

# Debugging Errors: Takeaways

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## 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](#)



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