Programming in Python[1]

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Lecture IX: Files

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Files

A file is an abstraction the operating system uses to preserve data among the execution of programs. Data must be accessed **sequentially**. (Italian reading people might enjoy this)

- We need commands to ask to the OS to give access to a file (open).
- It is easy to read or write data **sequentially**, otherwise you need special commands (seek) to move the file "cursor"
- The number of open files is limited ($\approx$ thousands), thus it is better to close files when they are not in use

Files contain bits (normally considered by group of bytes, 8 bits), the interpretation ("format") is given by the programs which manipulate them. However, "lines of printable characters" (plain text) is a rather universal/predefined interpretation, normally the easiest to program.

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File read access

```
f = open('filename.txt', 'r') # read only

# iterating on a file reads (all) the lines
for i in f:
    print(i)

# End of file already reached, result is ''
f.readline()

f.close()

# File closed, error!
f.readline()
```

To avoid remembering to close explicitly, Python provides the context manager syntax.

```
with open('filename.txt', 'r') as f:
  for i in f:
    print(i)
```

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