Cmpe 150 Lab 7: File I/O

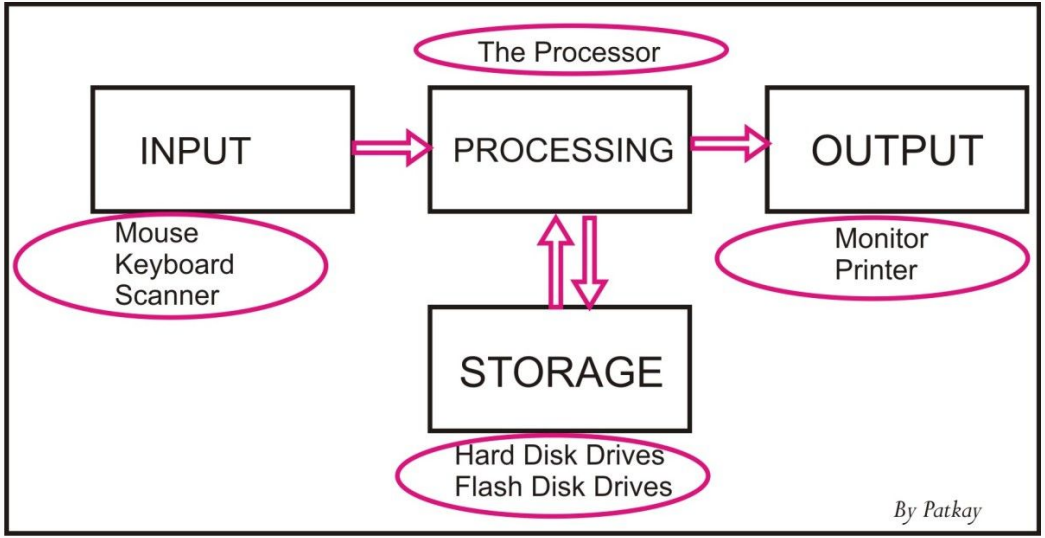
Up to Now

- We wrote various programs; however, when the execution is completed, we cannot access the information we have obtained.

- The reason is that we have yet to use one of the building blocks of our computer. Remember

Main Components of a Computer

- Input Device
- Memory
  - RAM
  - Disk
- Central Processing Unit (CPU)
- Output Device



Using Files

- We can use files to store information permanently on our computers. Our program could write some information (number/text) to a file and read it back.

- Example: Store the name and several information related to students

Prerequisite: Opening Files

- f = open('path_to_file', 'MODE')

- Different modes:
  - 'r': Read
  - 'w': Write
  - 'a': Append

Path Types: Absolute

- An Example in Linux/Mac

  /home/user/documents/file.txt

- An Example in Windows

  C:\Users\User\Documents\file.txt

Path Types: Relative

- Relative to the current location
  - ./documents/file.txt

- You can use .. to refer to the upper directory as well.

Closing a File

- Just like opening a file, we have to close it after the necessary processing.

- f.close()

An Alternative Way

- with open(PATH', 'MODE') as f:

  # Code

- This time, the file is automatically closed when the execution of that block is over.

How to Write

- f.write("My first line for the file\n")
- f.write("My second line for the file\n")
- f.write("My third line for the file\n")
- f.write("My fourth line for the file\n")

How to Write (Cont.)

- When opening the file, be careful about which option to choose, writing(w) or append (a).

- The writing option starts from scratch.

How to Read

- Necessary condition: The file to be read must be existing.
- Try the otherwise option.

Reading Everything

- all_content = f.read()

- It gives you the whole file as a single string

Reading a Single Line

- new_line = f.readline()

- Of course, we can call it multiple times. Each time, it will continue from where it has left.

Reading All Lines

- all_lines = f.readlines()

- for line in f.readlines():

    print(line)

Bonus Content: max and min Functions

- max_val = max(num1, num2)
- min_val = min(num1, num2)

Thanks

Any questions?

References

1. https://www.programiz.com/python-programming/file-operation