	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology
Subject: Programming With Python (01CT1309)	**Aim:** Practical based on File Handling using Python
Experiment No: 13	**Date:** **Enrollment No:92510133011**

Aim: Practical based on File Handling using Python

IDE:

File handling in Python is a powerful and versatile tool that can be used to perform a wide range of operations. However, it is important to carefully consider the advantages and disadvantages of file handling when writing Python programs, to ensure that the code is secure, reliable, and performs well.

Python provides various functions to perform different file operations, a process known as File Handling.

- ***open()*** *: Opens a file and returns a file object.*

- ***read()*** *: Reads data from a file.*

- ***write()*** *: Writes data to a file.*

- ***close()*** *: Closes the file, releasing its resources.*

Opening Files in Python

In Python, we need to open a file first to perform any operations on it—we use the open() function

Suppose we have a file named ict.txt

To open this file, we can use the open() function.

file1 = open("C:\\Users\\Mitesh\\OneDrive\\Desktop \\ict.txt")

or

file1 = open(r"C:\Users\Mitesh\OneDrive\Desktop \ict.txt")

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
ICT ICT ICT
ICT ICT ICT ICT ICT
```

Working in Read mode

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The open command will open the Python file in the read mode and the for loop will print each line present in the file.

f1 = open(r"C:\Users\Mitesh\OneDrive\Desktop \ict.txt")
 # This will print every line one by one in the file
for each **in** f1:
   print (each)

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
ICT ICT ICT

ICT ICT ICT ICT ICT
PS C:\Users\trupa\OneDrive\Documents\PWP>
```

In this example, we will extract a string that contains all characters in the Python file then we can use f1.read().

# Python code to illustrate read() mode
f1 = open(r"C:\Users\Mitesh\OneDrive\Desktop \ict.txt")
print (f1.read())

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
ICT ICT ICT
ICT ICT ICT ICT ICT
PS C:\Users\trupa\OneDrive\Documents\PWP>
```

Example

In this example, Read a file using the with statement in Python.

with open(r"C:\Users\Mitesh\OneDrive\Desktop\ict.txt",'r') as f1:
   data = f1.read()
print(data)

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
ICT ICT ICT
ICT ICT ICT ICT ICT
PS C:\Users\trupa\OneDrive\Documents\PWP>
```

Example 4:

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Another way to read a file is to call a certain number of characters like in the following code the interpreter will read the first five characters of stored data and return it as a string:

f1 = open(r"C:\Users\Mitesh\OneDrive\Desktop \ict.txt")
print (f1.read(5))

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
ICT I
```

Example

The split() function splits the variable when space is encountered. You can also split using any characters as you wish.

```
with open(r"C:\Users\Mitesh\OneDrive\Desktop\ict.txt",'r') as file:
    data = file.readlines()
    for line in data:
        word = line.split()
        print (word)
```
Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
['ICT', 'ICT', 'ICT']
['ICT', 'ICT', 'ICT', 'ICT', 'ICT']
```

Working in Write Mode

The write() function is used to write in a file. The close() command terminates all the resources in use and frees the system of this particular program.

```
file = open("ict1.txt",'w')
file.write("ICT ICT ICT \n")
file.write("ICT ICT ICT ICT ICT")
file.close()
```

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```
ict1.txt
1    ICT ICT ICT
2    ICT ICT ICT ICT ICT
```

Using with() function

```python
with open("file.txt", "w") as f:
    f.write("Hello World!!!")
    f.close()
```

```
file.txt
1    trupali
```

Working of Append Mode

Appending text to an existing file.

```python
file = open("ict1.txt",'a')
file.write("\n Department Department")
file.close()
```
Output:

```
ict1.txt
1    ICT ICT ICT
2    ICT ICT ICT ICT ICT
3    Department Department
```

Reading and Writing Binary Files

Reading and writing binary files, such as images.

Rading files

```python
with open(r'C:\Users\Mitesh\OneDrive\Desktop\a.tif', 'rb') as file:
```

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```python
    binary_data = file.read()
```

Output:

Writing binary files

```python
with open('c.tif', 'wb') as f:
    f.write(binary_data)
    f.close()
```

Output:

Working with CSV Files

```python
import csv

# Reading from a CSV file
```

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```python
with open('data.csv', 'r') as file:
    reader = csv.reader(file)
    for row in reader:
        print(row)
```

Output :

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 13.py"
['Name', 'Team', 'Number', 'Position', 'Age', 'Height', 'Weight', 'College', 'Salary']
['Avery Bradley', 'Boston Celtics', '0', 'PG', '25', '06-Feb', '180', 'Texas', '7730337']
['Jae Crowder', 'Boston Celtics', '99', 'SF', '25', '06-Jun', '235', 'Marquette', '6796117']
['John Holland', 'Boston Celtics', '30', 'SG', '27', '06-May', '205', 'Boston University', '']
['R.J. Hunter', 'Boston Celtics', '28', 'SG', '22', '06-May', '185', 'Georgia State', '1148640']
['Jonas Jerebko', 'Boston Celtics', '8', 'PF', '29', '06-Oct', '231', '', '5000000']
['Amir Johnson', 'Boston Celtics', '90', 'PF', '29', '06-Sep', '240', '', '12000000']
['Jordan Mickey', 'Boston Celtics', '55', 'PF', '21', '06-Aug', '235', 'LSU', '1170960']
['Kelly Olynyk', 'Boston Celtics', '41', 'C', '25', '7-0', '238', 'Gonzaga', '2165160']
['Terry Rozier', 'Boston Celtics', '12', 'PG', '22', '06-Feb', '190', 'Louisville', '1824360']
['Marcus Smart', 'Boston Celtics', '36', 'PG', '22', '06-Apr', '220', 'Oklahoma State', '3431040']
['Jared Sullinger', 'Boston Celtics', '7', 'C', '24', '06-Sep', '260', 'Ohio State', '2569260']
['Isaiah Thomas', 'Boston Celtics', '4', 'PG', '27', '05-Sep', '185', 'Washington', '6912869']
['Evan Turner', 'Boston Celtics', '11', 'SG', '27', '06-Jul', '220', 'Ohio State', '3425510']
['James Young', 'Boston Celtics', '13', 'SG', '20', '06-Jun', '215', 'Kentucky', '1749840']
['Tyler Zeller', 'Boston Celtics', '44', 'C', '26', '7-0', '253', 'North Carolina', '2616975']
['Bojan Bogdanovic', 'Brooklyn Nets', '44', 'SG', '27', '06-Aug', '216', '', '3425510']
['Markel Brown', 'Brooklyn Nets', '22', 'SG', '24', '06-Mar', '190', 'Oklahoma State', '845059']
['Wayne Ellington', 'Brooklyn Nets', '21', 'SG', '28', '06-Apr', '200', 'North Carolina', '1500000']
['Rondae Hollis-Jefferson', 'Brooklyn Nets', '24', 'SG', '21', '06-Jul', '220', 'Arizona', '1335480']
['Jarrett Jack', 'Brooklyn Nets', '2', 'PG', '32', '06-Mar', '200', 'Georgia Tech', '6300000']
['Sergey Karasev', 'Brooklyn Nets', '10', 'SG', '22', '06-Jul', '208', '', '1599840']
['Sean Kilpatrick', 'Brooklyn Nets', '6', 'SG', '26', '06-Apr', '219', 'Cincinnati', '134215']
['Shane Larkin', 'Brooklyn Nets', '0', 'PG', '23', '05-Nov', '175', 'Miami (FL)', '1500000']
['Brook Lopez', 'Brooklyn Nets', '11', 'C', '28', '7-0', '275', 'Stanford', '19689000']
['Chris McCullough', 'Brooklyn Nets', '1', 'PF', '21', '06-Nov', '200', 'Syracuse', '1140240']
['Willie Reed', 'Brooklyn Nets', '33', 'PF', '26', '06-Oct', '220', 'Saint Louis', '947276']
['Thomas Robinson', 'Brooklyn Nets', '41', 'PF', '25', '06-Oct', '237', 'Kansas', '981348']
['Henry Sims', 'Brooklyn Nets', '14', 'C', '26', '06-Oct', '248', 'Georgetown', '947276']
['Donald Sloan', 'Brooklyn Nets', '15', 'PG', '28', '06-Mar', '205', 'Texas A&M', '947276']
['Thaddeus Young', 'Brooklyn Nets', '30', 'PF', '27', '06-Aug', '221', 'Georgia Tech', '11235955']
['Arron Afflalo', 'New York Knicks', '4', 'SG', '30', '06-May', '210', 'UCLA', '8000000']
['Lou Amundson', 'New York Knicks', '17', 'PF', '33', '06-Sep', '220', 'UNLV', '1635476']
['Thanasis Antetokounmpo', 'New York Knicks', '43', 'SF', '23', '06-Jul', '205', '', '30888']
['Carmelo Anthony', 'New York Knicks', '7', 'SF', '32', '06-Aug', '240', 'Syracuse', '22875000']
['Jose Calderon', 'New York Knicks', '3', 'PG', '34', '06-Mar', '200', '', '7402812']
```

Writing to a CSV file

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```
import csv

with open('output.csv', 'w', newline='') as file:
    writer = csv.writer(file)
    writer.writerow(['Name', 'Subject', 'Mark'])
    writer.writerow(['Aansh', 'PWP', 9])
    writer.writerow(['Ashutosh', 'PWP', 10])
    file.close()
```

```
output.csv
1    Name,Subject,Mark
2    Aansh,PWP,9
3    Ashutosh,PWP,10
```

Post Lab Exercise:

a. Write a program that reads a text file example.txt and counts the number of lines, words, and characters in the file. Print these counts.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
Number of lines: 2
Number of words: 8
Number of characters: 32
```

b. Write a Python program to read a text file line by line and store each line in a list. Print the list after reading the entire file.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
List of lines: ['ICT ICT ICT', 'ICT ICT ICT ICT ICT']
```

c. Write a Python program to read data from a CSV file data.csv and print each row to the console.

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```
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
['Name', 'City', 'Number']
['A', 'M', '1']
['B', 'N', '4']
['C', 'V', '5']
['D', 'B', '7']
['E', 'J', '8']
['F', 'G', '9']
['G', 'F', '7']
['H', 'D', '5']
['I', 'C', '6']
['J', 'X', '7']
['K', 'Z', '3']
['L', 'S', '4']
['M', 'R', '6']
```

d. Write a Python program that merges the contents of two text files file1.txt and file2.txt into a third file merged.txt. Ensure that the contents of file1.txt come first.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
Files merged successfully into merged.txt
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
Files merged successfully into merged.txt
PS C:\Users\trupa\OneDrive\Documents\PWP> python -u "c:\Users\trupa\OneDrive\Documents\PWP\PWP POST LAB EXP 13.PY"
Files merged successfully into merged.txt
```

Github Link:
https://github.com/trupalijasani05/trupali-jasani