File Handling

Why do we need to store Data in Disk

name Sachin

Role   MLE

Org   Inform

Id.   1234

→ Disk ?

RAM
(Primary Memory)

RAM

Dynamic Memory

Volatile

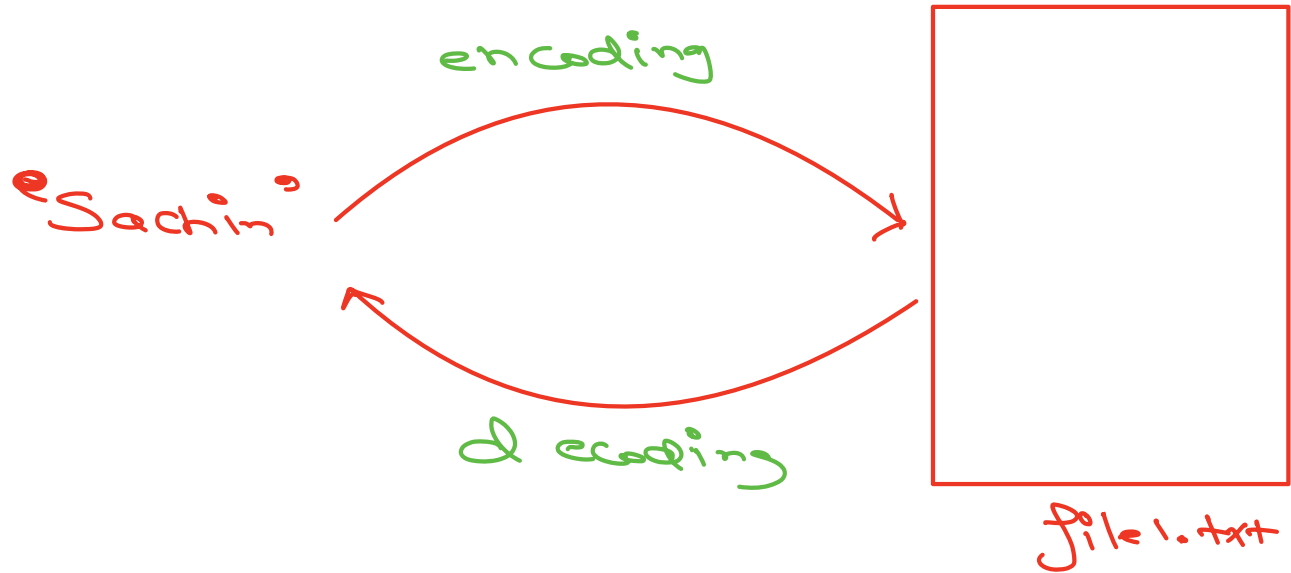Costly

16 GB (16K)

(Secondary Disk)

DISK

Static Memory

Non-Volatile
(Persistent)
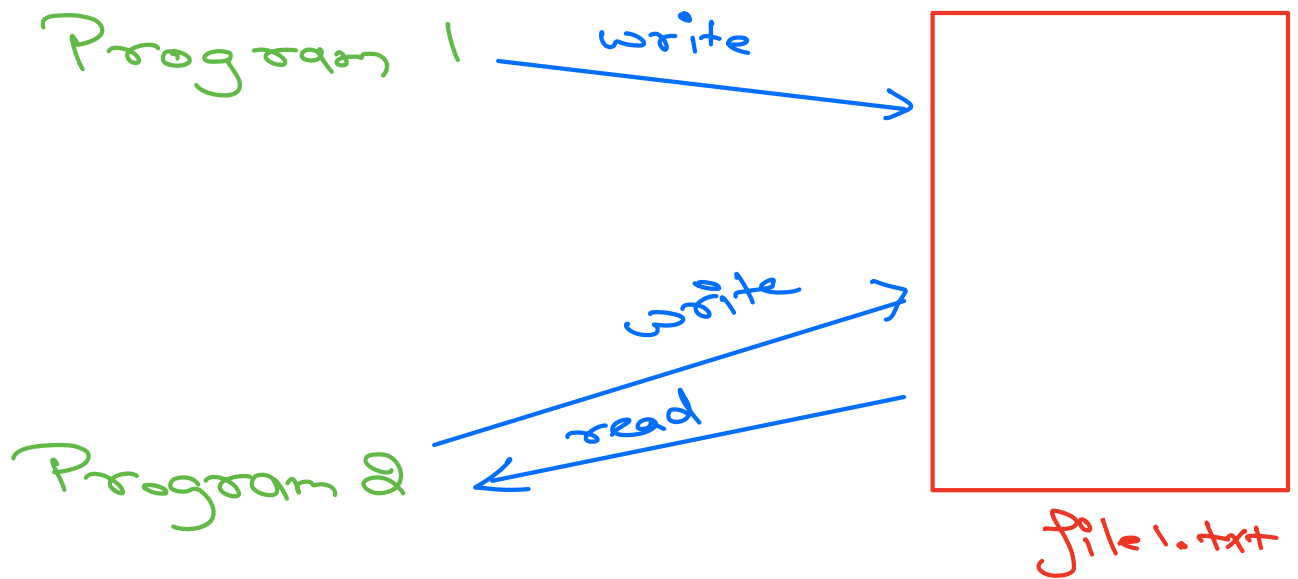
Cheap

4000GB (<10K)

How data is read and stored in Disk

"Sachin" — encoding → **file1.txt**

"Sachin" ← decoding — **file1.txt**

Encodings

- ASCII
- UTF-8

"A"	: 65
"B"	: 66
:	:
"a"	: 97

Program 1 → write → ☐ file1.txt

Program 2 → write → ☐
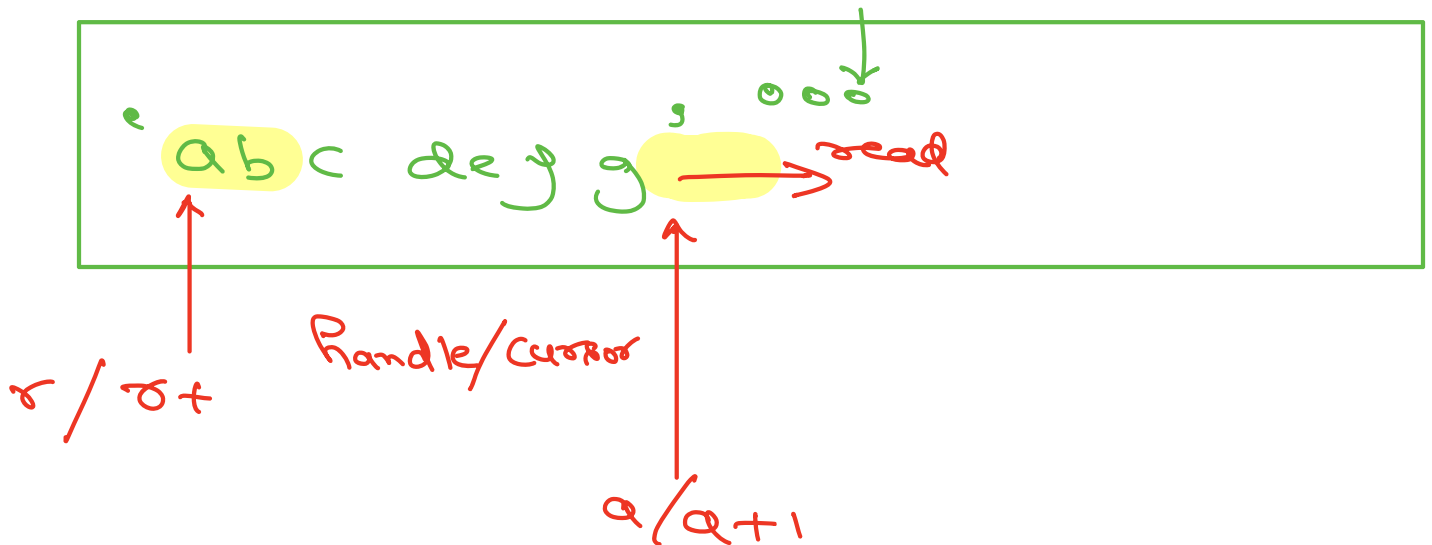Program 2 ← read ← ☐

Locking Mechanism

"mode of Opening"

I) **Defines what operations can be performed on Opened File**

① r (Read Only)

② r+ (Read and Write) : File has to be present

③ w (Write)

④ w+ (Writes and Read) : ① New file is created
② for files that already exist, data is Overwritten

③ a (Append)

⑥ at (Append and read)

abc dey g ⟶ read

r / rt

handle/cursor

a/at1

Note: You can control the cursor using
seek method

* Note : Always close the connenction once you one done with file.

* Python provide Context Managger that automatically closes the file once Code execution goes outside g the Context block
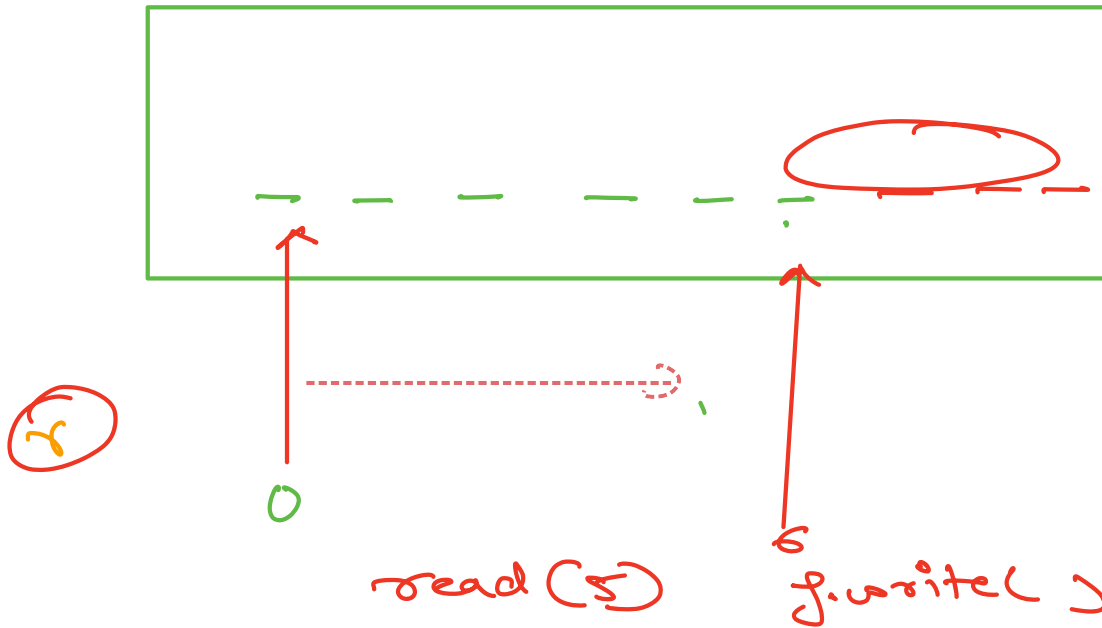
File Access Modes

Access modes govern the type of operations possible in the opened file. It refers to how the file will be used once its opened. These modes also define the location of the File Handle in the file. File handle is like a cursor, which defines from where the data has to be read or written in the file. There are 6 access modes in python.

- **Read Only ('r')** : Open text file for reading. The handle is positioned at the beginning of the file. If the file does not exists, raises I/O error. This is also the default mode in which file is opened.
- **Read and Write ('r+')** : Open the file for reading and writing. The handle is positioned at the beginning of the file. Raises I/O error if the file does not exists.
- **Write Only ('w')** : Open the file for writing. For existing file, the data is truncated and over-written. The handle is positioned at the beginning of the file. Creates the file if the file does not exists.
- **Write and Read ('w+')** : Open the file for reading and writing. For existing file, data is truncated and over-written. The handle is positioned at the beginning of the file.
- **Append Only ('a')** : Open the file for writing. The file is created if it does not exist. The handle is positioned at the end of the file. The data being written will be inserted at the end, after the existing data.
- **Append and Read ('a+')** : Open the file for reading and writing. The file is created if it does not exist. The handle is positioned at the end of the file. The data being written will be inserted at the end, after the existing data.

If you open a file in "r+" mode and read some content, what happens when you subsequently try to write data to the file?

9 users have participated

A	The new data will be appended to the end of the file.		22%
✓ B	The new data will replace the content from the current cursor position.		44%
C	The write operation will fail because the file is opened in read mode.		0%
D	The write operation will overwrite the content from the beginning of the file.		33%

r

0

read (5)   6   f.write( )

① Fibonacci Series

1 1 2 3. 5

$$f(n=6) = f(n-1) + f(n-2)$$

$$f(6) = f(5) + f(4)$$

① Iteration:

$$[0, 1]$$
oth   1st fib

$$[0, 1, 1]$$ 2nd $\longrightarrow$ TC $\Rightarrow$ O(n)
  +

$$[0, 1, 1, 2]$$ 3rd $[-1] + [-2]$

- - - - -   n

② Recursive

① Base-Case

$$[0, 1]$$
  =0 1
  +

② Recursive relation

$$f(n) = f(n-1) + f(n-2)$$

$fib(4) = 2+1 = 3$

2

$fib(3) = 2$

+1

$fib(2) = 1$

$+$

$fib(2) = 1$

+1

$fib(1)$

0   1

$fib(0)$ $fib(1)$

No more
occurring X

1

$fib(2) = 1$

$fib(1)$

$fib(0)$

No more
occurring X

$fib(0)$

$fib(1)$

$fib(0)$

0

or calculated

$TC = 2^n$