

# Announcements

- Midterm Regrade Requests are due Today (5:00 PM)
- Reading Chapter 11 (ch 10 7<sup>th</sup> Ed)

# Does the OS know what is stored in a file?

- needs to know about some types of files
  - directories
  - executables
- should other file types be visible to the OS?
  - Example: word processing file vs. spreadsheet
  - Advantages:
    - OS knows what application to run
    - Automatic make (tops-20)
      - if source changed, re-compile before running
  - Problems:
    - to add new type, need to extend OS
    - OS vs. application features are blurred
    - what if a file is several types
      - consider a compressed postscript file

# Example of File Types

- **Macintosh**
  - has a file type that is part of file meta-data
  - also has an application associated with each file type
- **Windows**
  - has a file type in the extension of the file name
  - has a table (per user) to map extensions to applications
- **Unix**
  - can use last part of filename like an extension
  - applications can decide what (if anything) to do with it
  - Look at first few bytes of file content for “magic number”

# File Protection

- How to give access to some users and not others?
- Access types:
  - read, write, execute, append, delete, list
  - rename: often based on protection of directory
  - copy: usually the same as read
- Degree of control
  - access lists
    - list for each user for each file the permitted operations
  - groups
    - enumerate users in a list called a group
    - provide same protection to all members of the group
    - depending on system:
      - files may be in one or many groups
      - users may be in one or many groups
  - per file passwords (tedious and a security problem)