**Common Error Types in Python**

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Python raises various types of errors (exceptions) when something goes wrong in a program. Below are some of the most common errors with examples.

**1. IndexError**

Occurs when trying to access an invalid index in a list or tuple.

**Example:**

my\_list = [1, 2, 3]

print(my\_list[5]) # IndexError: list index out of range

**Fix:** Ensure the index is within the valid range.

**2. NameError**

Occurs when trying to use a variable that has not been defined.

**Example:**

print(my\_variable) # NameError: name 'my\_variable' is not defined

**Fix:** Define the variable before using it.

**3. TypeError**

Occurs when performing an invalid operation on a data type.

**Example:**

num = 5

text = "hello"

print(num + text) # TypeError: unsupported operand type(s) for +: 'int' and 'str'

**Fix:** Convert types explicitly before performing operations.

**4. SyntaxError**

Occurs when Python cannot parse the code due to incorrect syntax.

**Example:**

if True

print("Hello") # SyntaxError: expected ':'

**Fix:** Correct the syntax, such as adding a colon :.

**5. ValueError**

Occurs when a function receives an argument of the correct type but with an invalid value.

**Example:**

num = int("hello") # ValueError: invalid literal for int() with base 10

**Fix:** Ensure the input value is valid.

**6. KeyError**

Occurs when trying to access a dictionary key that does not exist.

**Example:**

my\_dict = {"name": "Alice"}

print(my\_dict["age"]) # KeyError: 'age'

**Fix:** Use .get() or check if the key exists.

print(my\_dict.get("age", "Not Found")) # Returns 'Not Found' instead of error

**7. AttributeError**

Occurs when an invalid attribute is accessed on an object.

**Example:**

num = 10

print(num.upper()) # AttributeError: 'int' object has no attribute 'upper'

**Fix:** Ensure the attribute exists for the given object type.

**8. ZeroDivisionError**

Occurs when trying to divide by zero.

**Example:**

result = 10 / 0 # ZeroDivisionError: division by zero

**Fix:** Check if the denominator is zero before division.

**9. ImportError / ModuleNotFoundError**

Occurs when trying to import a module that does not exist.

**Example:**

import nonexistent\_module # ModuleNotFoundError: No module named 'nonexistent\_module'

**Fix:** Install or check the module name.

**Summary Table**

| **Error Type** | **Cause** |
| --- | --- |
| **IndexError** | Accessing an invalid index |
| **NameError** | Using an undefined variable |
| **TypeError** | Performing an invalid operation between types |
| **SyntaxError** | Incorrect Python syntax |
| **ValueError** | Wrong value for a valid data type |
| **KeyError** | Accessing a missing dictionary key |
| **AttributeError** | Calling a non-existent attribute |
| **ZeroDivisionError** | Dividing by zero |
| **ImportError** | Importing a missing module |