Practical No 9

Aim: To perform file handling operations such as reading, writing, and appending text files using different modes.

Theory:

File handling in programming involves operations such as reading, writing, and appending data to files. These operations are performed using different modes, which determine how the file is accessed and modified.

1. Reading from a File ('r' mode):

- Opens the file for reading only.
- If the file does not exist, an error will occur.
- The file pointer is placed at the beginning of the file.

```
try:
    with open("example.txt", "r") as file:
        content = file.read()
        print("File content:")
        print(content)
except FileNotFoundError:
    print("Error: The file 'example.txt' was not found.")
```

2. Writing to a File ('w' mode):

- Opens the file for writing only.
- If the file exists, its contents are truncated (erased).
- If the file does not exist, a new file is created.
- The file pointer is placed at the beginning of the file.

```
with open("example.txt", "w") as file:
    file.write("This is the first line.\n")
    file.write("This is the second line.")
print("Content written to 'example.txt' in write mode.")
```

3. Appending to a File ('a' mode):

- Opens the file for appending only.
- If the file exists, new data is written to the end of the file without overwriting existing content.
- If the file does not exist, a new file is created.
- The file pointer is placed at the end of the file.

```
with open("example.txt", "a") as file:
    file.write("\nThis is a new line appended.")
```

```
print("Content appended to 'example.txt' in append mode.")
```

Other Common Modes:

'r+' (Read and Write):

- Opens for both reading and writing. The file pointer is at the beginning.

'w+' (Write and Read):

- Opens for both writing and reading. Truncates the file if it exists, otherwise creates a new one. The file pointer is at the beginning.

'a+' (Append and Read):

- Opens for both appending and reading. The file pointer is at the end for writing and at the beginning for reading.

'x' (Exclusive Creation):

- Creates a new file and opens it for writing. Raises an error if the file already exists.

1. Write a Python program to open a text file named data.txt in read mode, display its contents line by line, and count the total number of lines in the file. Handle the exception if the file does not exist.

Program:

```
try:
    with open("AIML\data.txt", "r") as file:
        count = 0
        for line in file:
            print(line.strip())
            count += 1
        print("Total number of lines:", count)
except FileNotFoundError:
    print("The file does not exist.")
```

Output:

```
c:\Users\STUDENT\Desktop\AIML\1.PY:2: SyntaxWarning: in
  with open("AIML\data.txt", "r") as file:
The Womenâ€™s Cricket World Cup is one of the most
prestigious tournaments in international cricket,
showcasing the immense talent, skill, and passion of
female cricketers from around the world. Organized by
the International Cricket Council (ICC), the
tournament has grown significantly since its inception
Total number of lines: 6
```

2. Write a program that opens an existing file student.txt in **append mode** and adds two more student records at the end without deleting existing data.

Program:

```
try:
    with open("student.txt", "a") as file:
        file.write("\nJohn Doe, 20, Computer Science")
        file.write("\nJane Smith, 19, Mathematics")
    print("Records added successfully.")
except FileNotFoundError:
    print("The file does not exist.")
```

Output:

```
PS C:\Users\STUDENT\Desktop> python -u "c:\Users\STUDENT\Desktop\AIML\1.PY"
Records added successfully.
PS C:\Users\STUDENT\Desktop>
```

Conclusion: Code executed successfully