Experiment 05 –Python Programming on Files/Directories Exploration & Exception Handling.

Learning Objective: Student should be able to build a program through which they can explore Files & Directories. Also they should know about Exception can be Handled in Python.

Tools: Python under Windows environment

Theory: Develop a python program demonstrating file and directory exploration.

1. Write A Python Program demonstrating file & directory exploration.

Here are the general steps for building a Python exploring the Files & Directories.

1. Import the os module: The os module in Python provides a way of interacting with the file system. It is used to access and manipulate files and directories.

2. Define a function to explore files in a directory: This function should take the directory path as an argument and should use the os module to list all files in the directory.

3. Define a function to explore subdirectories in a directory: This function should take the directory path as an argument and should use the os module to list all subdirectories in the directory.

4. Define a main function: This function should take a directory path as an argument and should call the explore files and explore subdirectories functions.

5. Test the program: Run the program and provide a directory path as an argument to the main function. The program should display all the files and subdirectories in the directory.

Program:

main.py > explore_directories

```python
import os

def explore_files(directory):
    for root, dirs, files in os.walk(directory):
        for file in files:
            print(os.path.join(root, file))

def explore_directories(directory):
    for root, dirs, files in os.walk(directory):
        for dir in dirs:
            print(os.path.join(root, dir))

def main(directory):
    print("Exploring files...")
    explore_files(directory)
    print("\nExploring directories...")
    explore_directories(directory)

if __name__ == '__main__':
    directory = input("Enter directory path: ")
    main(directory)

```

Output:

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadLine for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadLine'.

PS C:\Users\ACER\OneDrive\Desktop> python -u "c:\Users\ACER\OneDrive\Desktop\main.py"
Enter directory path: C:\Users\ACER\OneDrive\Desktop\FILE
Exploring files...
C:\Users\ACER\OneDrive\Desktop\FILE\main.py
C:\Users\ACER\OneDrive\Desktop\FILE\sample text.txt

Exploring directories...
C:\Users\ACER\OneDrive\Desktop\FILE\test folder
PS C:\Users\ACER\OneDrive\Desktop>
```

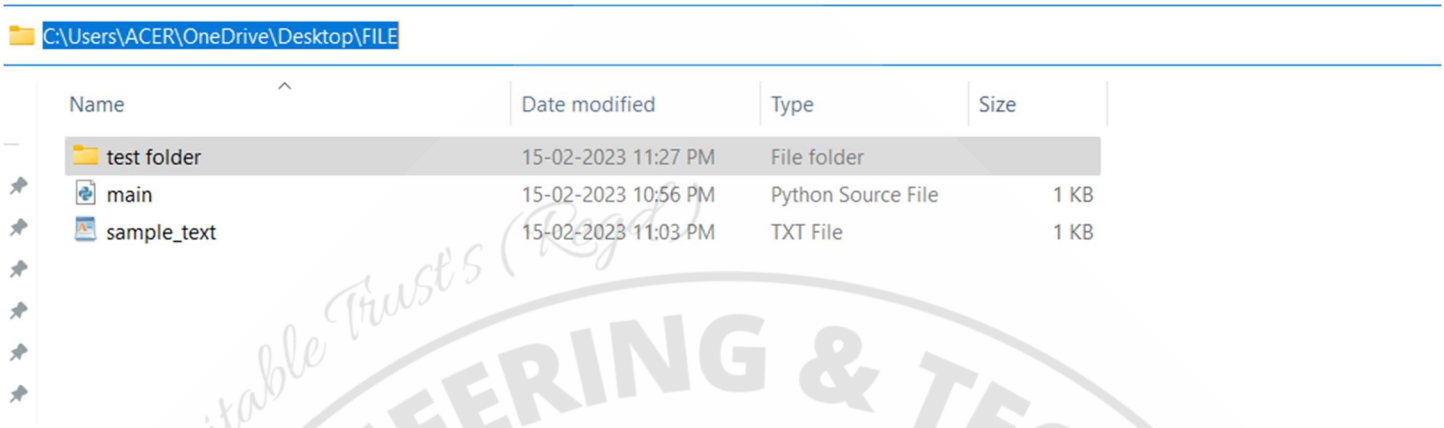

2. Write A Python Program showcasing Exception Handling.

Here are the steps through which we can make a gist how to handle Exception Handling.

1. Define a function that performs a task that may raise an exception: This function could be anything, as long as it performs a task that may raise an exception. For example, it could be a function that reads a file or performs a division operation.

2. Use a try-except block to handle the exception: Inside the function, wrap the code that may raise an exception in a try-except block. In the except block, catch the exception and handle it appropriately.

3. Test the program: Call the function and pass in arguments that will trigger the exception. Verify that the exception is caught and handled as expected.

Program:

```
def divide(x, y):
    try:
        result = x / y
    except ZeroDivisionError:
        print("Error: Division by zero")
    else:
        print(f"The result is {result}")

# Testing the program
divide(10, 0)
divide(10, 2)
```

Output:

```
Error: Division by zero
The result is 5.0
```

Learning Outcomes: The student should have the ability to deal with the Files Exploration & Exception Handling.

LO1: Learnt How to Explore Files & Directories using Python Script.

LO2: In this experiment, we have created a script which helps us in Handling Exceptions which can give error like if any number is divided by 0 then instead of getting an Invalid Syntax, we are handling this exception by Printing an Error in the division due to fundamental laws of Maths.

Course Outcomes: Upon completion of the course students will be execute programs on File & Directories Exploration & Exception Handling.

Conclusion: In this Experiment, we have learnt to implement:

1. **We have learnt File & Directories Exploration using Python Scripts. We are able to fetch the Files & List of Directories in the particular provided path.**

2. **We have learnt in this experiment how to handle Exceptions in a program. if any number is divided by 0 then instead of getting an Invalid Syntax, we are handling this exception by Printing an Error in the division due to fundamental laws of Maths.**

For Faculty Use

Correction Parameters	**Formative Assessment [40%]**	**Timely completion of Practical [40%]**	**Attendance / Learning Attitude [20%]**	
Marks Obtained				