🔹 PART 1 – A. Set IP Addresses on END DEVICES

We will do this **one device at a time**.

✅ General Steps (you will repeat this):

1. **Click the PC or Laptop**
2. Go to **Desktop**
3. Click **IP Configuration**
4. Choose **Static**
5. Type the values exactly

🖥️ PC1

1. Click **PC1**
2. Desktop → **IP Configuration**
3. Select **Static**

Enter:

```
IP Address: 172.16.0.10
Subnet Mask: 255.255.0.0
Default Gateway: 172.16.0.1
```

4.
5. Close window

✔️ What it should look like:
Static selected, three boxes filled

💻 Laptop1

1. Click **Laptop1**
2. Desktop → **IP Configuration**
3. Static

Enter:

```
IP Address: 172.16.0.11
Subnet Mask: 255.255.0.0
Default Gateway: 172.16.0.1
```

4.
5. Close

🖥️ PC2

1. Click **PC2**
2. Desktop → IP Configuration → Static

Enter:

```
IP Address: 172.17.0.10
Subnet Mask: 255.255.0.0
Default Gateway: 172.17.0.1
```

3.
4. Close

🖥️ PC3

1. Click **PC3**

2. Desktop → IP Configuration → Static

Enter:

```
IP Address: 172.18.0.10
Subnet Mask: 255.255.0.0
Default Gateway: 172.18.0.1
```

3.
4. Close

🔹 PART 1 – B. Connect PC3 to R1-ITN (gi0/0)

Cable Type:

🟩 **Copper Straight-Through**

Steps:

1. Click **Connections (⚡ icon)**
2. Choose **Copper Straight-Through**
3. Click **PC3**
    - Choose **FastEthernet0**
4. Click **R1-ITN**
    - Choose **GigabitEthernet0/0**

⏳ Wait 3–5 seconds
✔️ The link should turn **GREEN**

🔹 PART 1 – C. Which PC configures what

Device	Used to configure
PC1	SW-SOC
PC2	SW2
PC3	R1-ITN

⚠️ This means **console cable**, NOT Ethernet.

🔹 PART 1 – D. Configure SW-SOC

🔌 Connect PC1 to SW-SOC (Console)

1. Click **Connections (⚡)**
2. Choose **Console Cable (light blue)**
3. Click **PC1 → RS-232**
4. Click **SW-SOC → Console**

🧠 Configure SW-SOC (CLI)

1. Click **PC1**
2. Desktop → **Terminal**
3. Click **OK**

You should see:

```
Switch>
```

✏️ Type THESE commands (exactly):

```
enable
configure terminal
hostname SW-SOC
enable secret Prelim6ITN
line console 0
password SoC6ITN
login
exit
line vty 0 3
password SoC2024
login
exit
service password-encryption
banner motd #Authorized Access Only!#
```

✔️ What it should look like:

- Hostname becomes `SW-SOC`
- Passwords hidden
- MOTD appears when reconnecting

🔹 PART 1 – E. Configure SVI (VLAN 1)

On SW-SOC:

```
interface vlan 1
ip address 172.16.0.2 255.255.0.0
no shutdown
exit
```

On SW2 (use PC2 + console cable)

1. Console cable PC2 → SW2

2. PC2 → Desktop → Terminal

```
enable
configure terminal
hostname SW2
interface vlan 1
ip address 172.17.0.2 255.255.0.0
no shutdown
exit
```

🔹 PART 1 – F. Default Gateway for Switches

SW-SOC:

```
ip default-gateway 172.16.0.1
```

SW2:

```
ip default-gateway 172.17.0.1
```

🔹 PART 1 – G. Save Configuration

On **both switches**:

```
end
copy running-config startup-config
```

Press **Enter** when asked.

🔹 PART 1 – H. Configure R1-ITN (using PC3)

🔌 Console PC3 → R1-ITN

PC3 → Desktop → Terminal

✏️ Router Commands

```
enable
configure terminal
hostname R1-ITN
no ip domain-lookup
enable secret 6ITNPrelim
line console 0
password 6ITNSoC
login
exit
line vty 0 1
password SoC2024
login
exit
service password-encryption
banner motd #Strictly NO CHEATING!!!#
```

🌐 Configure Interfaces

```
interface gigabitEthernet0/0
ip address 172.18.0.1 255.255.255.0
no shutdown
exit

interface gigabitEthernet0/1
ip address 172.16.0.1 255.255.255.0
no shutdown
exit

interface gigabitEthernet0/2
ip address 172.17.0.1 255.255.255.0
no shutdown
exit
```

Save:

```
end
copy running-config startup-config
```

🔹 PART 1 – I. Test Connectivity

From **any PC**:

1. Desktop → Command Prompt
2. Try:

```
ping 172.16.0.10
ping 172.17.0.10
ping 172.18.0.10
```

✔️ All should reply

🔹 PART 1 – J. Telnet Tests

PC2 → Telnet SW-SOC

```
telnet 172.16.0.2
```

PC1 → Telnet R1-ITN

```
telnet 172.16.0.1
```

🔹 PART 2 – A

Connect R1-ITN to R2 using Serial0/0/1

⚠️ IMPORTANT

You must use **Serial DCE cable** (the one with a clock icon on ONE end).

🔌 Cable Connection Steps

1. Click **Connections (⚡)** at the bottom
2. Choose **Serial DCE** (has a small clock icon)
3. Click **R1-ITN**
    - Select **Serial0/0/1**
    - (this MUST be the end with the clock)
4. Click **R2**
    - Select **Serial0/0/1**

⏳ Wait a few seconds
The link will be **RED for now** — this is normal.

⏱️ Set Clock Rate on R1-ITN

1. Click **R1-ITN**
2. Go to **CLI**
3. Press **Enter**

Type:

```
enable
```

```
configure terminal
interface serial0/0/1
clock rate 64000
no shutdown
exit
```

✔️ After a few seconds, the serial link should turn **GREEN**

🔹 PART 2 – B

Connect R2 to SW3 (MDIX NOT enabled)

Cable Type:

🟩 **Copper Straight-Through**

🔌 Steps:

1. Click **Connections (⚡)**
2. Choose **Copper Straight-Through**
3. Click **R2**
    - Choose **GigabitEthernet0/2**
4. Click **SW3**
    - Choose **GigabitEthernet0/2**

⏳ Wait
✔️ Link should turn **GREEN**

🔹 PART 2 – C

Connect Laptop2 to SW3 port 18

Cable Type:

🟩 **Copper Straight-Through**
(because MDIX is NOT enabled)

🔌 Steps:

1. Click **Connections (⚡)**
2. Choose **Copper Straight-Through**
3. Click **Laptop2**
    - Choose **FastEthernet0**
4. Click **SW3**
    - Choose **FastEthernet0/18**

✔️ Link should turn **GREEN**

🔹 PART 2 – D

Set Laptop2 to DHCP

1. Click **Laptop2**
2. Go to **Desktop**
3. Click **IP Configuration**
4. Click **DHCP** (NOT Static)

⏳ Wait 2–3 seconds

✔️ What you should see:

- IP Address **automatically filled**
- Gateway filled
- Subnet filled

If it stays blank → tell me, we'll fix it.

🔹 PART 2 – E

Ping Client from Laptop2

Client IP is:

`172.16.10.11`

Steps:

1. Laptop2 → Desktop → **Command Prompt**
2. Type:

```
ping 172.16.10.11
```

✔️ You should see:

```
Reply from 172.16.10.11
```

If it fails, **do not panic** — Part 2 includes troubleshooting.

🔹 PART 2 – F

Open the Website from Laptop2

1. Laptop2 → Desktop
2. Click **Web Browser**
3. In the URL bar, type:

```
www.Prelim-6ITN.com
```

4. Press **Enter**

✔️ You should see a webpage load
(if not, that's okay — we'll fix it if needed)

🔹 PART 2 – G

TELNET Troubleshooting (THIS IS IMPORTANT)

❌ Try Telnet FIRST (It SHOULD FAIL)

1. Laptop2 → Desktop → Command Prompt
2. Type:

```
telnet 172.16.10.8
```

✔️ It should **FAIL**

❓ WHY does it fail?

Because **SW3 is misconfigured** (intentionally by your instructor).

Common issue:

- **No default gateway**
- **VTY lines not set correctly**
- **VLAN interface down**

🔧 Fixing SW3 (Using Client PC)

🔌 Connect Client PC to SW3 (Console)

1. Click **Connections (⚡)**
2. Choose **Console Cable (light blue)**
3. Click **Client PC**
    - Choose **RS-232**
4. Click **SW3**
    - Choose **Console**

🖥️ Access SW3 CLI

1. Click **Client PC**
2. Desktop → **Terminal**
3. Click **OK**

You should see:

```
Switch>
```

🔍 View Configuration

```
enable
show running-config
```

Look for:

- `interface vlan 1`
- `ip default-gateway`
- `line vty`

✅ FIX SW3 (Most likely solution)

Type:

```
configure terminal
interface vlan 1
no shutdown
exit
ip default-gateway 172.16.10.1
line vty 0 3
login
exit
end
copy running-config startup-config
```

⚠️ **DO NOT change the Telnet password**
(It says it's visible in config — use what's already there)

🔁 Try Telnet AGAIN

From **Laptop2**:

```
telnet 172.16.10.8
```

Enter the password you saw earlier.

✔️ If done correctly:

- You'll get access to SW3
- Telnet works

🔹 PART 3 – A

Connect R2 to SW4 (MDIX NOT enabled)

Correct Cable:

🟩 **Copper Straight-Through**

🔌 Steps:

1. Click **Connections (⚡)**
2. Choose **Copper Straight-Through**
3. Click **R2**
    - Select **GigabitEthernet0/2**
4. Click **SW4**
    - Select **GigabitEthernet0/2**

⏳ Wait
✔️ Link should turn **GREEN**

🔹 PART 3 – B

Connect PC6 to SW4 port 16 using CROSSOVER

❗ Important

Switch ports normally **do NOT accept crossover** unless configured.

🔌 Cable Connection

1. Click **Connections (⚡)**
2. Choose **Copper Crossover**
3. Click **PC6**
    - Select **FastEthernet0**
4. Click **SW4**
    - Select **FastEthernet0/16**

⛔ Link will be **RED** — this is expected

🛠️ Configure SW4 to allow crossover on Port 18

1. Click **SW4**
2. Go to **CLI**
3. Press **Enter**

✏️ Type:

```
enable
configure terminal
interface fastEthernet0/18
mdix auto
no shutdown
```

```
exit
```

⏳ Wait a few seconds
✔️ Link should turn **GREEN**

🔹 PART 3 – C

Fix connection between SW4 (fa0/1) and Hub (fa1)

❌ Why it fails

- Hubs do **NOT auto-negotiate**
- Speed/duplex mismatch causes RED link

🔧 Fix on SW4

1. Still on **SW4 CLI**, type:

```
interface fastEthernet0/1
speed 10
duplex half
no shutdown
exit
```

⏳ Wait
✔️ Link to Hub should now be **GREEN**

🔹 PART 3 – D

Test Connectivity (PC5 → PC6)

1. Click **PC5**
2. Desktop → **Command Prompt**
3. Type:

```
ping 172.16.20.7
```

✔️ You should see **Reply from 172.16.20.7**

🔹 PART 3 – E

Set DNS Server on PC4, PC5, PC6

DNS Address:

```
172.16.10.88
```

🔁 Do this on EACH PC (PC4 → PC6):

1. Click the PC
2. Desktop → **IP Configuration**
3. In **DNS Server** field, type:

```
172.16.10.88
```

4. Close

⚠️ Do NOT change IP or Gateway

🔹 PART 3 – F

Open Website from PC4–PC6

Steps (repeat on each PC):

1. Desktop → **Web Browser**
2. Type:

```
www.Prelim-6ITN.com
```

3. Press **Enter**

✔️ The webpage should load on **ALL PCs**