

JANUARY 22ND, 2025

# Conditionals

CE 311K - L05

A vertical decorative image on the left side of the slide shows an aerial photograph of a river flowing through a rugged, light-colored landscape, possibly sandstone or granite, with deep, narrow gorges and a bright blue-green color for the water.

# Review: Basic Conditionals

**Conditionals** allow us to execute code blocks based on conditions

```
temperature = 75.0
if temperature > 80.0:
    print("It's warm!")
```

**Indentation** is how Python knows what code to execute if the condition is true/false

```
age = 20
if age >= 18:
    print("You are an adult.") # only runs if condition is true

print("Thank you for using the age checker!") # Runs regardless
```



# Review: Multiple Conditions

`else` is a **catch-all** case

```
if humidity > 0.95:  
    print("It is probably raining")  
else:  
    print("It is likely not raining")
```

Provide more conditions to check with `elif`

```
if temperature > 75:  
    print("It is warm!")  
elif temperature > 65:  
    print("It is pleasant!")  
else:  
    print("It is cold")
```



# Nested Conditions

We can **Nest** conditional blocks within each other

```
if temperature > 75:  
    if humidity > 0.5:  
        print("It is warm and humid")  
    else:  
        print("It is warm and dry")  
elif temperature > 65:  
    print("It is pleasant!")  
else:  
    if humidity > 0.5:  
        print("It is cold and wet")  
    else:  
        print("It is cold and dry")
```



# One-Line Statements

Write conditional logic in a compact and concise manner  
Called a **Ternary Conditional Expression** when *if* and *else* are included

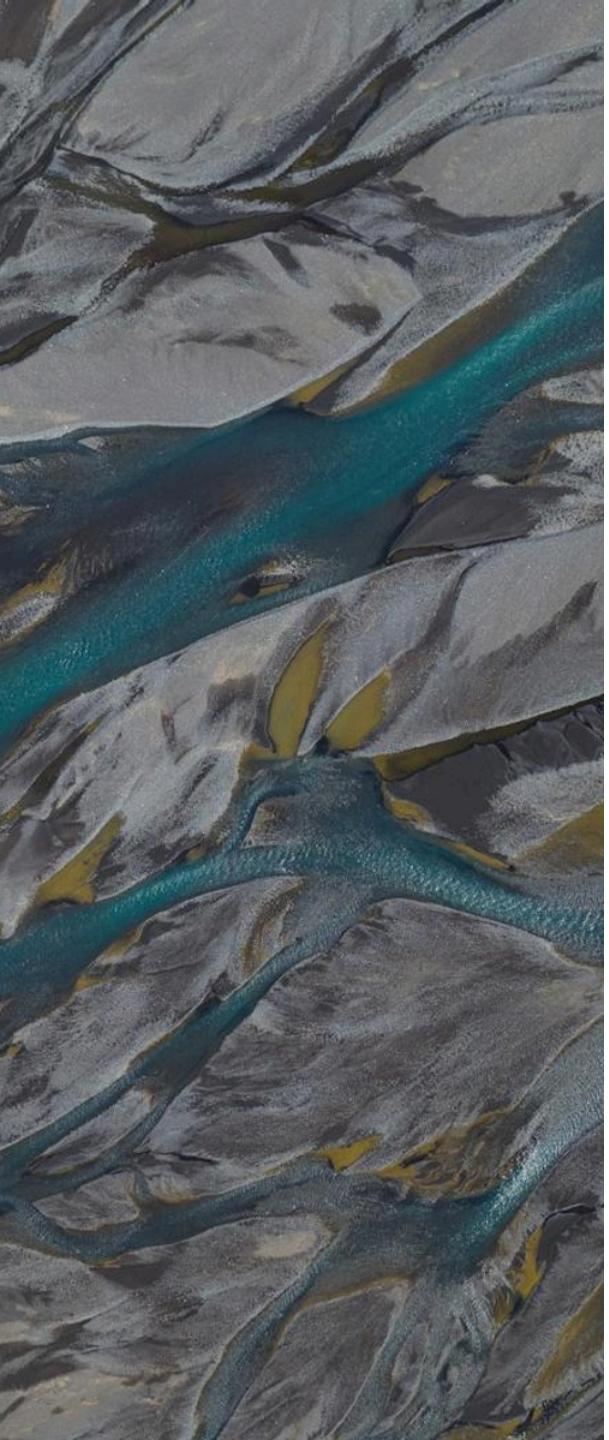
```
value_if_true if condition else value_if_false
```

```
message = "It's warm!" if temperature > 70 else "It's cold!"  
discount = 20 if is_member else 0
```

---

Without an *else*, you can simply put your expression on the same-line

```
if x > 5: print("x is greater than 5")
```



# Booleans Vars and Multiple Conditions

Use boolean variables directly in conditional statements

```
if is_humid: # same as `if is_humid == True:`  
    print("It is humid")
```

---

Logical operators allow for multiple conditions

```
if is_humid and temperature > 75: # both have to be true  
    print("It is warm and humid")  
  
if day_of_week == "Sat" or is_sun: # only one has to be true  
    print("It is the weekend!")
```

# Summary

You can **nest** conditionals

Create more sophisticated logic/flows

Use boolean variables and operations in conditional statements

**Write single-line conditional statements**

Ternary expressions have if-else