

# Python

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Conditionals

A decorative graphic in the background features various stylized leaves in shades of blue, purple, and white. On the left side, there's a large purple leaf with dark veins, a smaller green fern-like leaf above it, and a white leaf with thin veins to its right. On the bottom left, there's a large, light blue leaf with a prominent central vein. On the top right, there's a cluster of long, thin, light blue leaves.

# 01

Review of previous lessons.

# **What is debugging?**

Looking through code to find the problem, and fixing it.

# How did debugging get its name?

Computers used to get ACTUAL bugs in it! You can thank Grace Hopper for the name.

# **What's a variable and how do I write it?**

A variable is a container (like a labeled box) for our data.

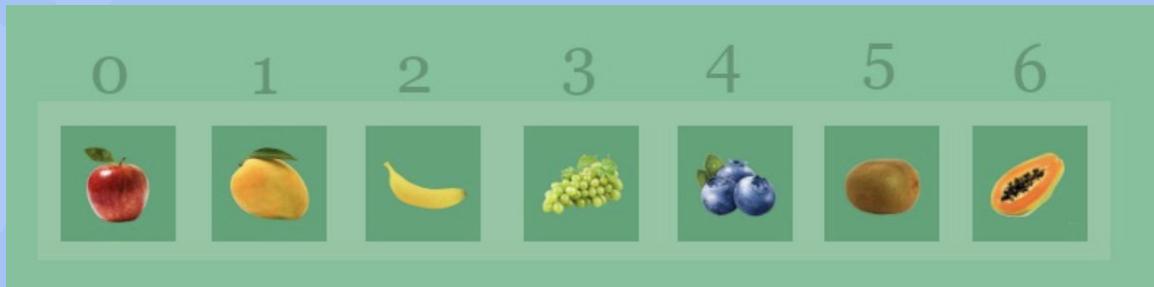
```
color = "green"
```

# What is a data type (hint: it's in the name)?

A type of data! It describes what our data is.

# **What kinds of data types have we used?**

**String, number, boolean**



The array is fruits. What is fruits[2]?

BANANA

**Think of the expression  $2 + 5 \times 3$ . A computer would think this is 21, but we know it's 17. Why are the answers different?**

Computers read from left to right, they don't follow an order of operations unless we include parenthesis.

# What's a function?

A chunk of code that can be called countless times, and helps with organization.

# What's a parameter?

A value that we can give to our function to do something with.

**What is something that you accomplished or  
did last year that you're proud of?**

A decorative graphic in the background features stylized leaves in various shades of blue and purple. On the left, there's a cluster of dark blue and purple leaves with prominent veins. Above them is a white leaf with thin, light blue veins. To the right, a large, semi-transparent blue leaf overlaps the main title area.

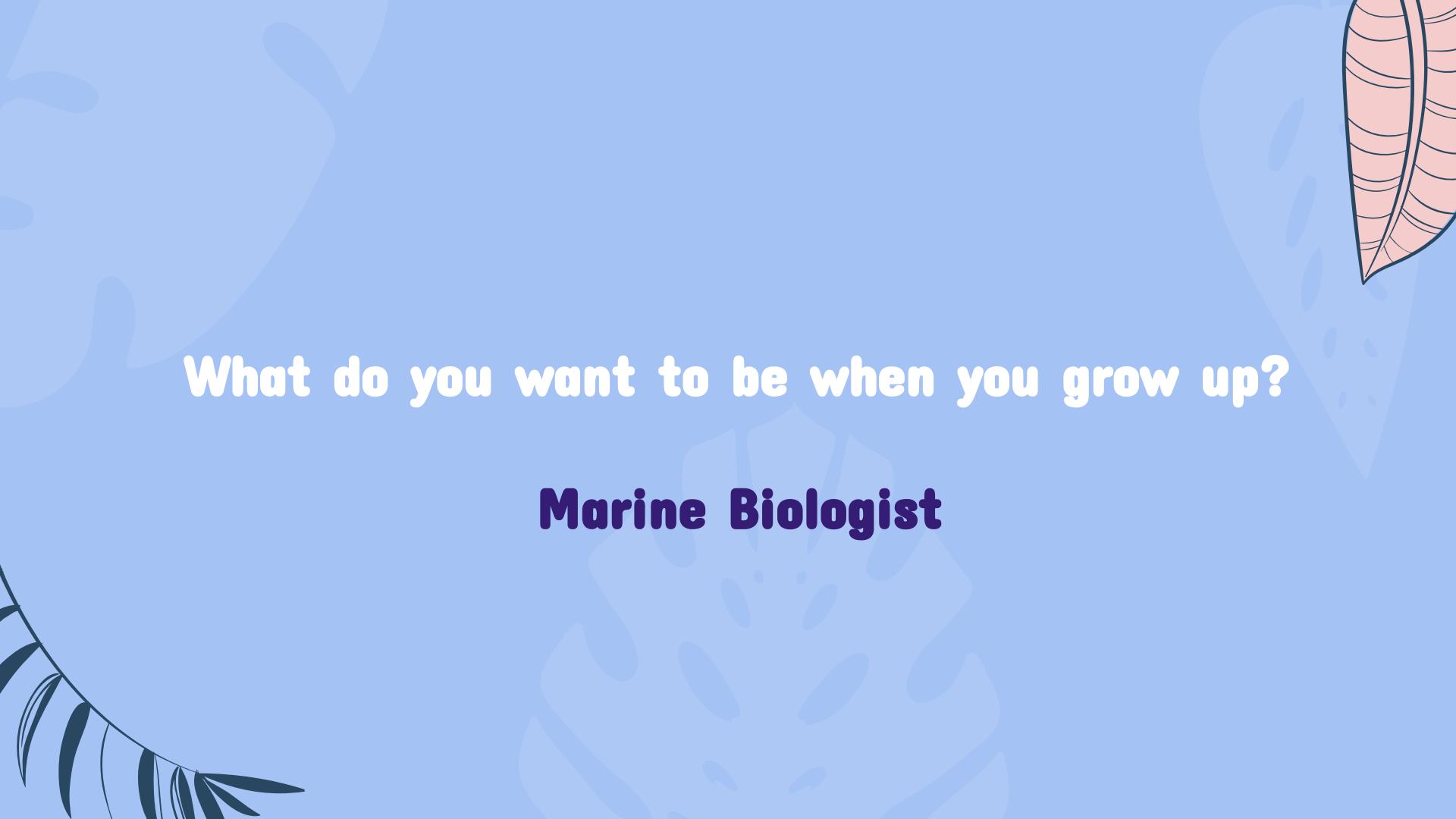
# 02

Where in the world is technology?

# Brainstorm

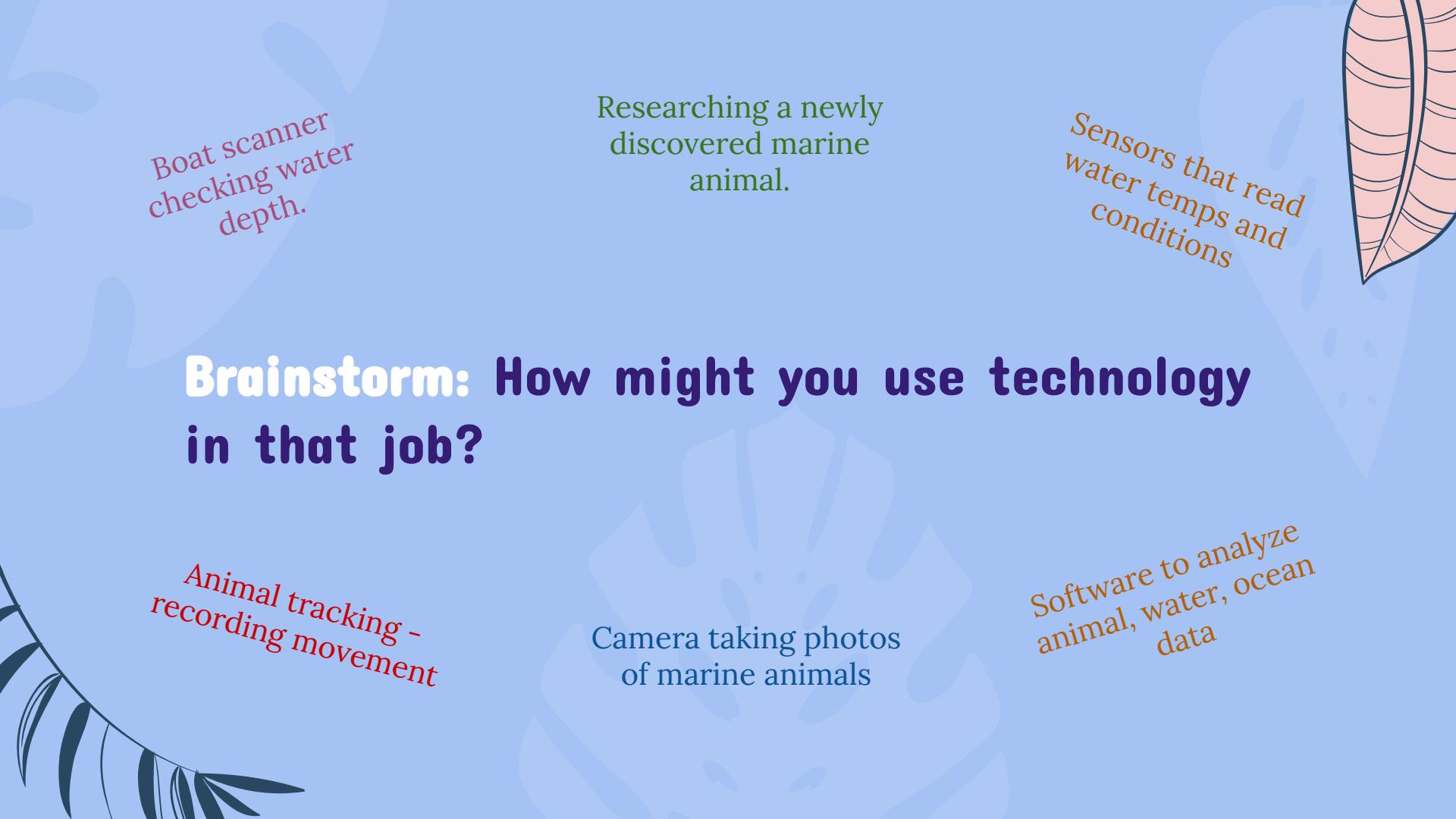
**What things in your life use technology?**

- Drive-through taking my order
- Google docs to create your worksheet
- Spell-check
- Gradebook for teachers
- Alarm clock



**What do you want to be when you grow up?**

**Marine Biologist**



Boat scanner  
checking water  
depth.

Researching a newly  
discovered marine  
animal.

Sensors that read  
water temps and  
conditions

## Brainstorm: How might you use technology in that job?

Animal tracking -  
recording movement

Camera taking photos  
of marine animals

Software to analyze  
animal, water, ocean  
data

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03

SHE-ro of the month!

# SHEro - Ada Lovelace



Ada Lovelace was a mathematician and the first programmer... ever!

Video:

[https://www.youtube.com/watch?v=uOkmyICUW\\_c](https://www.youtube.com/watch?v=uOkmyICUW_c)

**What is one thing you liked or learned about Ada Lovelace?**

# SHEro - Megan Smith



An American engineer that is still around today.

She is the founder and CEO of shift7, which works on tech-forward inclusive innovation for faster impact on economic, social and environmental challenges.

# 04

## Conditionals



# Conditionals - what are they?

## Subject to...

One or more requirements being met.

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## In grammar...

We have conditional clauses.

## Example:

Remember booleans? If **TRUE**, the code can run.

# Conditionals in Grammar

IF...

it's raining, you will get wet.

# Conditionals in Grammar

IF...

it's raining, you will get wet.

# Conditionals in Grammar

IF...

it's raining, you will get wet.

# Conditionals in Grammar

IF...

you heat ice, it melts.

# Conditionals in Grammar

IF...

you heat ice, it melts.

# Conditionals in Grammar

IF...

you heat ice, it melts.

# Conditionals in Code - Water

**if**

less than 32, water freezes.

**else if**

greater than 212, water boils.

**else**

water is liquid.

# Conditionals in Code - Water

**if**

less than 32, water freezes.

**elif**

greater than 212, water boils.

**else**

water is liquid.

# Conditionals in Code - Water

if

less than 32, water freezes.

```
if temp < 32:  
    print("The water will freeze!")
```

# Conditionals in Code - Water

**if**

less than 32, water freezes.

```
if temp < 32:  
    print("The water will freeze!")
```

# Conditionals in Code - Water

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# Conditionals in Code - Water

if

less than 32, water freezes.

```
if temp < 32:  
    print("The water will freeze!")
```

# Conditionals in Code - Water

**if**

less than 32, water freezes.

**else**

water is liquid.

```
if temp < 32:  
    console.log("The water will freeze!")  
else:  
    console.log("The water is liquid.")
```

# Conditionals in Code - Comparisons

`<=`

less than or equal to

`>=`

greater than or equal to

`==`

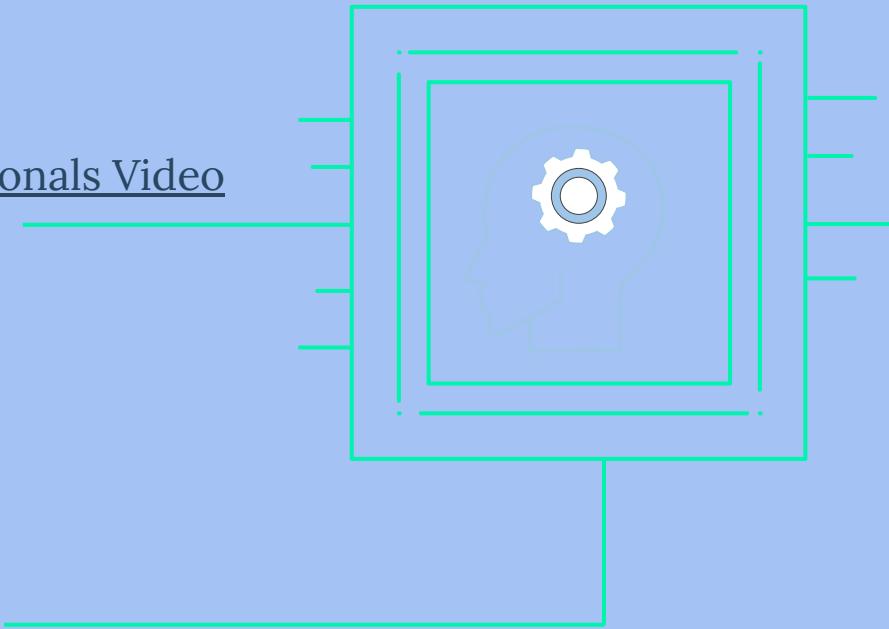
equal to

`!=`

not equal to

# Process Conditionals Another Way

Conditionals Video



# Example – Stevie Budd

if today is Christmas:

**Stevie wears snowman PJs!**

elif it's chilly outside:

// It's not Christmas but it's chilly.

**Stevie wears a vest.**

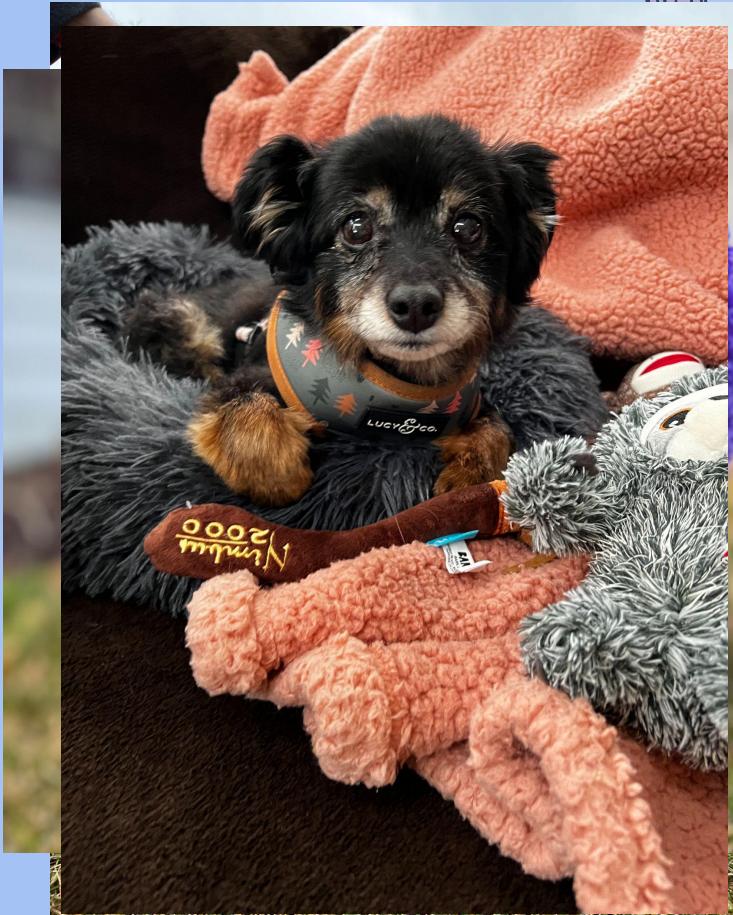
elif it's COLD outside:

// It's not Christmas and it's COLDer

**Stevie wears a sherpa.**

else:

**Stevie wears her harness.**



# Example - Cats

if cat color is orange:

**Hamish**

elif cat color is black:

**Ampersand**

elif brown tabby:

**Mina**

else:

**Po**



# 05

JavaScript coding exercises.

A decorative graphic in the background features various stylized leaves in shades of blue, purple, and white, creating a natural and organic feel.

# 05

Python coding exercises.

```
1 var clothing = ""  
2 var temp = 0  
3  
4 if (temp < 40) {  
5     clothing = "jacket & gloves"  
6 } else if (temp >= 40 && temp < 55) {  
7     clothing = "jacket"  
8 } else if (temp >= 55 && temp < 60) {  
9     clothing = "sweater or cardigan"  
10 } else {  
11     clothing = "shirt"  
12 }  
13  
14 console.log(`When it's ${temp} degrees, I wear a ${clothing} to go outside.`)
```

```
1 clothing = ""
2 temp = 0
3
4 if temp < 40:
5     clothing = "jacket & gloves"
6 elif temp >= 40 and temp < 55:
7     clothing = "jacket"
8 elif temp >= 55 and temp < 60:
9     clothing = "sweater or cardigan"
10 else:
11     clothing = "shirt"
12
13 print(f'When it\'s {temp} degrees, I wear a {clothing} to go outside.')
14
```

**Now that you've written your code, what is printed in the console?**

**For each set of instructions in your packet, make the code change and write down what was printed in the console.**



07

## Custom Conditional