Goals

- Implement an abstraction (files) for secondary storage

- Organize files logically (directories)

- Permit sharing of data between processes, people, and machines

- Protect data from unwanted access (security)

Files

File - named bytes on disk that encapsulate data with some properties: contents, size, owner, last read/write time, protection, etc.

A file can also have a type

- Understood by the file system: block device, character device, link, FIFO, socket, etc.
- Understood by other parts of the OS or runtime libraries:
  text, image, source, compiled libraries (Unix `.so` and Windows `.dll`), executable, etc.

A file's type can be encoded in its name or contents

- Windows encodes type in name: `.com`, `.exe`, `.bat`, `.dll`, `.jpg`, etc.
- Unix encodes type in contents:
  magic numbers, initial characters (e.g., `#!` for shell scripts)