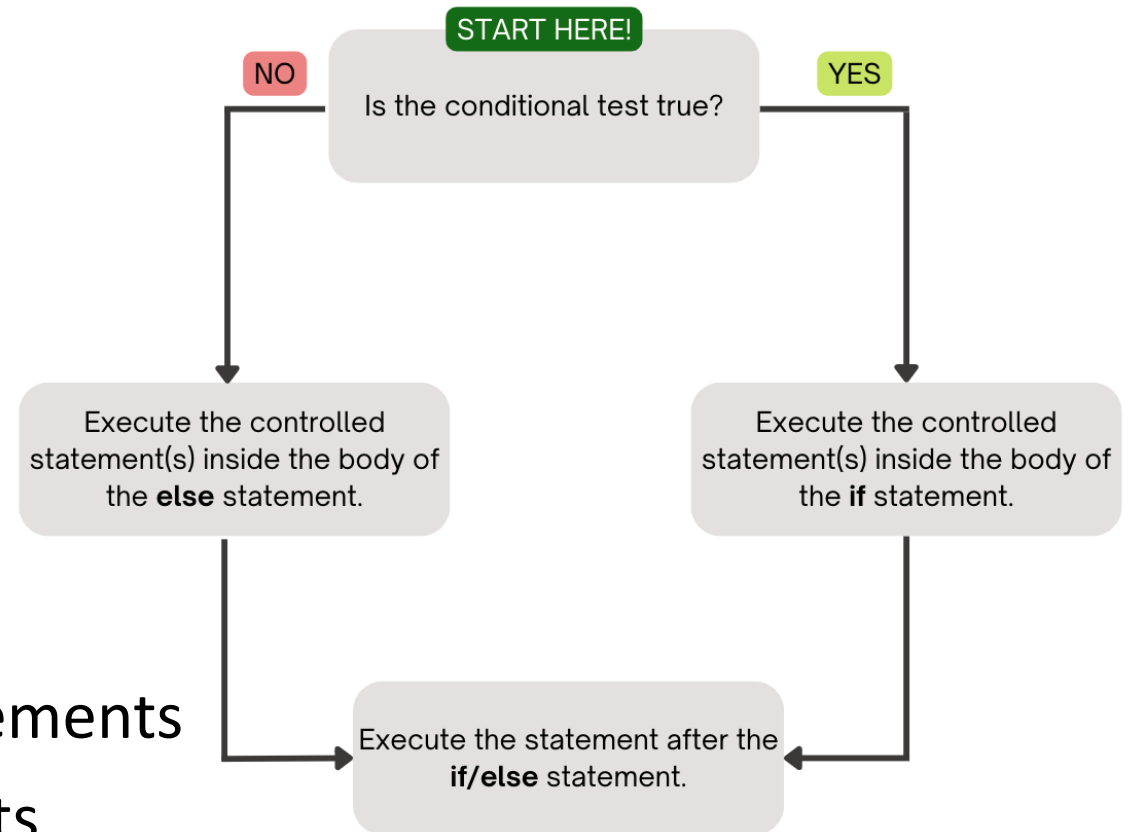Execute the controlled statement(s) inside the body of the **if** statement.

(PCM) Conditionals (2/4)

if (test) {
    statement(s)
} else {
    statement(s)
}

1. If the test is true: execute block of statements
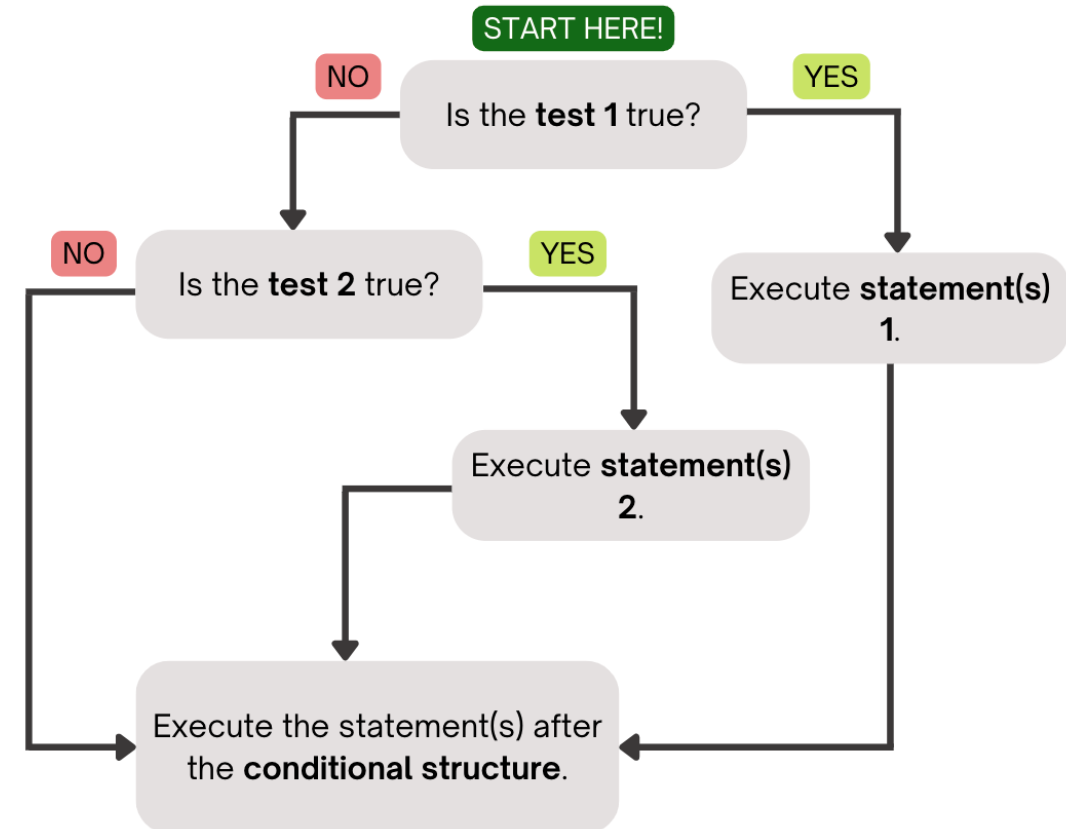2. If not, execute other block of statements

if/else statement Control Flow

START HERE!
Is the conditional test true?

NO

YES

Execute the controlled statement(s) inside the body of the **else** statement.

Execute the controlled statement(s) inside the body of the **if** statement.

Execute the statement after the **if/else** statement.

(PCM) Conditionals (3/4)

if (test) {

    statement(s)

} else if (test) {

    statement(s)

}

1. If the first test is true, execute that block
2. If not, proceed to the next test, and repeat
3. If none were true, don't execute any blocks
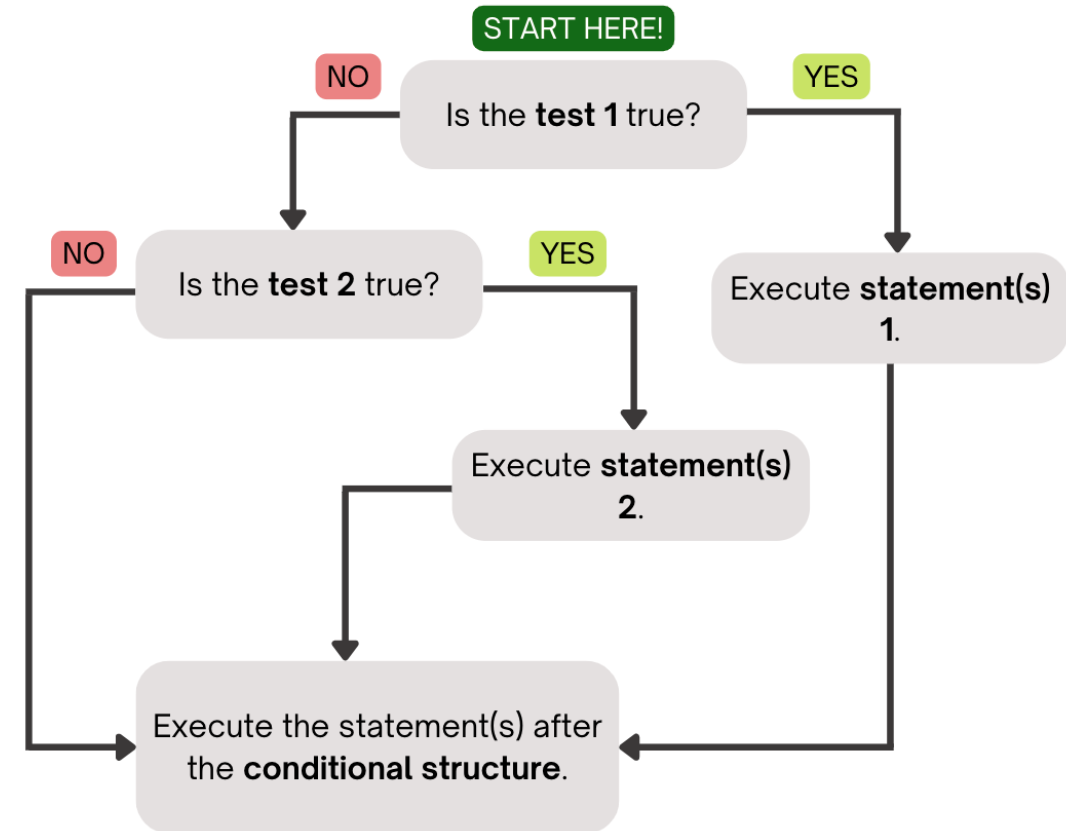

if/else if statement Control Flow

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(PCM) Conditionals (4/4)

```
if ( test ) {
        statement(s)
} else if (test) {
        statement(s)
}
```

With a large if-else-if-else chain,

- if there is an ending else, exactly one block will execute
- if there is no ending else, zero or one blocks will execute

if/else if statement Control Flow

Nested Conditionals

```
if (A) {
  if (B) {
    // do something
  }
}
```

```
if (A && B) {
  // do something
}
```

Poll in with your answer!

```java
int a = 7;
int b = -1;
int c = 12;
if (a < b) {
  a *= 2;
} else if (b < a) {
  a /= 2;
} else {
  a = c;
}
if (c % 2 == 0) {
  c += 1;
}
if (b > 0) {
  b *= -1;
} else if (a < 0) {
  a *= -1;
}
System.out.print(a + " " + b + " " + c);
```

What is the output produced by executing this code?

A. 7 -1 12

B. -3 -1 13

C. 3 -1 13

D. 12 1 12

E. -14 1 13

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Poll in with your answer!

```java
public static void main(String[] args) {
  for (int i = 1; i <= 3; i++) {
    System.out.print(mystery(i));
  }
}

public static String mystery(int n) {
  if (n % 2 == 1) {
    return "odd ";
  } else if (n == 1) {
    return "one ";
  }
  return "even ";
}
```

What does this program output?

A. odd even odd

B. one even odd

C. one even even

D. even even even

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Poll in with your answer!

```java
public static void main(String[] args) {
    for (int i = 1; i <= 3; i++) {
        System.out.print(mystery(i));
    }
}


public static String mystery(int n) {
    if (n % 2 == 1) {
        return "odd ";
    } else if (n == 1) {
        return "one ";
    }
    return "even ";
}
```

This else if statement never runs!

Poll in with your answer!

```java
public static void main(String[] args) {
    int a = ?;
    int b = ?;

    if (a > 0 && b < 0) {
        if (b < 0) {
            System.out.println("fizz");
        } else if (b >= 0)  {
            System.out.println("boop");
        } else {
            System.out.println("pop");
        }
    }
}
```

What value(s) of a and b can output:
- "fizz"
- **"boop"**
- "pop"