FRC Java
Lesson 2

Making Decisions

If Statements, Comparison Operators, Switch

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IF statement

```
if(<condition>) {
   <code>;
}
```

- Checks the condition.
  - If it is true, it runs the code inside
  - If it is false, the code inside is skipped over

IF ELSE Statement

```
if(<condition>) {
    <code>;
} else {
    <code>;
}
```

- If condition is false
  - Run code in else
- If condition is true
  - Run code in if (NOT the code in else)

IF, ELSE IF, ELSE Statements

```
if(<condition) { <code>;}
else if(<condition>) {
  <code>;
} else { <code>; }
```

- When If is false, check else if, if that is false run else.
- Can have without else as well.
- You can have more than one else if()

Comparison Operators

- == - is equal to
- != - not equal to
- < - less than
- <= - less than or equal to
- > - greater than
- >= - greater than or equal to

Using Comparison Operators

- If(43 == 43) {} - true
- If(24 !=24) {} - false
- If(43 < 50) {} - true
- If(50 <= 49) {} - false
- If(38 > 2) {} - true
- If(32 >= 70) {} - false
- Comparing Strings uses the equals() method
  - <String or Variable>.equals(<String or Variable>);

Boolean Operators

- && - and
- || - or
- Using Them
  - If(4>3 && 5>3) {} - true
  - If(4>3 && 3>6 {} - false
  - If(7>3 || 4 > 8) {} - true
  - If(4 == 5 || 5 < 99) {} - true
  - If(4 != 4 || 6 > 2) {} - false
  - If(4 != 7 || 4 > 9) {} - true

Examples

-
  ```
  if(numLeds % 2 == 0) {
    System.out.println(“Even Number of LEDs”);
  }
  ```
- I used this for checking how many LEDs I had

```
if(interval <= 100 && interval >=500) {
  System.out.println(“Input is in range”);
} else {
  System.out.println(“Input out of range”);
}
```

- I used this for checking my delay timer was ok

Switch Statement

```
switch(<variable>) {
  case <value>:
    <code>
    break;
  case <value>:
    <code>
    break;
  default:
    <code>
    break;
}
```

Switch Statement

- Check bunch of inputs and perform code based on it
- break; is used to exit the Switch Statement
    - If left out it would also perform all options after the first.
- Can have as many case: as you want.
- default: can be used if you want an “else” on the end.

Switch Statement Example

```
switch(mode) {
  case 0:
    off();
    break;
  case 1:
    pulseForward();
    break;
  case 3:
    crissCross();
    break;
}
```

Assignment

- Use an if statement to check for positive, negative, or 0
  - If Positive print “POS” to screen, if Negative print “NEG”, 0 print ZERO.
- Use a switch statement to check if a given number is the same as your house number, age, or other possible number.
  - Print output accordingly.