Boolean and if

if : Short Circuiting

Lecture Contents

- Short Circuit of `if` statements

Weighting

- `boolean` expressions and `if` statements
  - AP Exam Weighting: **15% - 17.5%**

Short Circuit of &&

```
// Short Circuit &&
if( false && x>5 ) {
    System.out.println("Will NEVER execute this.");
} else {
    System.out.println("Will always execute this.");
}
```

Short Circuit of &&

```
// Short Circuit &&
if( false && x>5 ) {
    System.out.println("Will NEVER execute this.");
} else {
    System.out.println("Will always execute this.");
}
```

```
Will always execute this.
```

Short Circuit of &&

```
int x = 0;
if( x != 0 && (1/x) < 1 ) {
    System.out.println("When x==0, 1/x divides by zero");
} else {
    System.out.println("1/0 should give an ARITHMETIC_EXCEPTION");
    System.out.println("Why does this still work?!");
}
```

Short Circuit of &&

```
int x = 0;
if( x != 0 && (1/x) < 1 ) {
    System.out.println("When x==0, 1/x divides by zero");
} else {
    System.out.println("1/0 should give an ARITHMETIC_EXCEPTION");
    System.out.println("Why does this still work?!");
}
```

```
1/0 should give an ARITHMETIC_EXCEPTION
Why does this still work?!
```

Short Circuit of &&

```
// Short Circuit &&
if( true || x>5 ) {
    System.out.println("Will always execute this.");
} else {
    System.out.println("Will NEVER execute this.");
}
```

Short Circuit of &&

```
// Short Circuit &&
if( true || x>5 ) {
    System.out.println("Will always execute this.");
} else {
    System.out.println("Will NEVER execute this.");
}
```

```
Will always execute this.
```

Short Circuit of | |

```
int x = 0;
if( x == 0 || (1/x) < 1 ) {
    System.out.println("When x==0, 1/x divides by zero");
} else {
    System.out.println("1/0 should give an ARITHMETIC_EXCEPTION");
    System.out.println("Why does this still work?!");
}
```

```
When x==0, 1/x divides by zero
```

Short Circuit of | |

```
int x = 0;
if( x == 0 || (1/x) < 1 ) {
    System.out.println("When x==0, 1/x divides by zero");
} else {
    System.out.println("1/0 should give an ARITHMETIC_EXCEPTION");
    System.out.println("Why does this still work?!");
}
```

```
When x==0, 1/x divides by zero
```

Remember the Order of Operations!

```
int x = 0;
if( x == 0 || (1/x) < 1 ) {
    System.out.println("Works");
} else {
    System.out.println("Never prints");

}
```

```
int x = 0;
if( (1/x) < 1 || x == 0 ) {
    System.out.println("Doesn't Work");
} else {
    System.out.println("Exception.");

}
```

Since we evaluate left-to-right, this code will lead to an exception.

Boolean and if

if : Short Circuiting