Memory Management

- To execute a program all (or part) of the instructions must be in memory.
- All (or part) of the data required by the program must be in memory.
- Memory Management determines what is in memory and when.
  - Optimizing CPU utilization and computer response to users
- OS is responsible for:
  - Keeping track of which parts of memory are being used and by whom
  - Deciding which processes (or parts thereof) and data to move into and out of memory
  - Allocating and deallocating memory space as needed.

Storage Management

- OS provides uniform, logical view of storage
  - Abstracts physical properties to logical storage unit
  - Each medium is controlled by device
- OS is responsible for:
  - Organize files into directories
  - Access control for files and directories
  - OS activities include:
    - Create/Delete files and directories
    - Primitives to manipulate files and folders
    - Mapping files onto secondary storage

Mass Storage Management

- Usually disks used to store data that doesn't fit in main memory
- Proper management

Check slides.

Protection and Security

- Protection
  - Any mechanism for controlling access of processes or users to resources of the OS
- Security
  - Defense of system against internal and external threats
    - Huge range, DOS, worms, virus, etc
- Systems generally first distinguish among users, to determine who can do what.
  - User identities (user IDs) include name and associated number.
  - User ID associated with all files.
  - Group IDs
  - Privilege escalation