



File Handling and Exception Handling

Course Unit 11: Week 14



Objectives:

1. Explain python file handling and exception handling.
2. Inspect what modules and packages need file handling and exception handling.
3. Prepare file handling and exception handling on the modules / packages.



Python Exception Handling

Python Exception Handling

- Exceptions are raised when the program is syntactically correct, but the code results in an error. This error does not stop the execution of the program, however, it changes the normal flow of the program.
- exceptions are raised when some internal events occur which change the normal flow of the program.



Most Common Types of Exceptions

Most Common Types of Exceptions

SyntaxError

- This exception is raised when the interpreter encounters a syntax error in the code, such as a misspelled keyword, a missing colon, or an unbalanced parenthesis.

TypeError

- This exception is raised when an operation or function is applied to an object of the wrong type, such as adding a string to an integer.



Most Common Types of Exceptions

NameError

- This exception is raised when a variable or function name is not found in the current scope.

IndexError

- This exception is raised when an index is out of range for a list, tuple, or other sequence types.

Most Common Types of Exceptions

KeyError

- This exception is raised when a key is not found in a dictionary.

ValueError

- This exception is raised when a function or method is called with an invalid argument or input, such as trying to convert a string to an integer when the string does not represent a valid integer.

Most Common Types of Exceptions

AttributeError

- This exception is raised when an attribute or method is not found on an object, such as trying to access a non-existent attribute of a class instance.

IOError

- This exception is raised when an I/O operation, such as reading or writing a file, fails due to an input/output error.



Most Common Types of Exceptions

ZeroDivisionError

- This exception is raised when an attempt is made to divide a number by zero.

ImportError

- This exception is raised when an import statement fails to find or load a module.



Advantages of Exception Handling



Advantages of Exception Handling

Improved program reliability

- you can prevent your program from crashing or producing incorrect results due to unexpected errors or input.

Simplified error handling

- Exception handling allows you to separate error handling code from the main program logic, making it easier to read and maintain your code.

Advantages of Exception Handling

Cleaner code

- you can avoid using complex conditional statements to check for errors, leading to cleaner and more readable code.

Easier debugging

- Python interpreter prints a traceback that shows the exact location where the exception occurred, making it easier to debug your code.



Disadvantages of Exception Handling



Disadvantages of Exception Handling

Performance overhead

- slower than using conditional statements to check for errors, as the interpreter has to perform additional work to catch and handle the exception.

Increased code complexity

- can make your code more complex, especially if you have to handle multiple types of exceptions or implement complex error handling logic.

Disadvantages of Exception Handling

Possible security risks

- Improperly handled exceptions can potentially reveal sensitive information or create security vulnerabilities in your code, so it's important to handle exceptions carefully and avoid exposing too much information about your program.

References:

- 8. Errors and Exceptions. (n.d.). <https://docs.python.org/3/tutorial/errors.html>
- File Handling in Python. (n.d.). <https://www.geeksforgeeks.org/file-handling-python/>
- File Handling in Python – How to Create, Read, and Write to a File. (2022).
- <https://www.freecodecamp.org/news/file-handling-in-python/>
- Learn Python Programming. (2023). <https://www.tutorialsteacher.com/python>
- Python Exception Handling. (n.d.). <https://www.geeksforgeeks.org/python-exception-handling/>
- Python Tutorial. (2022). <https://www.w3resource.com/python/python-tutorial.php>
- Python Tutorial. (n.d.). <https://www.tutorialspoint.com/python/index.htm>
- Python Tutorial. (n.d.). <https://www.w3schools.com/python/default.asp>