Control Flow - Branching

```
if <condition>:
    statements
```

```
if <condition>:
    statements

elif <condition>:
    statements
else:
    statements
```

```
if <condition>:
    statements

else:
    statements
```

- \<condition\>has a **Boolean** value: Trueor False

- relies on indentation to define scope in the code

Control Flow-If ...

- The if loop has the following general form.

```
if <condition>:
    statements
```

- If condition evaluates to **True**, the statements are executed. Otherwise, they are skipped entirely.

Control Flow-If ...

```
a = 1
b = 0
if a:
    print("a is true!“)
if not b:
    print("b is false!“)
if a and b:
    print("a and b are true!“)
if a or b:
    print("a or b is true!" )
```

What is the output?

a is true!
b is false!
a or b is true!

Control Flow - Branching

- Boolean conditions
  - Equals: a == b
  - Not Equals: a != b
  - Less than: a < b
  - Less than or equal to: a <= b
  - Greater than: a > b
  - Greater than or equal to: a >= b

- We can also pair an else with an if branch.

  if condition **:**

        statements

  else:

        statements

```
a = 1
b = 2
c = 2
if a > b:
    print("a is greatest")
else:
    print("b is greatest")
```

What is the output?

b is greatest

- The **elif** keyword can be used to specify an else if branch.

if condition **:**

    `statements`

else if condition:

    `statements`

else:

    `statements`

```
a = 0
b = 2
c = 1
if a > b:
    print("a is greatest")
elif b > c:
    print("b is greatest")
else:
    print("c is greatest")
```

What is the output?

b is greatest

- Furthermore, if statements may be nested within each other.

```
if condition :
        if condition:
                statements
        else:
                statements
else:
        statements
```

```
a = 1
b = 0
c = 2
if a > b:
    if a > c:
        print("a is greatest")
    else:
        print("c is greatest")
elif b > c:
    print("b is greatest")
else:
    print("c is greatest")
```

What is the output?

c is greatest

```
num = 5
if num == 3:
    print('boss')
elif num == 2:
    print('user')
elif num == 1:
    print('worker')
else:
    print('roadman' )
```

What is the output?

```
var = 100
if var < 200:
    print("Expression value is less than 200")
    if var == 150:
        print("Which is 150")
    elif var == 100:
        print("Which is 100")
    elif var == 50:
        print("Which is 50")
elif var < 50:
    print("Expression value is less than 50")
else:
    print("Could not find true expression")
```

What is the output?