If / Else and Case Statements
Questions?
Object vs. Variable

- Variable is something that can store a piece of data
  - Can have variables of type int, double, String, Scanner

- Objects are variables that perform actions when you call their methods.
  - Can have objects of type String, Scanner, Integer, Double

```java
Scanner keyboard = new Scanner(System.in);
int input = keyboard.nextInt();
```

- int input = keyboard.nextInt();
Gotcha  ==

- In an if statement:
  - `var1 = var2` (assignment statement)
    - Error!!!!!!!
  - `var1 == var2` (boolean expression)
  - Do NOT use `==` to compare Strings
    - `string1 == string2`  //BAD
    - `string1.equals(string2);`  //GOOD
if (boolean expression)

DO NOT DO THIS!!!!!!!
Today in COMP 110

- More if / else statements
- Switch statements
Tracing if / else code

- I give you code and input
- You give me output
```java
int overtimeDays = 0;
if (input < 6) {
    System.out.println("I worked " + input + " days this week");
} else {
    overtimeDays = input - 5;
    System.out.println("I worked " + overtimeDays + " days of overtime");
}
```
Write a program that:

- Takes as input your year in college (as an integer)
- Outputs your year as “freshman”, “sophomore”, “junior”, “senior”, or “super senior”

Another Example
Example problem

Prompt user for year

Which year?

1. freshman
2. sophomore
3. junior
4. senior
5. super senior

Next step
With if/else

```java
if (year == 1) {
    System.out.println("freshman");
} else if (year == 2) {
    System.out.println("sophomore");
} else if (year == 3) {
    System.out.println("junior");
} else if (year == 4) {
    System.out.println("senior");
} else if (year == 5) {
    System.out.println("super senior");
} else {
    System.out.println("unknown");
}
```
switch (year) {
    case 1:
        System.out.println("freshman");
        break;
    case 2:
        System.out.println("sophomore");
        break;
    case 3:
        System.out.println("junior");
        break;
    case 4:
        System.out.println("senior");
        break;
    case 5:
        System.out.println("super senior");
        break;
    default:
        System.out.println("unknown");
        break;
}

Controlling expression
Case labels
Break statements
Default case:
all other values
switch statement syntax

```java
switch (controlling expression)
{
    case case label:
        statements;
        break;
    case case label:
        statements;
        break;
    default:
        statements;
        break;
}
```
**switch** statement details

- Only **int** and **char** can be used in the controlling expression
- Case labels must be of same type as controlling expression
- The **break** statement ends the switch statement, go to the next step outside the braces in the code
- The **default** case is optional
Write a switch statement that takes as the controlling expression the number of siblings a person has (as an int) and outputs an appropriate messages as follows:

<table>
<thead>
<tr>
<th>Number of Siblings</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>An only child</td>
</tr>
<tr>
<td>1</td>
<td>Just one you say</td>
</tr>
<tr>
<td>2</td>
<td>Two siblings!</td>
</tr>
<tr>
<td>3</td>
<td>Big Family!</td>
</tr>
<tr>
<td>4 or more</td>
<td>I don’t believe you</td>
</tr>
</tbody>
</table>
Swicth Statements

```java
switch (numSiblings)
{
    case 0:
        System.out.print(“An only child”);
        break;
    case 1:
        System.out.print(“Just one you say”);
        break;
    case 2:
        System.out.print(“Two siblings!”);
        break;
    case 3:
        System.out.print(“Big family!”);
        break;
    default:
        System.out.print(“I don’t believe you”);
        break;
}
```
The Conditional Operator

```c
if (n1 > n2) {
    max = n1;
} else {
    max = n2;
}
can be written as
max = (n1 > n2) ? n1 : n2;
```

The `?` and `:` together call the conditional operator or ternary operator.
Tomorrow

- Read 4.1–4.2
- Loop Statements