BACKING UP YOUR DATA

Schoefield's Second Law of Computing
- ▪ "Data doesn't really exist unless you have two copies of it."

Why Back Up?
- ▪ Operators make mistakes
- ▪ Servers get hacked
- ▪ Passwords get lost
- ▪ Companies Fail

Types of Storage
- ▪ **Hard Drive** – Most common drive, prone to mechanical failure, affordable, large capacity
- ▪ **Solid State Drive (SSD)** – Not mechanical, fast, more expensive, mid-range capacity
- ▪ **Flash Drive** – USB Drive, cheap, smaller capacity

Backup Methods
- ▪ **Full Backup –** All selected files/folders are backed up each time, time consuming,
- ▪ **Incremental Backup –** First backup is full, subsequent backups only include changes, faster
- ▪ **Manual Backup –** Done manually by user, dragging and dropping files, prone to errors
- ▪ **Image Backup –** Snapshot of entire hard drive, easy restore, long backup

Backup Locations
- ▪ **Local –** Onsite, in your house, convenient and easily retrievable
- ▪ **Offsite –** In the cloud, or a drive stored at a friend's house or in a safety deposit box

Backup Drives
- ▪ **External Hard Drive –** USB, 500GB-6TB, $50-$300, ideal for local backups
  - ○ Western Digital, Seagate, LaCie, Iomega, Fujitsu
- ▪ **Flash Drive –** USB, 4GB-256GB, $5-$100, great for portability and smaller backups
  - ○ Patriot, SanDisk, Lexar, Kingston
- ▪ **Cloud Backups –** Services that backup your entire computer to the cloud
  - ○ BackBlaze, Carbonite, SOS, Crashplan
- ▪ **Cloud Storage –** Services that offer smaller storage tiers for smaller collections and sharing files
  - ○ DropBox, iCloud Drive, One Drive, Google Drive

Backup Software
- ▪ **Mac** – Carbon Copy Cloner, SuperDuper, ChronoSync, Time Machine
- ▪ **Windows –** Backup and Restore, True Image, ToDo Backup, Timeline Backup

Backup Strategy
- ▪ Decide what to backup, purchase storage, create a schedule, and periodically verify backups

File Formats
FAT32 – Read/Write by both Windows and Mac. 4GB max file size.
exFAT – Read/Write by both Windows and Mac. Best for flash drives.
NTFS – Read/Write by Windows, Read only Mac. Best for Windows drives.
HFS+ / Mac OS Journaled – Read/Write only by Mac. Best for Mac drives.