Chapter 2

INTRODUCTION TO COMPUTERS AND OPERATING SYSTEMS

Episode 2.01

Episode title: **Primary PC Components**

N/A

Objective:

Episode 2.02

Episode title: **Common Safety Procedures**

Objective:

- **Remember to practice proper power handling and disconnect the PC prior to working on it**
- **Use antistatic bags to help protect against electrostatic discharge (ESD)**
- **When dealing with electronic components, make sure to follow the common safety procedures**

Lower 3rds

Static electricity occurs when two materials or objects are rubbed against each other

a charge as low as 30 volts can damage some electronic components

The most commonly used ESD protection device is a wrist strap

Lower 3rds

Two different types of ESD mats

ESD container

Fire extinguishers are classified into four classes

Lower 3rds

Electromagnetic static discharge (ESD)

ESD dangers

ESD safety devices

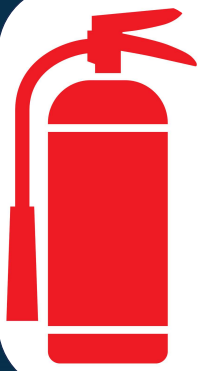
Personal safety

Fire extinguishers

Cable management

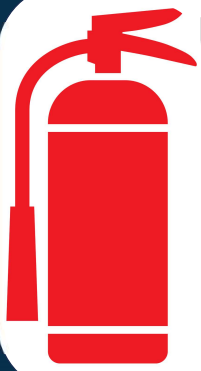
Occupational Safety and Health Administration (OSHA)

Extinguisher Class A



- ✗ Electrical Fires ✗
- Water
  - Paper and wood

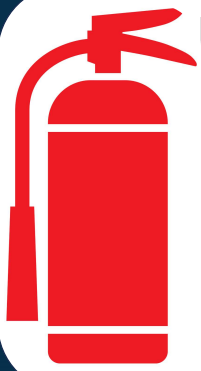
Extinguisher Class B



Flammable Liquid

- **Dry chemical**
  - **Alcohol, gasoline, and oil**

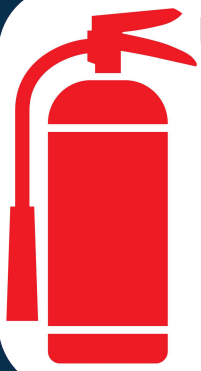
Extinguisher Class C



Non-Conductive Agent

- **CO2 or dry chemical powder**
  - **Electrical fires**

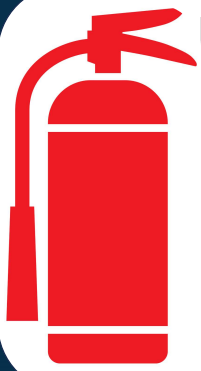
Extinguisher Class D



Dry Powder Agent

- **Specialized dry powder**
  - **Magnesium, potassium, and titanium**

Extinguisher Class K



Heat Absorbing Agent

- **Liquid potassium agent**
  - **Cooking oils, grease, and fats**

Episode 2.03

Episode title: **Touring a PC**

Objective:

- **220-1201 1.1 Given a scenario, monitor mobile device hardware and use appropriate replacement techniques.**
  - **Random-access memory (RAM)**
  - **Hard disk drive (HDD)/solid-state drive (SSD)**
- **220-1201 3.2 Summarize basic cable types and their connectors, features, and purposes.**
  - **Peripheral cables**
- **220-1201 3.4 Compare and contrast storage devices.**
  - **Hard drives**
  - Solid-state drives
- **220-1201 3.5 Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.**
  - Motherboard form factors
  - Motherboard compatibility

Lower 3rds

- USB-A
- USB-B
- USB-C
- Mini/micro USB ports
- DisplayPort
- Thunderbolt port
- Form factors – size, shape, layout

Form Factors

Form factors are standards that set the size, shape, and specifications of hardware components

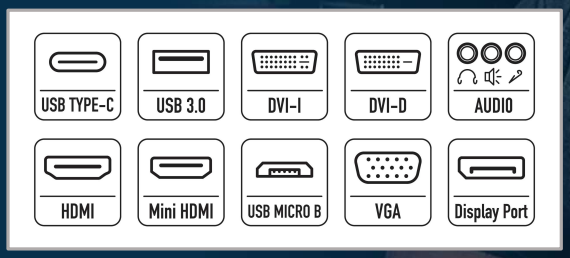
Four basic closed-case sizes / form factors:

- **full tower (extended-ATX - eATX)**
- **mid-tower (ATX or an eATX)**
- **mini-tower (ATX or micro-ATX – mATX)**
- **small form factor (SFF or a mini-ITX)**

Peripheral Cables

There are many types of ports and connectors

Ports are provided to allow the device to connect with the PC's internal components



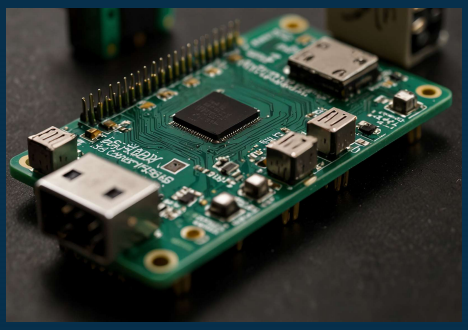
Closed Case

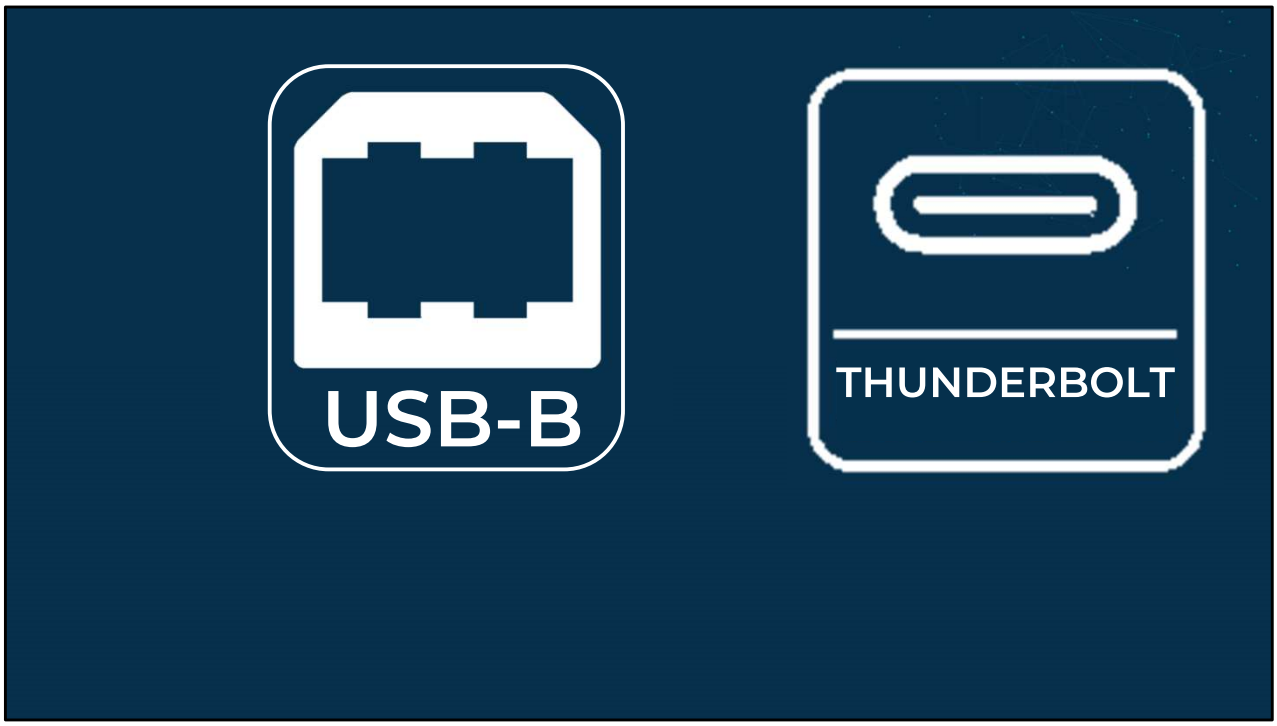
The housing that holds the internal components of a PC

Open Case

No walls or case

All the components are exposed to dust, smoke, or other particulates




USB-B
THUNDERBOLT

Episode 2.04

Episode title: **What is a Computer?**

Objective: **N/A**

Episode 2.05

Episode title: **What is an Operating System?**

Objective: **N/A**

Episode 2.06

Episode title: **Users and Super Users**

Objective: **N/A**

Episode 2.07

Episode title: **Why Windows?**

Objective: **N/A**

Episode 2.08

Episode title: **Touring Windows 10 and 11**

Objective: **See Next Page**

Objectives

- 220-1202 1.1 Explain common operating system (OS) types and their purposes.
  - Workstation systems (OSs)
- 220-1202 1.2 Given a scenario, perform OS installations and upgrades in a diverse environment.
  - Types of installations
- 220-1202 1.3 Compare and contrast basic features of Microsoft Windows editions.
  - Windows 10 editions
  - Windows 11 editions
  - Feature differences
  - Upgrade paths
  - Hardware requirement

Objectives

- 220-1202 1.10 Given a scenario, install applications according to requirements.
  - System requirements for applications
- 220-1202 2.2 Given a scenario, configure and apply basic Microsoft Windows OS security settings
  - BitLocker

Lower 3rds

Windows 10 – released July 2015

Windows 11 – release October 2021

Windows “N” Version – specialized versions excluding standard multimedia features

Needs internet, TPM 2.0, secure boot

Secure Boot

Trusted Platform Module version 2.0 (TPM 2.0)

Lower 3rds

TPM and Secure Boot enabled through BIOS, UEFI, and Windows Settings

Windows computers: Workgroup / Domain

Workgroup

Domain

Lower 3rds

Group Policy Editor (gpedit.msc)

Group Policy Objects (GPOs)

Group Policies: Domain / Local

Remote Desktop Protocol (RDP)

Windows Editions

Edition	Windows 10	Windows 11
Home	Yes	Yes
Pro	Yes	Yes
Pro for Workstations	Yes	Yes
Enterprise	Yes	Yes
Mixed Reality	No	Yes

System Requirements

Windows 10	Windows 11
A 64-bit 1 GHz single-core CPU	A 64-bit 1 GHz dual-core CPU
2 GBs of RAM	4 GBs of RAM
32 GBs of data storage	64 GBs of data storage
Compatible with DirectX 9 graphics	Compatible with DirectX 12 graphics
Display of a 800 x 600 pixels	Display of a 1280 x 720 pixels

These are the recommended minimum requirements

Windows RAM Limits

Edition	MAX RAM
Home	128 GB
Pro	2 TB
Pro for Workstations	6 TB
Enterprise	2 TB

BitLocker

Device Encryption encodes volumes, folders, and/or files

Drive Encryption can be used to manually encrypt an entire storage drive to protect the data stored

Windows Upgrade

In-place Upgrade

- Creates complete copy and replaces current system
- Reapplies settings and restores app and data files

Clean Install

- Bare metal installs, re-installs, upgrades
- Time-consuming
- + Fresh and clean install

Episode 2.09

Episode title: **Touring the MacOS**

Objective: **N/A**

Lower 3rds

- OBJ - Multiple desktops
- OBJ - Mission Control
- OBJ - Keychain
- OBJ - Spotlight
- OBJ - iCloud
  - OBJ - iMessage
  - OBJ - FaceTime
  - OBJ - Drive
- OBJ - Gestures
- OBJ - Finder
- OBJ - Dock
- OBJ - Continuity

Lower 3rds

The macOS, in terms of aesthetics, is very much like the Windows Desktop
The Dock holds frequently used desktop icons
On the menu bar, you find, from left to right:
Apple menu
app menus
status menus
Spotlight icon
Control Center status menu
privacy indicators
Notification Center

Lower 3rds

MacOS is very much like the Windows Desktop

Dock holds the application icons of those that are frequently used

On the menu bar are the Apple menu, app menus, status menus, the Spotlight (search) icon, the Control Center status menu, privacy indicators, and the Notification Center

Mission Control is used to view open application windows and the desktop

Apple has enabled fifteen hand gestures for interfacing and controlling a macOS device

Lower 3rds

iCloud for Messages – Also called iMessage, all Apple devices can interact with messaging through this app and the iCloud

iCloud Backup and Restore – 5GB of storage for each Apple ID account

iCloud for Phone and FaceTime - iPhone data, such as its call history and voicemails, is stored through iCloud, including FaceTime data, call history, and video messages

Find My Device – Used to find the location of a missing or stolen device or to lock down the missing device or reset it to a factory default with all user data erased

iCloud Drive – File and folder storage similar to Dropbox or Google Drive

iCloud Photo Library – This service uploads photos to the iCloud permanently, which relieves the worry about device storage space

Notes, contacts, calendars, reminders, etc. – Several of the most basic apps on a macOS system use iCloud for storage and its ability to synchronize files between Apple devices and apps

Lower 3rds

Mission Control - used to view all open application windows

Apple has enabled fifteen different hand gestures for interfacing and controlling a macOS device

Lower 3rds

- Tap to click – One finger tap to select
- Secondary click – Two fingers tap = right-click
- Scroll – Slide two fingers to scroll
- Three-finger drag – Drag items with three fingers
- Zoom in or out – Pinch or spread two fingers
- Smart zoom – Double-tap two fingers to zoom
- Rotate – Twist two fingers to rotate
- Mission Control – Swipe four fingers up
- Launchpad – Pinch thumb + three fingers inward
- Show desktop – Spread thumb + three fingers apart

What isn't iCloud?

iCloud is the umbrella name that covers virtually all of the services Apple delivers

Some of the better-known apps are as follows...

What isn't iCloud?

iCloud is the umbrella name that covers virtually all of the services Apple delivers

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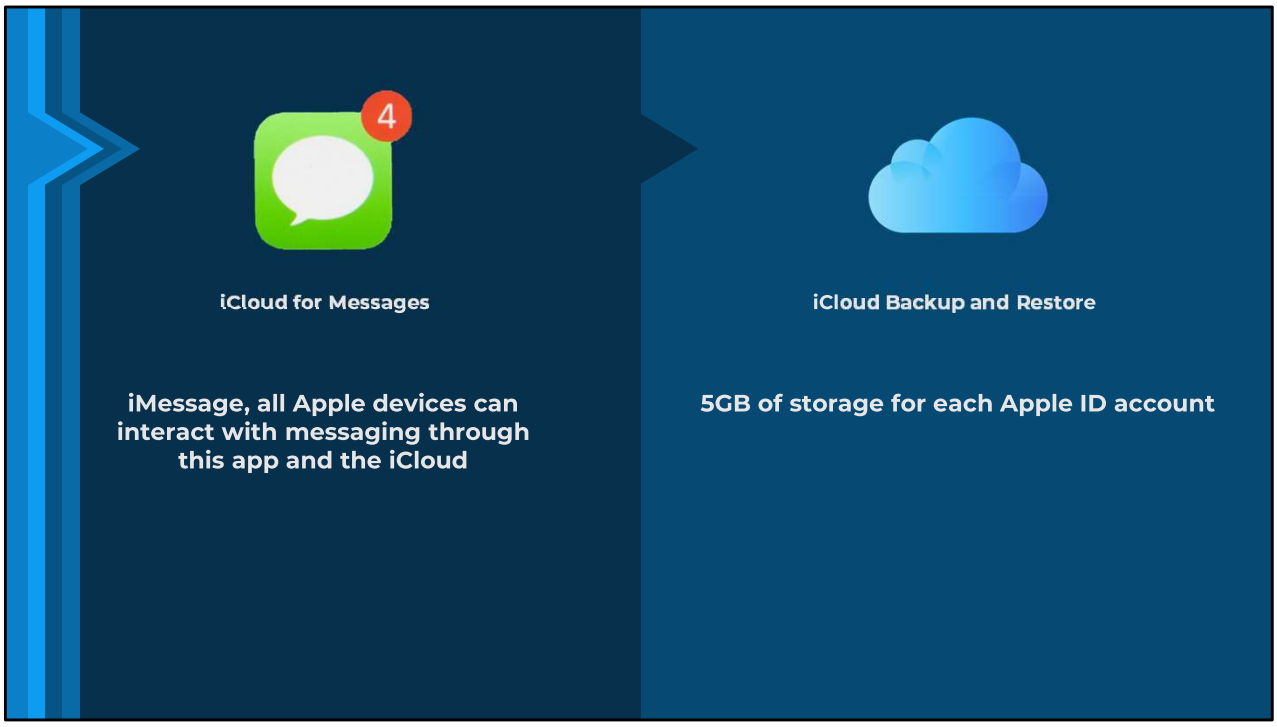
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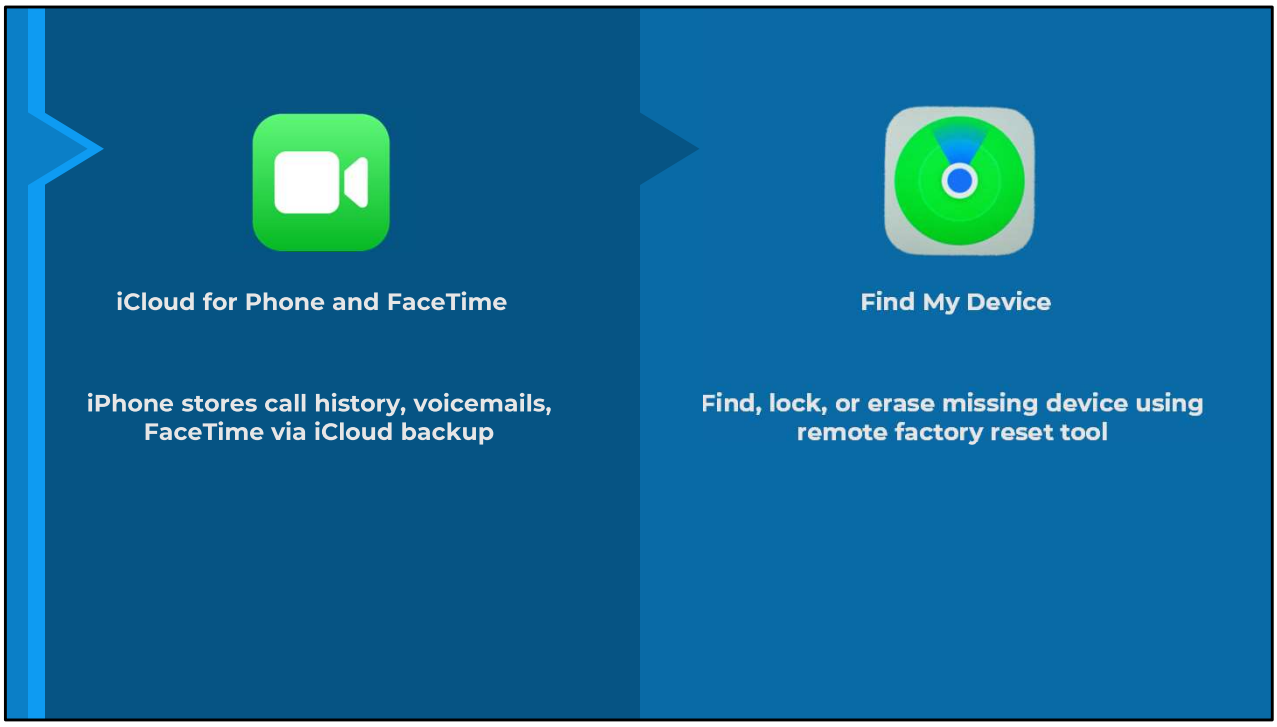
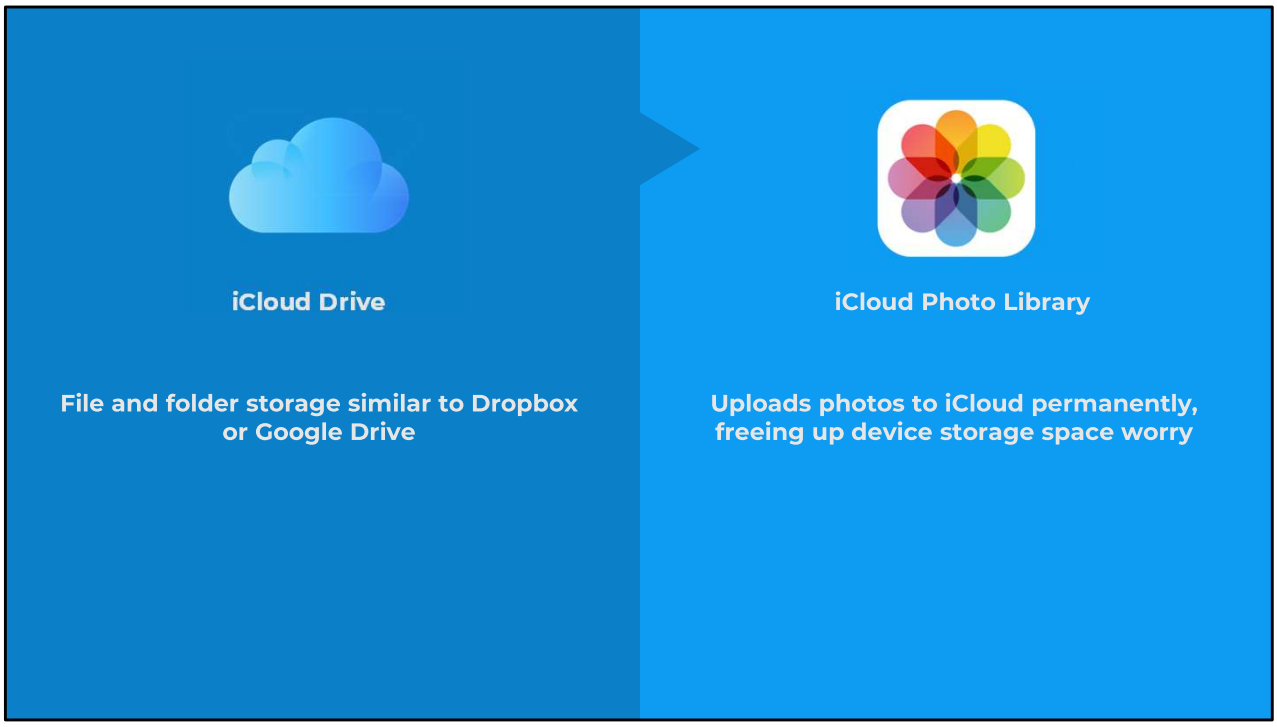
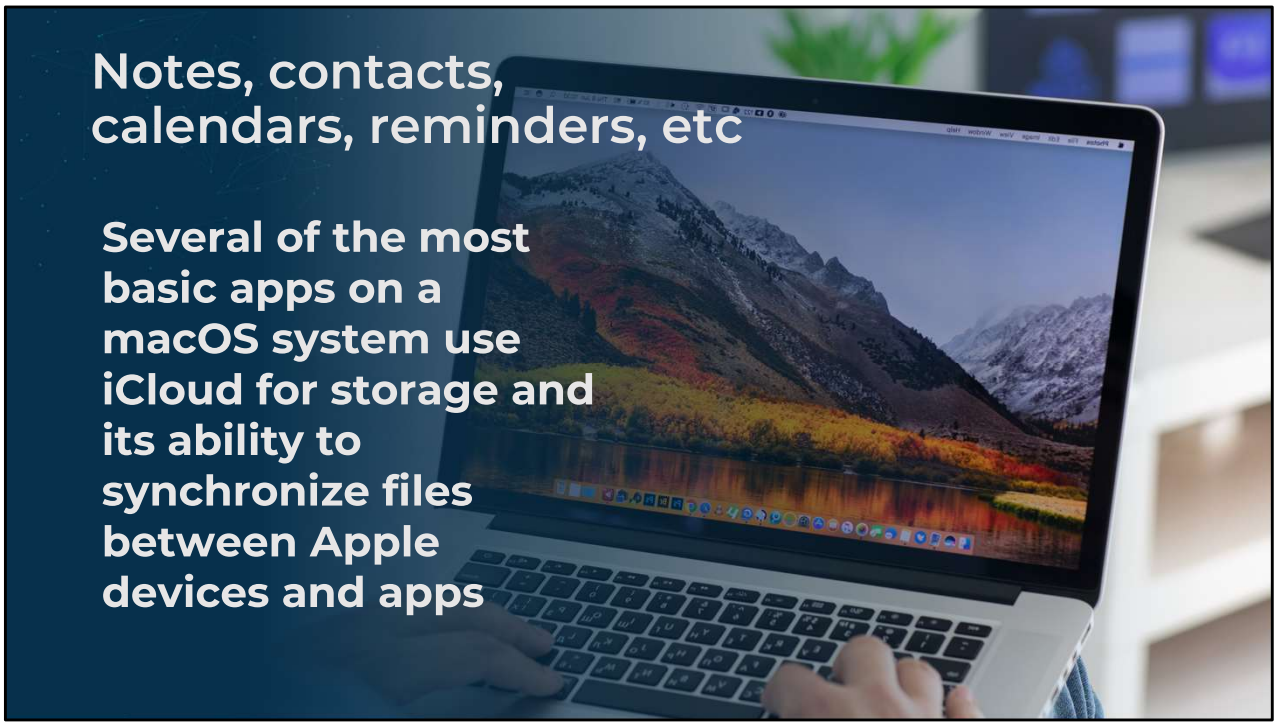
iCloud for Messages
iMessage, all Apple devices can interact with messaging through this app and the iCloud
iCloud Backup and Restore
5GB of storage for each Apple ID account


iCloud for Phone and FaceTime
iPhone stores call history, voicemails, FaceTime via iCloud backup
Find My Device
Find, lock, or erase missing device using remote factory reset tool


iCloud Drive
File and folder storage similar to Dropbox or Google Drive
iCloud Photo Library
Uploads photos to iCloud permanently, freeing up device storage space worry


Notes, contacts, calendars, reminders, etc
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Episode 2.10

Episode title: **Touring Linux**

Objective: **N/A**