Exception Handling in Python

INTRODUCTION TO ERRORS, EXCEPTIONS, AND HANDLING TECHNIQUES

What is Exception Handling?

DEFINITION

- Exception Handling refers to the process of responding to the occurrence of exceptions – anomalous or exceptional conditions requiring special processing.

WHY IS IT IMPORTANT?

- Ensures the smooth running of code.
- Prevents crashes and handles unexpected inputs or behavior gracefully.

Types of Errors

SYNTAX ERRORS

- Occur when the parser detects a syntactical mistake.
- Example: print("Hello)

EXCEPTIONS

- Errors detected during execution.
- Example: Division by zero (ZeroDivisionError).

Common Python Exceptions

- ZeroDivisionError: Raised when you attempt to divide a number by zero.
- ValueError: Raised when a function receives an argument of the correct type but inappropriate value.
- TypeError: Raised when an operation or function is applied to an object of inappropriate type.
- IndexError: Raised when attempting to access an index that is out of the valid range for a list or other sequence.
- KeyError: Raised when a dictionary key is not found.

Basic Structure of Try-Except Block

- **Try Block:** Code to be executed.
- **Except Block:** Handles specific exceptions that occur in the try block.

```
try:
    # Code that may raise an exception
except SomeException:
    # Code that runs if an exception occurs
```

Example of Try-Except

```
try:
    num = int(input("Enter a number: "))
    result = 100 / num
    print(result)
except ZeroDivisionError:
    print("You cannot divide by zero!")
except ValueError:
    print("Invalid input. Please enter a valid integer.")
```

- Catching Multiple Exceptions

```
try:
    # Some code
except (TypeError, ValueError):
    # Handle both exceptions
```

Finally Block

- Always executes whether an exception occurred or not.

```
try:
    # Code
except SomeException:
    # Handle exception
finally:
    # Code that always executes
```

ELSE Block

- The else block executes if no exception occurs.

```
try:
    # Code
except SomeException:
    # Handle exception
else:
    # Executes if no exception occurs
```

THANK YOU!

HAPPY LEARNING