Controlling Program Flow in Java (Java SE 11 Developer Certification 1Z0-819)

Conditional Logic

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Course

Prepare you for the exam

Point out common programming errors

Provide guidance for things to look for

Getting Started with Programming in Java

This course assumes that you are familiar
with the content covered in the course
Getting Started with Programming in Java

Overview

- if-else
- Block statement
- Chaining if-else
- Nested if
- Logical Operators
- Valid conditions

```
int value1 = 10;

int value2 = 4;

if (value1 > value2)
  System.out.println(“value 1 is bigger”);

else
  System.out.println(“value 1 is not bigger”);
```

Boolean value, variable or expression

if-else

An if statement conditionally executes a statement

Else clause executes a statement when condition is false

```
if ( condition )
   true-statement ;
else
   false-statement ;
```

```
int value1 = 10;
int value2 = 4;
if (value1 > value2)
  System.out.println(“value 1 is bigger”);
else
  System.out.println(“value 1 is not bigger”);
System.out.println(“Keep working...”);
```

if-else

An if statement conditionally executes a statement

Else clause executes a statement when condition is false

```
if ( condition )
   true-statement ;
else
   false-statement ;
```

```
int value1 = 1;
int value2 = 4;
if (value1 > value2)
  System.out.println(“value 1 is bigger”);
else
  System.out.println(“value 1 is not bigger”);
System.out.println(“Keep working...”);
```

if-else

An if statement conditionally executes a statement

Else clause executes a statement when condition is false

```
if ( condition )
   true-statement ;
else
   false-statement ;
```

```
int value1 = 1;

int value2 = 4;

if (value1 > value2)
  System.out.println(“value 1 is bigger”);
else
  System.out.println(“value 1 is not bigger”);
System.out.println(“Keep working...”);
```

if-else

An if statement conditionally executes a statement

Else clause executes a statement when condition is false

- **Else clause is optional**

```
if ( condition )
   true-statement ;
else
   false-statement ;
```

Executing Multiple Statements within if-else

```
int value1 = 1, value2 = 4;

int diff = 0;

if (value1 > value2)

     diff = value1 – value2;



else

     diff = value2 – value1;

     System.out.println(“value 1 is not bigger than value 2, diff = “ + diff);
```

Executing Multiple Statements within if-else

```
int value1 = 10, value2 = 4;

int diff = 0;

if (value1 > value2)

    diff = value1 – value2;



else

    diff = value2 – value1;

    System.out.println(“value 1 is not bigger than value 2, diff = “ + diff);
```

Block statement

- Groups statements together
- Creates a compound statement
- Enclose statements within brackets

```
{
  statement-1;
  statement-2;
        .
        .
        .
  statement-N;
}
```

Executing Multiple Statements within if-else

```
int value1 = 10, value2 = 4;

int diff = 0;

if (value1 > value2)
    diff = value1 – value2;


else
    diff = value2 – value1;
    System.out.println(“value 1 is not bigger than value 2, diff = “ + diff);
}
```

Executing Multiple Statements within if-else

```
int value1 = 10, value2 = 4;

int diff = 0;

if (value1 > value2)
    diff = value1 – value2;
    System.out.println(“value 1 is bigger than value 2, diff = “ + diff);
}
else {
    diff = value2 – value1;
    System.out.println(“value 1 is not bigger than value 2, diff = “ + diff);
}
```

Executing Multiple Statements within if-else

```
int value1 = 1, value2 = 4;

int diff = 0;

if (value1 > value2) {

    diff = value1 – value2;

    System.out.println(“value 1 is bigger than value 2, diff = “ + diff);
}

else {

    diff = value2 – value1;

    System.out.println(“value 1 is not bigger than value 2, diff = “ + diff);
}
```

Chaining if-else

- Evaluated in order top-to-bottom
- First to test true is executed

```
if ( condition-1 )
 true-statement-1 ;
else
 true-statement-2 ;
        .
        .
        .
else if ( condition-N )
 true-statement-N ;
else
 false-statement ;
```

Chaining if-else

```
int value1 = 10, value2 = 40, diff = 0;
if (value1 > value2)
    diff = value1 - value2;
    System.out.println(“value 1 is bigger, diff = “ + diff);
}
else
    diff = value2 - value1;
    System.out.println(“value 2 is bigger, diff = “ + diff);
}
else
    System.out.println(“value 1 and value 2 are equal”);
}
```

Chaining if-else

```
int value1 = 10, value2 = 40, diff = 0;
if (value1 > value2) {
    diff = value1 - value2;
    System.out.println(“value 1 is bigger, diff = “ + diff);
}
else if (value1 < value2) {
    diff = value2 - value1;
    System.out.println(“value 2 is bigger, diff = “ + diff);
}
else {
    System.out.println(“value 1 and value 2 are equal”);
}
```

Chaining if-else

```
int age = 70;
if (age > 17) {
    System.out.println(“Adult”);
}
else if (age > 64) {
    System.out.println(“Senior adult”);
}
else {
    System.out.println(“Minor”);
}
```

Chaining if-else

```
int age = 70;
if (age > 17) {
    System.out.println(“Adult”);
}
else if (age > 64) {
    System.out.println(“Senior adult”);
}
else {
    System.out.println(“Minor”);
}
```

Chaining if-else

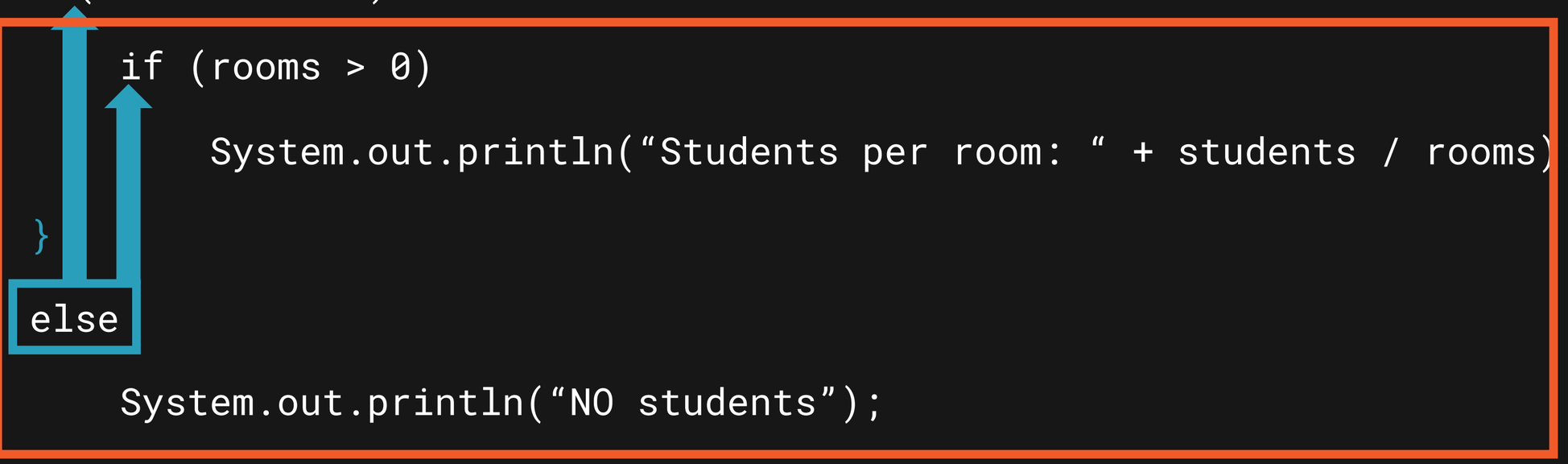
```
int age = 70;
if (age > 64) {
    System.out.println(“Senior adult”);
}
else if (age > 17) {
    System.out.println(“Adult”);
}
else {
    System.out.println(“Minor”);
}
```

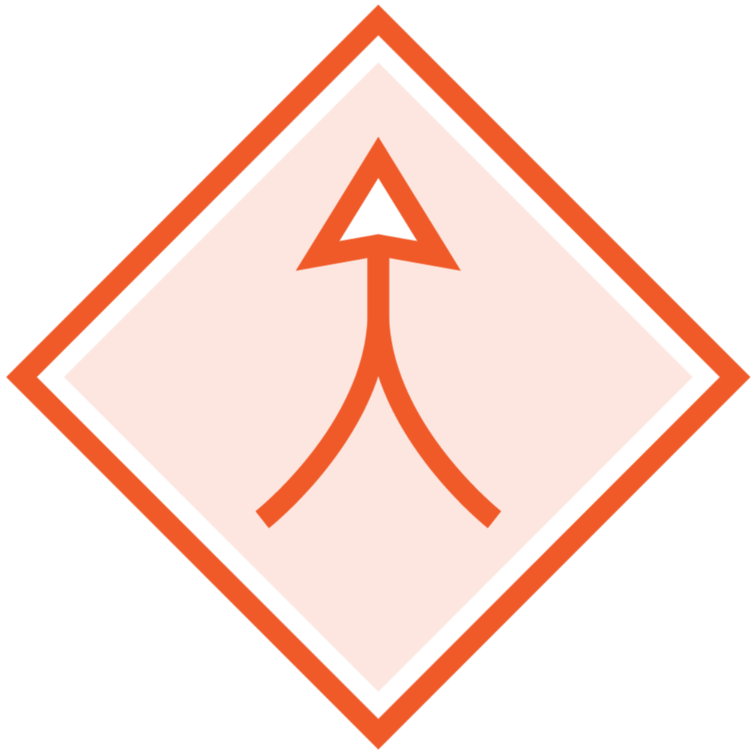
Nested if

```
int students = 0;

int rooms = 4;

if(students > 0)
    if (rooms > 0)
        System.out.println(“Students per room: “ + students / rooms);
}
else
    System.out.println(“NO students”);
```





Logical operators

- Combines two values, variables or expressions
- Produce a single true or false result

And operator

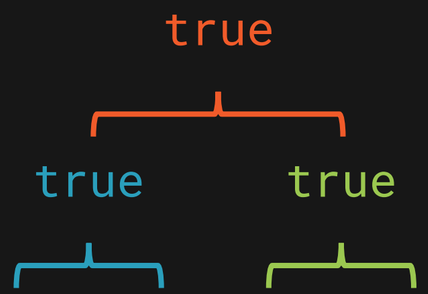
- &&
- True if both sides are true

Or operator

- ||
- True if at least one side is true

Logical Operators

```
int a = 20, b = 14, c = 5;
```




```
if ( a > b && b > c )
    System.out.println(“a is greater than c”);
```

```
int iVal = 1;

if (iVal = 1)
    System.out.println("Won't compile");

if (iVal - 1)
    System.out.println("Still won't compile");

if (iVal == 1)
    System.out.println("This works!");
```

Valid Conditions

Must always be boolean

- **A variable, value, or expression that resolves to true or false**

Summary

if-else

- if conditionally executes a statement
- Can include optional else to execute a statement when condition is false

Condition

- Boolean value, variable, or expression

Block statement

- Groups statements together

Summary

Chaining if-else

- Evaluates multiple conditions
- Evaluated top-to-bottom
- First to test true is executed

Nested if

- One if within another
- Be sure else matches with correct if

Logical operators

- Combine two values, variables, or expressions