📌 COC 1: Install and Configure Computer Systems

◆ Step 1: Identify Computer Components

✅ CPU, RAM, HDD/SSD, PSU, Motherboard, GPU
✅ Input/Output devices (Keyboard, Mouse, Monitor, Printer)

📝 **Practice Task:** Open a desktop/laptop case and identify the components.

◆ Step 2: Assemble a Computer

1. **Prepare the Workstation** (Anti-static mat, tools, power supply off)
2. **Install the Power Supply Unit (PSU)**
3. **Install the Processor (CPU)**
4. **Apply Thermal Paste** and attach the CPU Cooler
5. **Install RAM Sticks** into the motherboard slots
6. **Mount the Motherboard** into the case
7. **Install Storage Devices (HDD/SSD)** and connect cables
8. **Install the Graphics Card (GPU)** if applicable
9. **Connect all Power Cables** (Motherboard, CPU, GPU, Storage)
10. **Attach the Front Panel Connectors** (Power switch, USB, Audio)

🎯 **Practice Task:** Assemble a desktop PC and ensure all components are properly connected.

◆ Step 3: Install an Operating System (Windows/Linux)

🖥️ **Windows 10/11 Installation**

1. **Create a Bootable USB Drive**
   - Download the Windows ISO from Microsoft
   - Use **Rufus** to create a bootable USB
2. **Set BIOS to Boot from USB**
   - Restart PC and enter BIOS (**F2, F12, DEL, ESC**)
   - Set USB as the **first boot device**
3. **Install Windows**
   - Select **Language, Time, and Keyboard Layout**

- ○ Click **Install Now**
- ○ Choose **Custom: Install Windows only (Advanced)**
- ○ Select the drive and format it if needed
- ○ Wait for installation to complete and restart
4. **Install Drivers and Software**
   - ○ Download drivers from the **manufacturer's website**
   - ○ Install essential apps (Chrome, Office, Antivirus)

🎯 **Practice Task:** Install Windows 10/11 on a PC or Virtual Machine.

📌 COC 2: Set Up Computer Networks

🔹 Step 1: Identify Network Components

✅ Router, Switch, Modem, Access Point
✅ Cables (Ethernet, Fiber Optic), Connectors (RJ45)

📝 **Practice Task:** Identify network devices at home or in a lab.

## 🔹 Step 2: Set Up a Local Area Network (LAN)

1. **Connect the Router to the Modem** using an Ethernet cable
2. **Connect the Router to a Switch** if using multiple devices
3. **Connect PCs/Laptops to the Switch** using RJ45 cables
4. **Assign Static IP Addresses** (Optional)
   - ○ Go to **Control Panel → Network & Internet → Ethernet Properties**
   - ○ Select **Internet Protocol Version 4 (TCP/IPv4)**
   - ○ Set **IP: 192.168.1.X**, Subnet: **255.255.255.0**, Gateway: **192.168.1.1**

🎯 **Practice Task:** Set up a simple LAN with two computers and test connectivity.

◆ **Step 3: Crimp and Test RJ45 Cables**

RJ45 Ethernet Cable Color Codes

 Pin No.   T568A (Old Standard)   T568B (New Standard - Most Common)
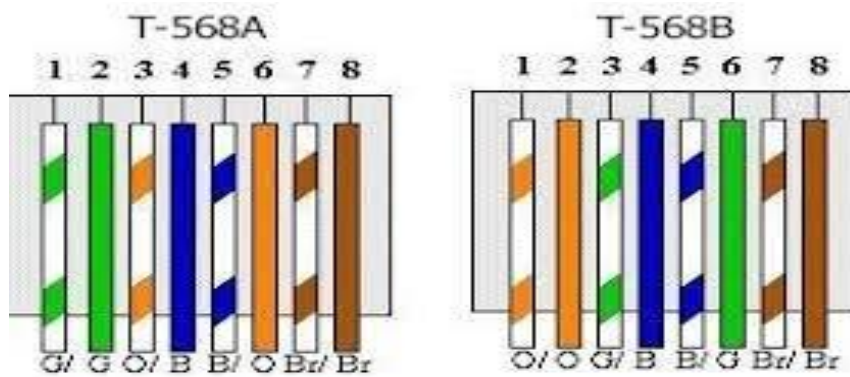
✅ **Straight-through cable:** Both ends use **T568B (most common)**
✅ **Crossover cable:** One end uses **T568A**, the other **T568B**

Steps to Crimp RJ45 Cables

1. **Strip the Cable Jacket** (Use a cable stripper or cutter)
2. **Align Wires in T568B Order (Recommended)**
3. **Trim Wires to Equal Length** (About 1.5 cm)
4. **Insert Wires into RJ45 Connector**
5. **Use a Crimping Tool to Secure the Connector**
6. **Test the Cable with a LAN Tester**

📌 COC 3: Set Up and Configure Computer Servers

◆ Step 1: Install Windows Server

1. **Download Windows Server ISO** from Microsoft
2. **Create a Bootable USB and Boot from it**
3. **Select Language, Time, and Install Now**
4. **Choose "Windows Server with GUI"**
5. **Set Admin Password and Login**

🎯 **Practice Task:** Install Windows Server in VirtualBox.

📖 **Guide:** Windows Server Setup

📌 COC 4: Maintain and Repair Computer Systems and Networks

◆ Step 1: Diagnose Common Hardware Issues

✅ No Display (Check RAM, GPU, PSU)
✅ Overheating (Check Thermal Paste, Fan)
✅ No Boot (Check BIOS, Boot Order)

🎯 **Practice Task:** Troubleshoot a slow computer and suggest fixes.

📖 **Guide:** PC Troubleshooting

◆ Step 2: Perform Preventive Maintenance

✅ Clean Dust from Components
✅ Apply New Thermal Paste
✅ Check for Loose Connections

🎯 **Practice Task:** Clean a PC and apply thermal paste to the CPU.

📖 **Guide:** PC Maintenance Tips