Session - 3

step-by-step guide to installing Raspbian OS (now called Raspberry Pi OS) on a Raspberry Pi:

🧰 Requirements

Item	Description
🧠 Raspberry Pi	Any model (e.g., Pi 4, Pi 3B+, Pi Zero)
💾 microSD Card	Minimum 8GB (16GB or more recommended)
💻 Computer	Windows, Linux, or macOS (to flash the OS)
🔌 Power Supply	Compatible 5V power supply for your Pi
📱 Raspberry Pi Imager	Tool to write the OS image to the SD card
🌐 Optional	Internet connection (Ethernet or Wi-Fi for setup)

🔽 Step 1: Download Raspberry Pi Imager

1. Visit the official site:
   👉 https://www.raspberrypi.com/software/
2. Download and install the **Raspberry Pi Imager** for your OS.

💽 Step 2: Prepare microSD Card

- Insert the microSD card into your computer using a card reader.
- Use a **clean/formatted** microSD card (backup if needed).

🖥️ Step 3: Write Raspbian OS to SD Card

1. Open **Raspberry Pi Imager**.
2. Click **"Choose OS"** → Select **"Raspberry Pi OS (32-bit)"**.
3. Click **"Choose Storage"** → Select your **microSD card**.
4. Optionally click ⚙️ (gear icon) for:
    - Set hostname
    - Enable SSH
    - Preconfigure Wi-Fi
    - Set locale, keyboard layout
5. Click **"Write"** → Confirm.
6. Wait until the process completes (5–10 mins).

🔌 Step 4: Boot Your Raspberry Pi

1. Insert the microSD card into the **Raspberry Pi**.
2. Connect:
    - Power supply
    - HDMI to monitor
    - Keyboard and mouse
3. Power on the Raspberry Pi.

🐧 Step 5: First-Time Setup

On first boot:

- You'll be guided through initial setup:
    - Language and country
    - Wi-Fi connection
    - Password change
    - Software update (if connected to internet)

✅ Raspberry Pi OS is Installed!

You now have **Raspbian (Raspberry Pi OS)** running on your Raspberry Pi.
You can:

- Browse the web
- Write code (Python, C, etc.)
- Use GPIO pins for hardware projects

🔧 Optional Tools and Tips

Task	Tool or Option
Enable full screen	sudo raspi-config → Display options
Remote access via SSH	Enable SSH in Imager or raspi-config
Headless setup (no monitor)	Configure Wi-Fi and SSH via Imager or config files
GPIO programming	Use Python with RPi.GPIO or gpiozero libraries