CMP 204 ★

Complete Note

200LVL 2ND Semester

CMP 204

INTRODUCTION

Students should understand what a file is and how they are stored and Processed.

File

A file is a named collection of related information that is recorded on secondary storage. Such as

- magnetic disks,
- magnetic tapes
- Optical disks

In general a file is a sequence of bits, bytes, lines or records whose meaning is defined by the files creator and User.

FILE STRUCTURE

A file structure should be accordily to the required format that the Operating System can understand

- A file has a certain defined structure accordily to it's type.
- A text file is a sequence of characters organized into lines.
- A source contains a sequence of procedures and function

- An Object file is a sequence of bytes organized into blocks that are understandable by the machine

When Operating system defines different file structure, it also contains the code to support this file structures.

Unix, MS-DOS support minimum number of file structure.

Types Of Files

There are 3 basic types of files

regular	Stores data (text, binary and executable).
directory	Contains information used to access other files.
Special	Defines a FIFO (First-in, first-out), pipe file or a physical device

two Parts of a filename is:
- name
- Extention

File Naming

Files abstractions mechanisms. They provide a way to store information and read it back later. This must be done in a way as to shield the user from the details of how and where

name: They are not case-sensitive

Assignment 4
What's the difference between
.doc
.docx

File Attributes

- File Name
- File Type
- Location
- Size
- Protection (Who can use it, modify it, read it and so on)

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There Are Two Common ways of Viewing Files.

1 Logical Files

A logical file is a file viewed in terms of what data items it's record contains and what processing operations can be performed on the file.

2 Physical Files

A physical file is a file viewed in terms of how the data is stored on a storage device and how the processing operations can be made possible.

Elements Of A Computer File

A File Consists of a number of records, each record is made up of a number of fields and each

A character is the smallest element in a file and can be alphabetic, numeric or special.

An Item of Data within a record is called a FIELD. It is made up of a number of characters e.g a name, a date or an amount.

3 Record

A Record is made up of a number of fields e.g customer record, finatric number, name, age.

File Processing Activities

1 Updating: is when data on a master record is changed to reflect a current position.

2 Referencing: is when access is made to a particular record to ascertain what is

3 File Maintenance: is when New records are added to a file or deleted.

4 File Inquiry: is similar to referencing. It involves the need to ascertain a piece of information

NEXT UP: FILE ORGANIZATION

from the 1st of June we begin looking to start looking into the practical aspect

Physical File: Is the physical version where that we can open up, copy from one system to another and things like that

Logical file: is a virtual representation of the physical files that holds all the meta data required for the physical file to work

Python: Opening a File
Python 3:

file = open ("myFile.txt")
: :
Logical file Physical File

SPIN-OFF
What is a Variable: A Variable is a named memory location

When we open files, we have to open it in a mode
Two types of modes
read: "r" append: "a"
write: "w"

for Reading
Syntax in Python: file = open ("myfile.txt", "r")
Syntax for writing in Python: file = open ("myfile.txt", "w")

NOTE :

Read Conditions :

The file has to exist before it can be read

Write Conditions :

Always begins if it exists, it overwrites the
If file exists, it opens it and if it doesn't it creates it
In write the writing starts from the start of the file

Append Conditions :

In append the file has to exist
And ~~it~~ append it begins at the end of the file unlike "write".

To Read Each Line :

```
# Python 3:

file = open ("myFile.txt", "r")

for line in file:
    print (line)
```

Let's Say :

myfile.txt

Hello, I need to get food
I need to Jack
I need to Sleep

TERMINAL

Hello, I need to get food
I need to Jack
I need to Sleep

OBJECTIVE : How to write in a File

```
file = open ("myfile.txt", "w")

count = 1
for line in file:
    line = count + line
    count += 1
    file.write (line)
```

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File Organization

We've learn't what files are, what types of files we have, how we can create files along with their basic operations using python.

Right now we want to talk about how the organizaborn / Structure of a file is different from a ~~differd~~ different file.

WHAT IS File Organization ?

File Organizaborn refers to the structure of a filed defined in terms of it's Component and how they are mapped onto backing store (or Secondary storage).

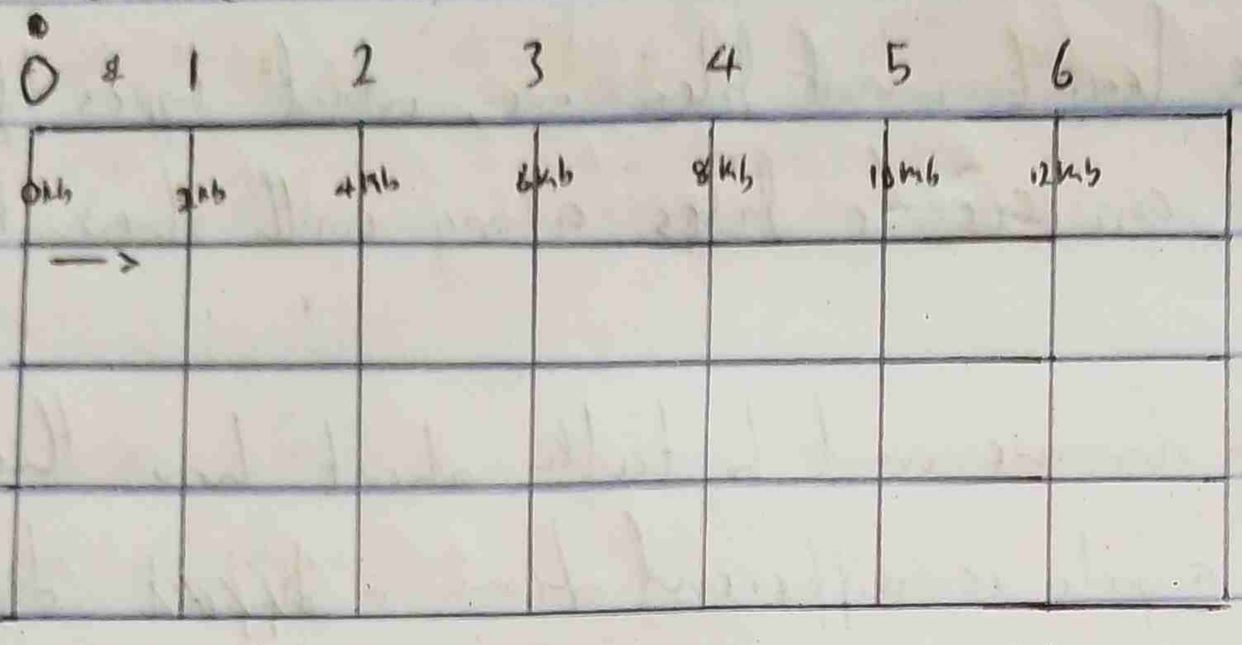
Any given file supports 1 or more access operations. The way files are stored determines how they can be accessed and used.

Types of File Organizaborn

1. Fixed-Length Records : Every record / field in the file is assumed to halve the same size

2kb

Where each Record is 2KB



i = number of record

n = size of record

2kb

To Read to the 4th	To Write to the 6th
n x 4 = ?	(n x i) - n = ?
2 x 4 = 8kb	(2 x 6) - 2 = ?
	12 - 2 = 10

2 Variable-Length Records: This is used when we are storing variables of different length e.g int is stored in a different number of bytes than float.

In this record you have to assign the End of record delimeter.

End of Record basically says: Read until you see this delimeter (e.g space " ") then you know you have arrived at the end of the record