FILES IN PYTHON

OPEN FUNCTION

The open() function in Python is used to open a file and returns a file object. A file object is a data type that represents a file on the computer. It can be used to read or write data to the file.

The open() function takes two arguments:

- The name of the file to open.
- The mode in which to open the file.

The mode argument can be one of the following values:

- r: - Opens the file for reading.
- w: - Opens the file for writing.
- a: - Opens the file for appending.
- r+: - Opens the file for both reading and writing.
- w+: - Opens the file for both reading and writing, overwriting the existing contents of the file.
- a+: - Opens the file for both reading and writing, appending to the existing contents of the file.

Day 4.py

```
f = open("test.txt" , 'w')
```

WRITE FUNCTION

write function and writelines function is used to write a content of file like string.
Write() : In write function we have a single string to write a complete content or we can say we have only one parameter.

Writelines() : In write function we have a multiple-string to write a complete content or we can say we have multiple string to pass the file content.

Day 4.py

```
f.write("This is the second line.\n")
```

Day 4.py

```
f.writelines(["This is the first line.\n", "This is the second line.\n"])
```

CLOSE FUNCTION

The close() function in Python is used to close a file. This is important because it releases any resources that are being used by the file, such as memory and disk space. It also ensures that any changes that have been made to the file are saved.

Day 4.py

```
f = open("test.txt" , 'w')
f.write("This is the second line.\n")
f.close()
```

READ FUNCTION

The read() function in Python is used to read the contents of a file. It takes one argument, which is the name of the file to be read. The read() function returns a string containing the contents of the file.

The readline() function in Python is used to read a single line from a file. It takes one argument, which is the file object that you want to read from. The function returns the line as a string, or an empty string if the end of the file has been reached.

Day 4.py

```
f = open("test.txt" , 'w')
f.write("This is the second line.\n")
f.close()
f.read()
```

SEEK FUNCTION

Python is used to change the file pointer's position to a given specific location. The file pointer can be thought of as a cursor, which indicates from where the data is to be read or written in the file.

Day 4.py

```
f = open("test.txt" , 'w')
f.write("This is the second line.\n")
f.seek(10)
print(f.readline())
f = open(“test.txt”, “r”)
print(f.seek(4))
```

OS MODULE

The os module in Python provides functions for interacting with the operating system. This includes functions for creating and removing files and directories, changing the current working directory, and getting information about the system. The os module also provides functions for executing commands and for getting information about the environment.
Here are some of the most commonly used functions in the os module:

- **os.listdir(): - Lists the contents of a directory.**
- **os.mkdir(): - Creates a directory.**
- **os.rmdir(): - Removes a directory.**
- **os.remove(): - Removes a file.**
- **os.rename(): - Renames a file or directory.**

Day 4.py

```
import os
```

SHUTIL MODULE

The shutil module in Python provides high-level operations on files and collections of files. These operations include:
File copying and removal, Directory and files operations, Platform-dependent efficient copy operations, and Archiving operations.
Here are some of the functions in the shutil module:

- shutil.copyfileobj(): Copies the contents of a file-like object to another file-like object.
- copyfile(), copy(), copy2(), copytree(), and move(): These functions may use platform-specific syscalls to copy files more efficiently.
- rmtree(): Removes an entire directory tree.

Day 4.py

```
import shutil
```

PRACTICE QUESTIONS

Q1. Which function is used to open a file? What are the different modes of opening a file? Explain each mode
of file opening.
Q2. Why close() function is used? Why is it important to close a file?
Q3. Write a python program to create a text file. Write 'I want to become a Data Scientist' in that file. Then
close the file. Open this file and read the content of the file.
Q4. Explain the following with python code: read(), readline() and readlines().
Q5. Explain why with statement is used with open(). What is the advantage of using with statement and open() together?
Q6. Explain the write() and writelines() functions. Give a suitable example.

BASICS OF ALGORITHMS

Algorithms

It is a combination of sequence of finite steps to particular problem.

Multiply Two Numbers

1) Take two numbers(a & b)
2) Take c = a * b
3) Return c

Properties →
1) Terminate after finite amount of
2) Produce atleast one output
3) Independent of any Programming
   ↳ C/C++/ Java/ Python
4) Unambiguous (Deterministic)

a = 5, b = 2
↳ 5*2 = 10 = c
↳ answer = 10

10 Days
5*2 = 10

Steps to construct algorithm

```
while (True):
    ↳ condition
    print("Priya Bhatia")
```
(Infinite)

Loop → while, for
Python

Not an algorithm (Properties)

1) Problem Definition → constraints, parameters, test cases (end-to-end)
2) Design algo → Divide & conquer, Dynamic Programming, Greedy Approach & many more
3) Draw flow chart
4) Testing
5) Implementation (Python/C/C++/Javascript - - -)
6) Analysis ✗
   1) Time complexity
   2) space complexity