

# CMSC 412

## Filesystems: Interfaces

## Announcements

- Reading
  - Today : Chapter 11
  - Next time : Chapter 12

## File Abstraction

- What is a file?
  - A *named* collection of information stored on secondary storage
- Properties of a file
  - non-volatile (persistent)
  - can read, store, or update it
  - has *meta-data* to describe attributes of the file
  - May be *structured* or *unstructured*

## File Attributes

- **name**: a way to describe the file
- **type**: some information about what is stored in the file
- **location**: how to find the file on disk
- **size**: number of bytes
- **protection**: access control
  - may be different for read, write, execute, append, etc.
- **time**: access, modification, creation
- **version**: how many times the file changed

## File Operations

- Files are an *abstract data type (ADT)*
  - **Interface**: what can I do with them?
  - **Implementation**: how do I implement them?
- Operations
  - Create, Open, Read, Write, Fsync, Seek, Delete, Truncate, Close, Read-Meta-Data, Write-Meta-Data

## Create, Open

- create
  - assign it a name
  - check permissions
- open
  - check permissions
  - check that the file exists
  - lock the file (if we don't want to permit other users at the same time)
  - may provide *file pointer* for access