2. Illustrates the basic setup process for Raspberry Pi, including the installation of the operating system.

1. Gather the Required Components

- **Raspberry Pi board** (any model: Pi 4, Pi 3, etc.)
- **MicroSD card** (16GB or higher recommended)
- **MicroSD card reader**
- **Power supply** (specific to your Pi model)
- **Monitor** (HDMI supported) and HDMI cable
- **Keyboard and mouse**
- **Internet connection** (Wi-Fi or Ethernet)

2. Download and Install Raspberry Pi OS

- **Step 1:** Go to https://www.raspberrypi.com/ and Download the official Raspberry Pi Imager on your computer.
- **Step 2:** Insert the microSD card into your computer using a card reader.
- **Step 3:** Open the Raspberry Pi Imager and:
    1. Select **Choose OS** > Choose **Raspberry Pi OS** (default or lite versions).
    2. Click **Choose Storage** > Select the microSD card.
    3. Click **Write** to install the OS.
- **Step 4:** Once completed, safely eject the microSD card.

3. Boot Up the Raspberry Pi

- **Step 1:** Insert the microSD card into the Pi's card slot.
- **Step 2:** Connect the Pi to the monitor, keyboard, and mouse.
- **Step 3:** Plug in the power supply to power on the Pi.
- **Step 4:** Follow the on-screen instructions to configure:
    - Language, region, and time zone.
    - Wi-Fi network (if using wireless).
    - Update system software (requires internet).

3. Describe the functionality of Raspberry Pi's ports and the components connected to each.

Raspberry Pi Ports and Components Connected

1. **USB Ports**
    - **Function:** Connects peripherals (keyboard, mouse, USB drives).
    - **Example Components:** USB devices like flash drives or Wi-Fi dongles.
2. **HDMI Port**
    - **Function:** Outputs video and audio to monitors/TVs.
    - **Example Components:** HDMI monitors or TVs.
3. **Ethernet Port**
    - **Function:** Wired internet connection for fast and stable networking.
    - **Example Components:** Ethernet cable to a router or switch.
4. **GPIO Pins**
    - **Function:** Interface for external circuits (sensors, motors, etc.).
    - **Example Components:** LEDs, temperature sensors, motors.
5. **MicroSD Card Slot**
    - **Function:** Primary storage for OS and data.
    - **Example Components:** MicroSD card (16GB+).
6. **Audio Jack**
    - **Function:** Outputs analog audio.
    - **Example Components:** Headphones or speakers.
7. **Power Port**
    - **Function:** Supplies power to the Raspberry Pi.
    - **Example Components:** USB-C or micro-USB power adapter.
8. **Camera Interface (CSI)**
    - **Function:** Connects Raspberry Pi Camera Module.
    - **Example Components:** Camera Module for photos/videos.

9. **Display Interface (DSI)**

    - **Function:** Connects touchscreens or compatible displays.
    - **Example Components:** Official Pi touchscreen.
10. **Wi-Fi/Bluetooth**

- **Function:** Wireless internet and peripheral connection.
- **Example Components:** Wireless keyboard, Bluetooth speaker.

Each port adds versatility, making Raspberry Pi suitable for multiple applications like IoT, education, and media.