Code with Me Meeting #4

Variables and Files

WHAT ARE VARIABLES:
- Variables are like containers for storing data.
- They can be any combination of letters, numbers, and underscores
- Variable names must start with a letter or an underscore
- Variable names are case sensitive!
- You can assign any values to a variable, strings numbers, etc.

DECLARING A VARIABLE:
- A variable is declared when you write `x = 'Apple'`
- Yes, it's that simple! Now the string `'Apple'` will be stored in the variable `x`
- If you type `print(x)` can you guess what the output will be?

ASSIGNING VALUES TO MULTIPLE VARIABLES:
- You can assign values to multiple variables at the same time.
- `x, y, z = 'Apple', 'Banana', 'Cherry'`
- This would be equivalent to assigning the variables in separate lines.
- You can also assign the same value to many variables:
  - `x = y = z = 'Apple'`
  - Now, calling on any of these variables will return `'Apple'`

IMPORTANT NOTES:
- When assigning numbers to variables
  - Variables are not like math, x does not 'equal to' a number.
  - You are assigning values, so it's more like x → 4 not x = 4
  - You can reassign values
- Remember concatenating strings? You can use the same method to concatenate a string stored in a variable.
  - `print('I love ' + x)`
  - What do you think will be the output?

OPENING FILES:
- In Python, you can open a file from your computer or create a new one to work with it.
  - Built-in function, `open()` that can open a file.
    - In Python, functions allow you to perform tasks. You can define your own function, or use a built-in one like this.
  - Syntax: `file = open("testfile.txt")`
  - Must be in the correct directory, otherwise specify the full path.
  - Store it in a variable! Here, that's `file`

FILE MODES:
- We can specify what mode we want to open the file in.
- There is read, write, text, and create
- To read, say `file = open("testfile.txt", "r")`
- "t" which represents text mode, is a default. You can also specify "rt", but the 't' part is understood.
- For writing, replace "r" with "w"

CREATING, READING, AND WRITING FILES:
- To create, just write the name of the file you want to create, and then "x"
  - Like this: `file = open("newfile.txt", "x")`
  - This creates a new file, and you can write to it using the `.write()` function
- `file.read()` returns the full contents of the file and allows you to access them. You cannot edit them.
  - You can also specify the number of characters you want to read in the brackets.
- You can use the `.write()` function to write to the file, like this: `file.write("This is a test file!")`
- Lastly, you will need to close the file. It's simple: `file.close()`

LAST NOTES AND REMINDERS