Debugging Errors: Takeaways ⤴

Syntax

- SyntaxError occurs when the Python interpreter can't parse the code as valid Python code:

    - Input:

    ```
    the_answer = "42
    ```

    - Output:

    ```
    File "ipython-input-1-85ffad3b5465", line 1
        the_answer = "42
                      ^
    SyntaxError: EOL while scanning string literal
    ```

- IndentError occurs when the Python interpreter can't accurately determine a line's intended indentation:

    - Input:

    ```
    def find():
        print("42")
         print("what, really?")
    ```

    - Output:

    ```
    File "ipython-input-2-dd6a6ca22a8f", line 3
        print("what, really?")
        ^
    IndentationError: unexpected indent
    ```

- TypeError occurs when the Python interpreter didn't know how to apply a function or operator to a specific value type:

    - Input:

    ```
    42 + "42"
    ```

    - Output:

    ```
    TypeError
    ipython-input-5-6061d7365225 in ()
        42 + "42"
    TypeError: unsupported operand type(s) for +: 'int' and 'str'
    ```

- ValueError occurs when an operation or function received a value of the right type but an inappropriate value:
  - Input:
    ```
    float("guardians")
    ```
  - Output:
    ```
    ValueError

    ipython-input-8-325ad4dda32a in ()

        float("guardians")

    ValueError: could not convert string to float: 'guardians'
    ```
- IndexError:
  - Input:
    ```
    lives = [1,2,3]

    lives[4]
    ```
  - Output:
    ```
    IndexError                            Traceback (most recent call last)

    ipython-input-9-e6921ecc6ecc in ()

          1 lives = [1,2,3]

     ---> 2 lives[4]

    IndexError: list index out of range
    ```
- AttributeError:
  - Input:
    ```
    f = open("story.txt")

    f.split(" ")
    ```
  - Output:
    ```
    AttributeError                        Traceback (most recent call last)

    ipython-input-10-4cad13e731cc in ()

          1 f = open("story.txt")

     ---> 2 f.split(" ")

    AttributeError: '_io.TextIOWrapper' object has no attribute 'split'
    ```

Concepts

- The two main types of errors are:
    - Syntax errors. Some examples of syntax errors include:
        - Missing ending quotes or starting quotes
        - Using improper indentation
        - Using improper keywords
    - Runtime errors. Some examples of runtime errors include:
        - Calling a function before it's defined
        - Calling a method or attribute that the object doesn't contain
        - Attempting to convert a value to an incompatible data type

Resources

- [Python Documentation: Errors and Exceptions](#)