El-Shorouk Academy
Higher Institute for Computer
&Term Information Technology
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Year: 4
**Computer Science Department**

Network Programming
Section one

➢ **Network**: is a group of connected devices (like computers, phones, or servers) that can share information and resources with each other. These connections can be physical (**Wired**), like cables, or **Wireless**, like Wi-Fi.

➢ **The purpose of a network:** is to allow devices to communicate, share data, and access services, such as the internet or printers.

❖ **How to share files between two computers using a wireless (NO Cables Needed) connection.**

- **Wireless file sharing medium examples:**
  - Wi-Fi:
    - Longer range.
    - Faster data transfer.
    - Used for internet access and local networks.
    - Supports multiple devices.
  - Bluetooth:
    - Shorter range.
    - Slower data transfer.
    - Used for connecting devices (e.g., headphones, keyboards).
    - Typically connects to one device at a time.

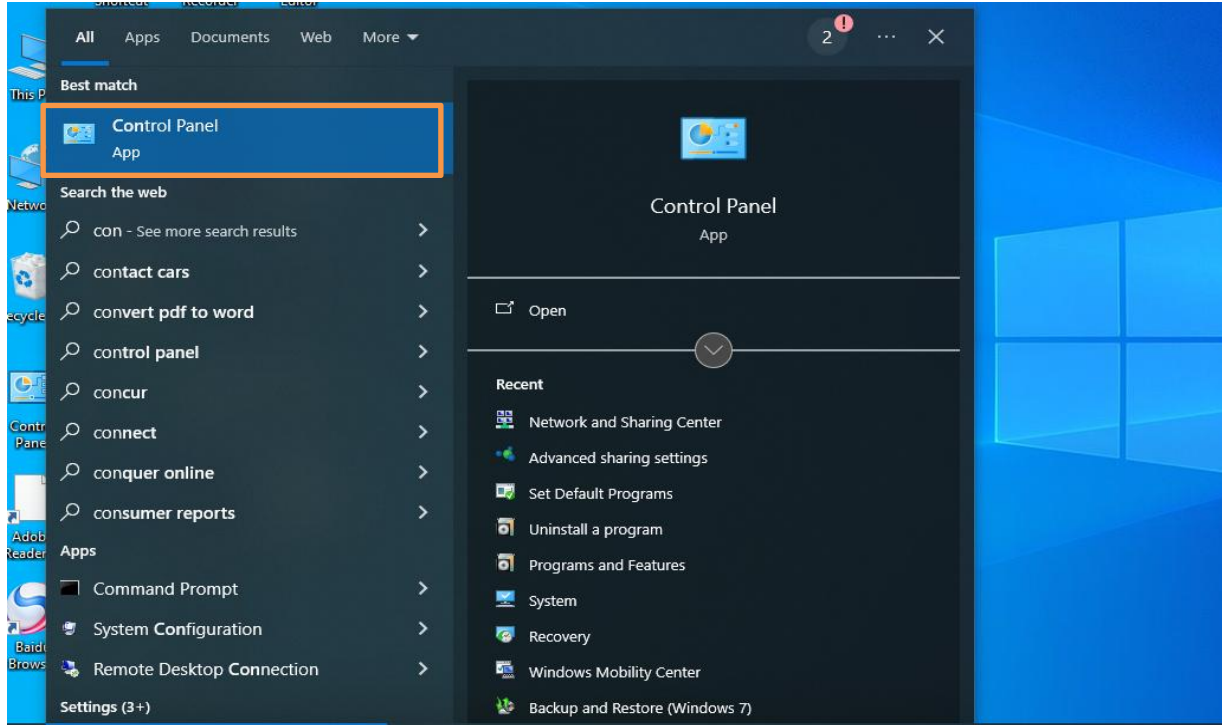❖ **How To share files between two laptops on the same network using Wi-Fi.**

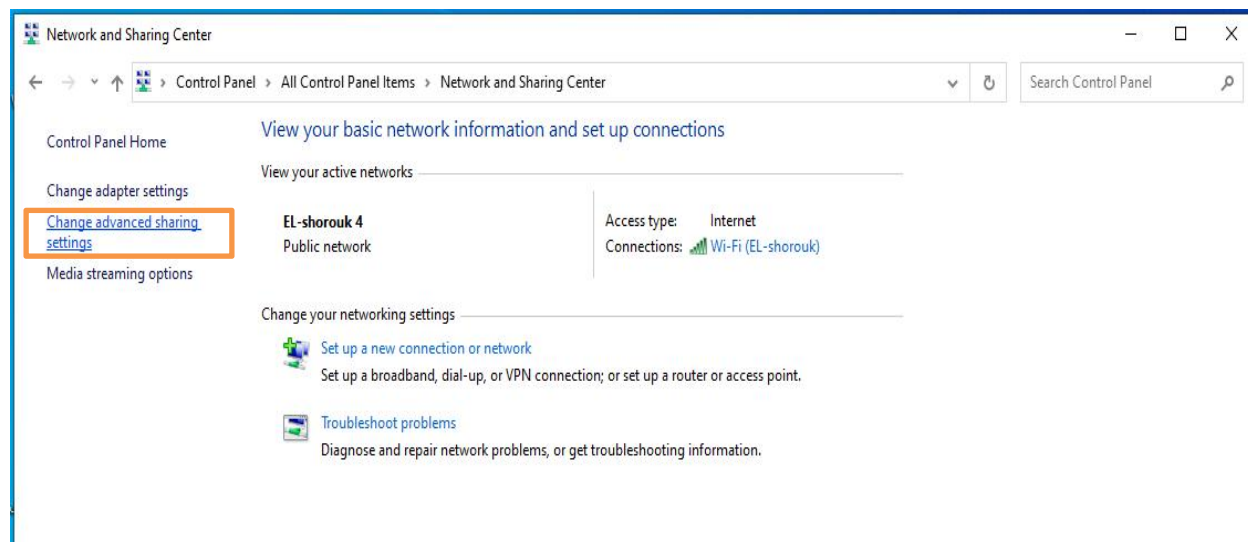➢ First, ensure that both devices are on the same network.
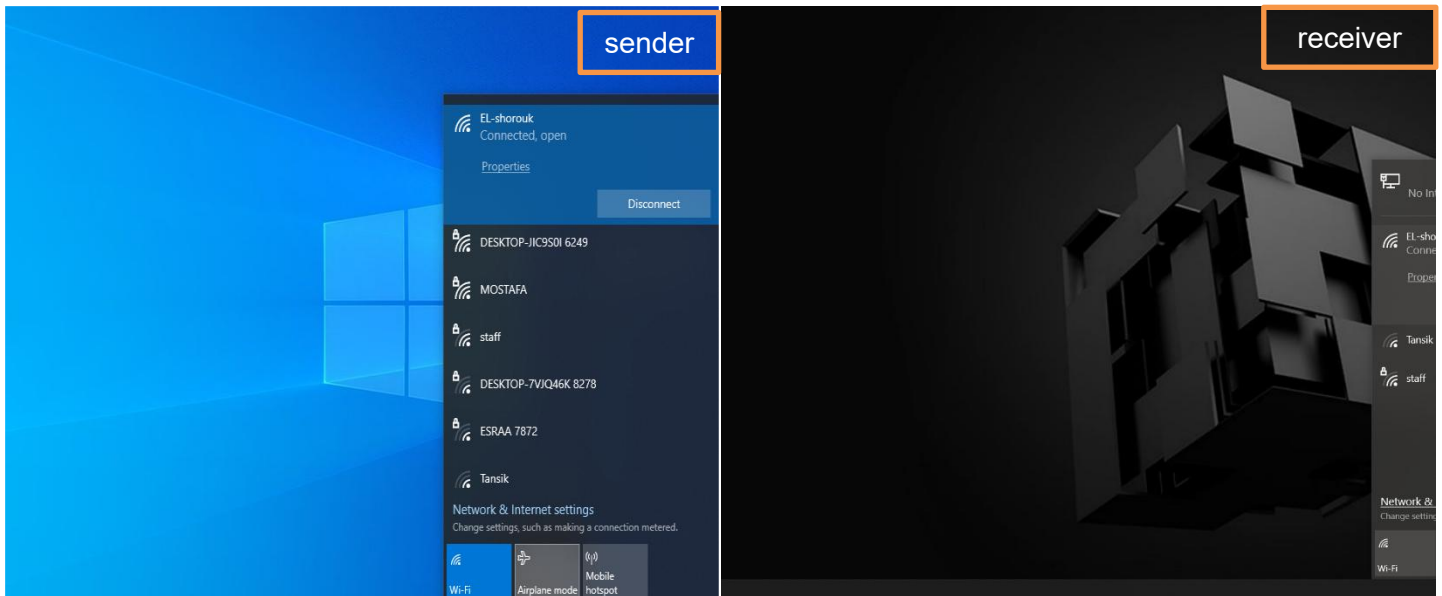
sender

receiver

Sender related settings

1. **Turn on "network discovery". (Allow receiver to see you on the network)**

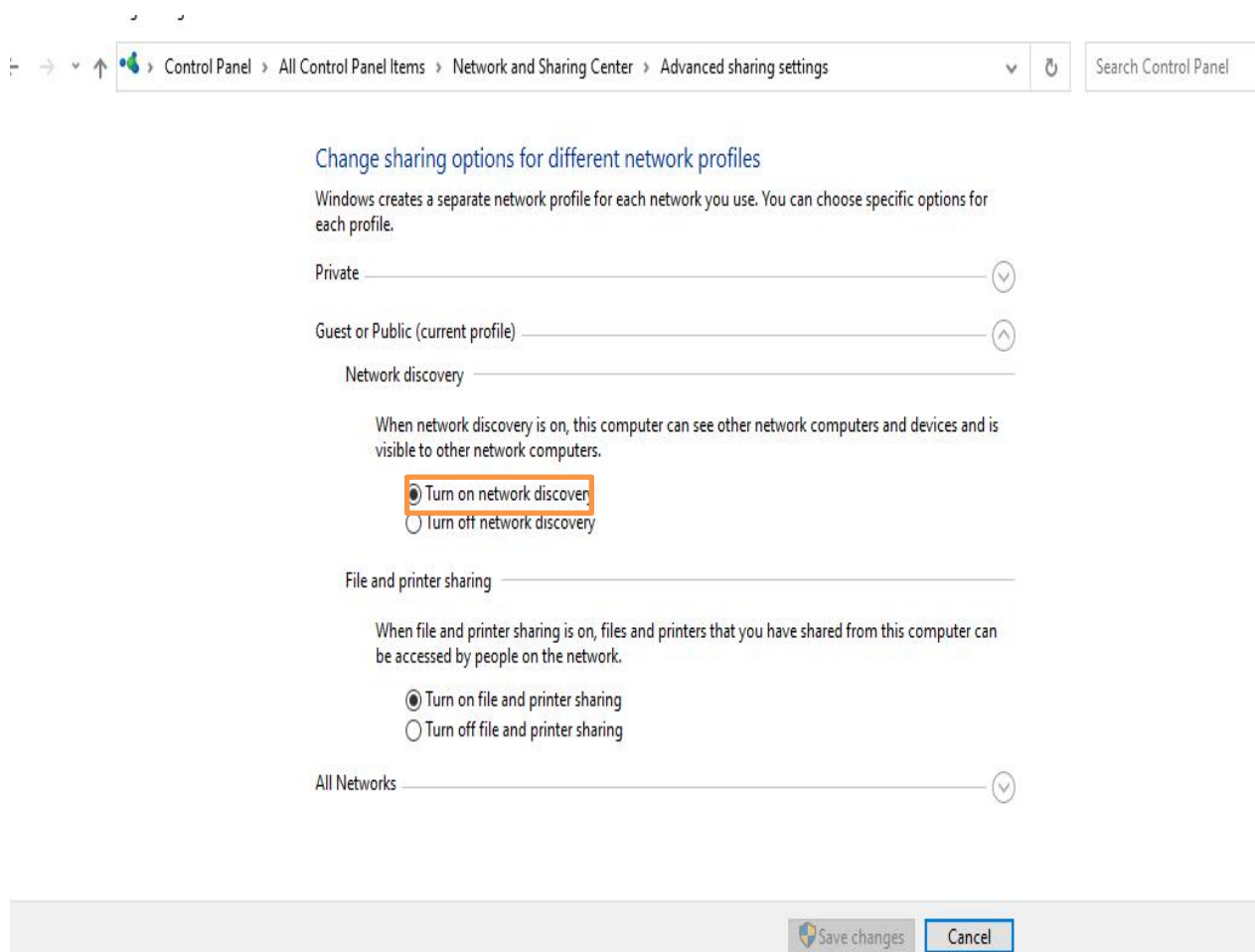   **At First Open Control Panel.**
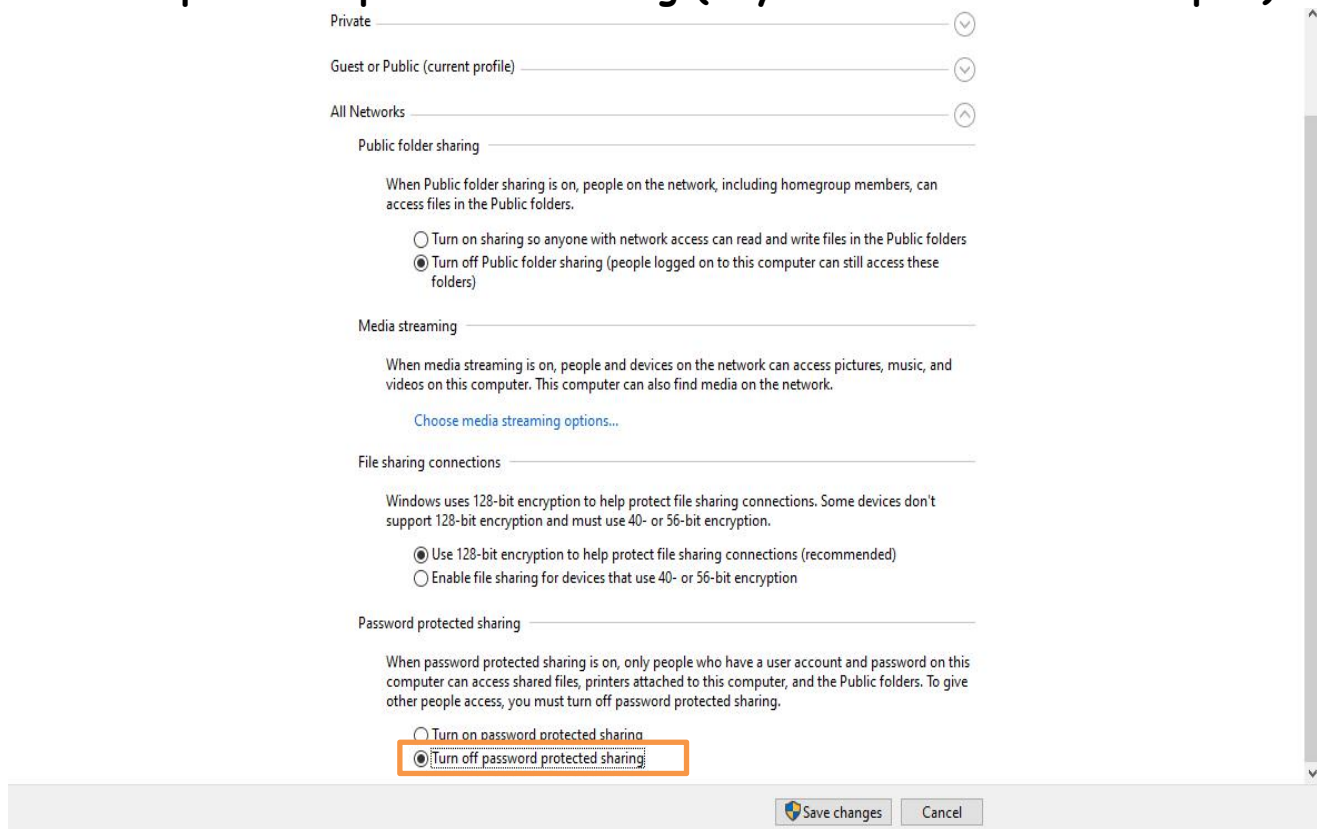
2. Then, Network and Sharing Center. Then, Advanced sharing settings.

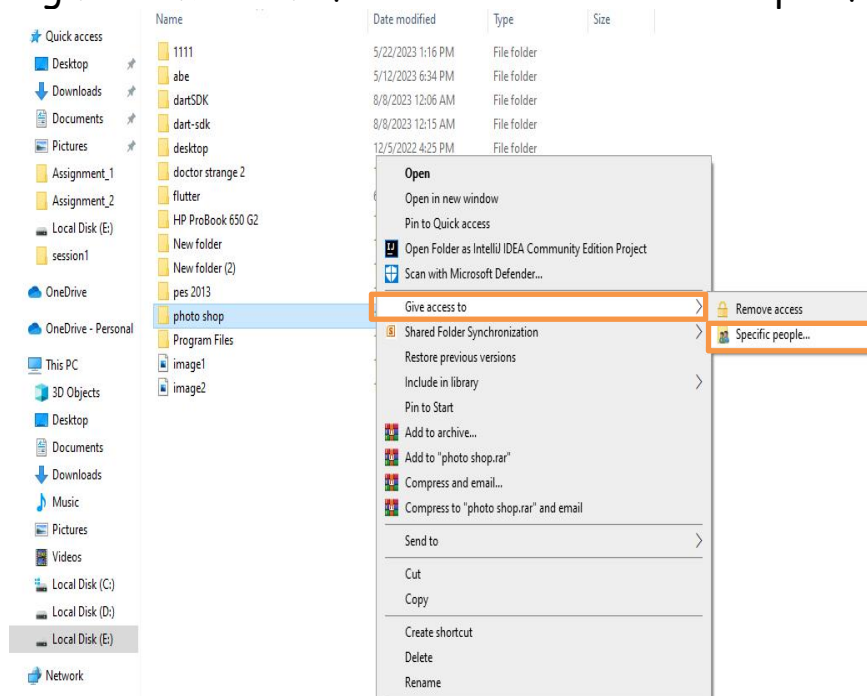## 3. Turn on network discovery

4. **Turn off password protected sharing (if you want to make it simpler).**
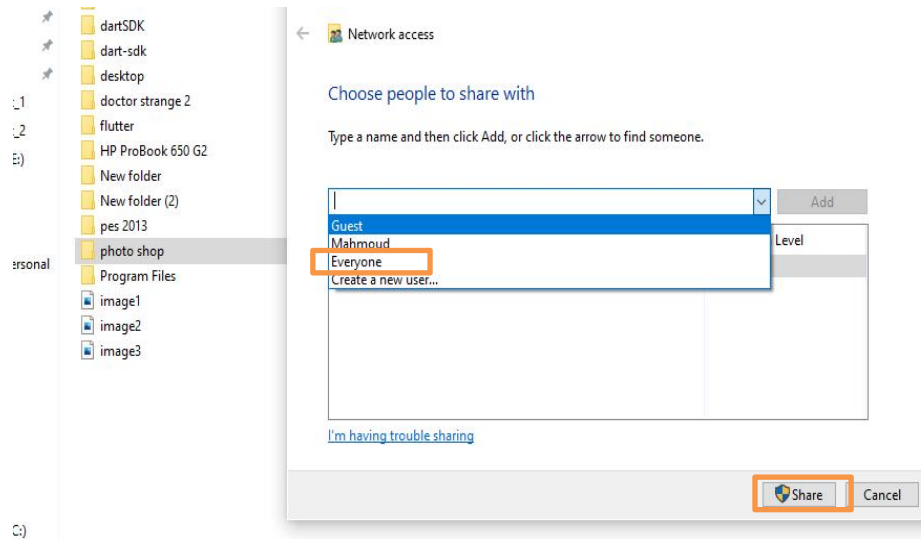

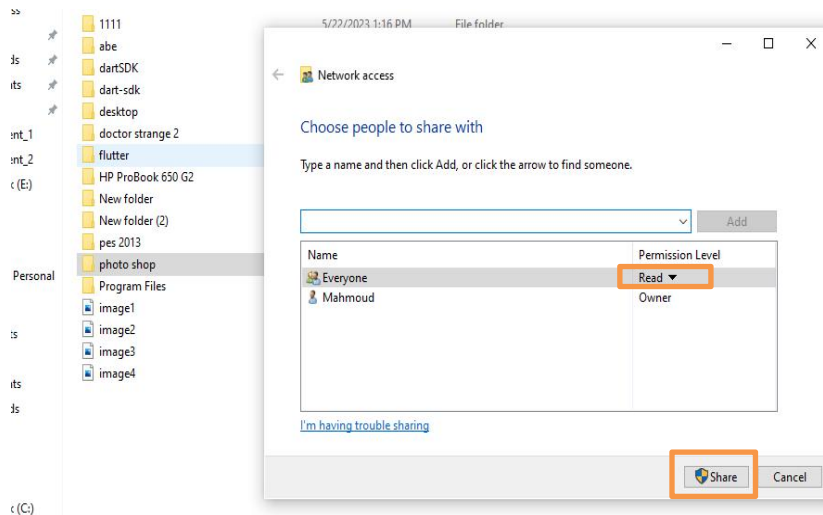## 5. select the folder\file you want to share to others.

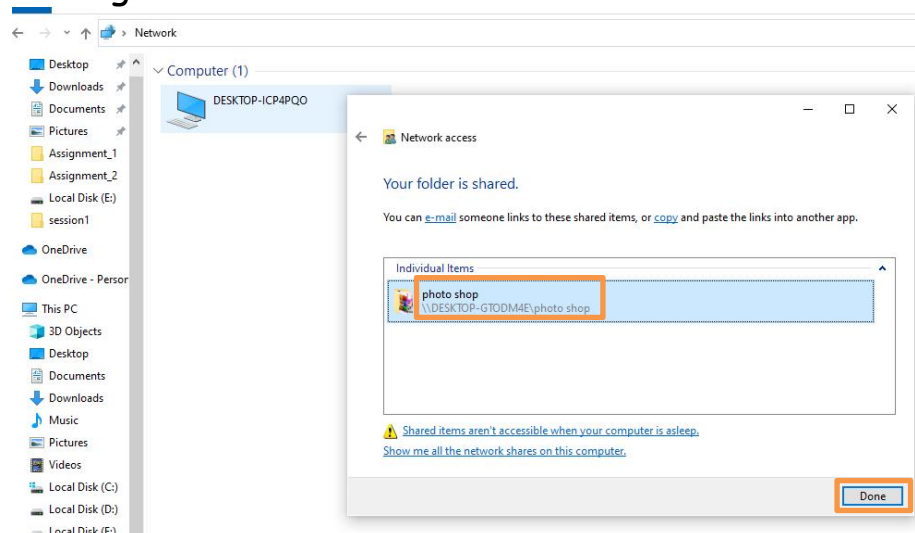> ➢ Right-click on the file => Give access to => Specific people

6. Select everyone then click add. (allow sharing to everyone on the network)

7. Determine permission level (Read or Read/Write) => click on Share
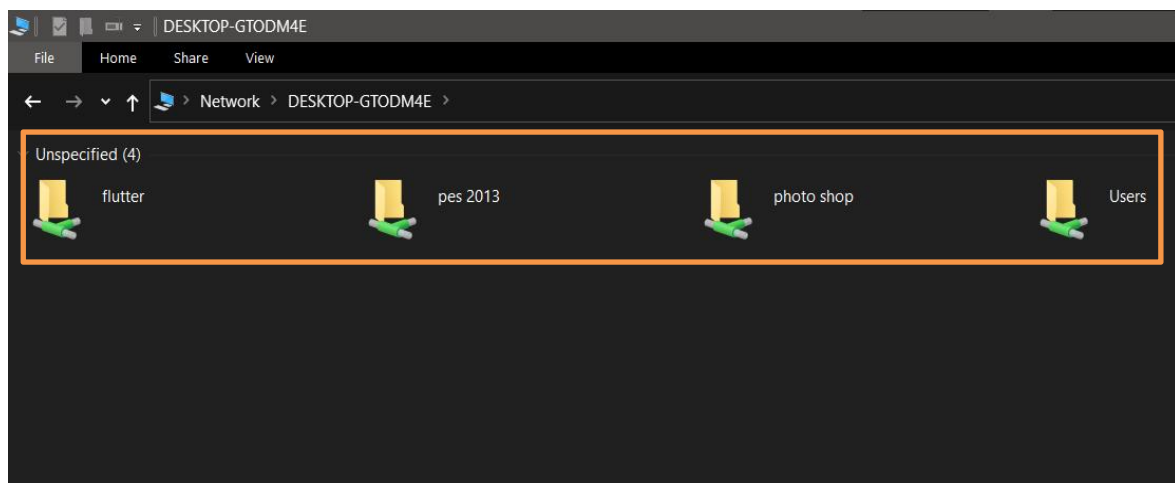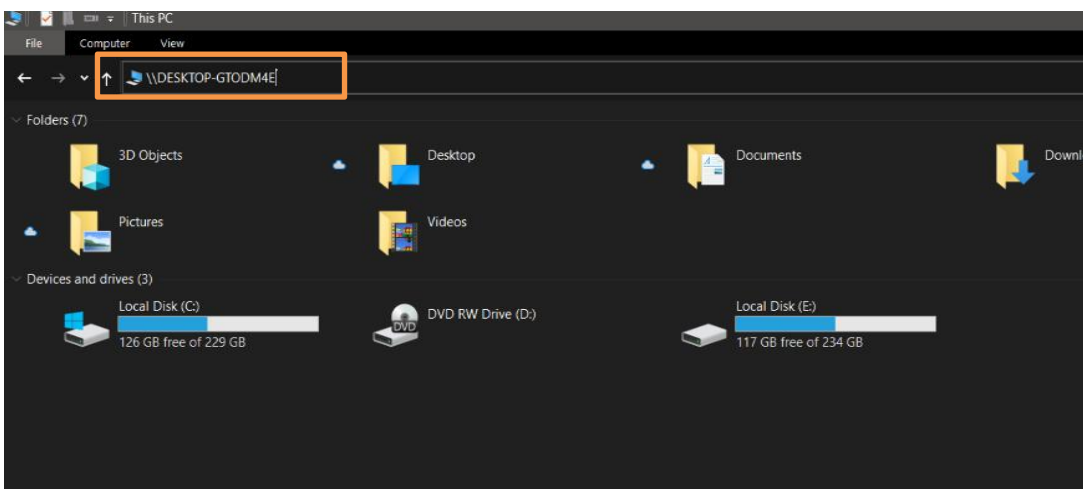

8. Now the folder is being shared with all devices in the same network.

receiver related steps

1. Open "file explorer" and in the address bar type " \\SenderName "
2. => press Enter.
3. If it asks for credentials
   a. username: SSID.
   b. password: WIFI password.
4. Press Enter then you can access the sender folder.

Introduction to Proxy Server.

A Proxy Server is like a middleman between your device (computer or smartphone) and the internet. It takes your requests to access websites and passes them on for you. When the websites respond, the proxy server receives the data and hands it back to you. It can help with security, privacy, and sometimes speed up web access.

Why Use Proxy Servers:

- **Privacy:** They hide your online identity.
- **Access Control:** They help organizations control internet access.
- **Content Storage:** They store web content to save time and data.
- **Security:** They act as guards against harmful content.
- **Traffic Balance:** They distribute internet traffic for better performance.

How Proxy Servers Work:

1. **Client Request:** A user or client device sends a request for a web resource (e.g., a webpage or file) to the proxy server.
2. **Proxy Server Processing:** The proxy server receives the request and evaluates it. It can perform various functions, including caching, filtering, and anonymizing the request.
3. **Forwarding the Request:** If the resource is not in its cache, the proxy server forwards the request to the target web server.
4. **Web Server Response:** The target web server processes the request and sends a response back to the proxy server.
5. **Response to Client:** The proxy server then forwards the web server's response to the client device.

How to set up a proxy server on Windows 10

When your computer is connected to a company server or network, it requires a more manual setup process. You can typically go about doing this by getting a 'script address' from the person regulating your local network [usually the network administrator at your company's Information Technology (IT) department]. A configuration address will look something like this:

my_proxy_server.com:9367

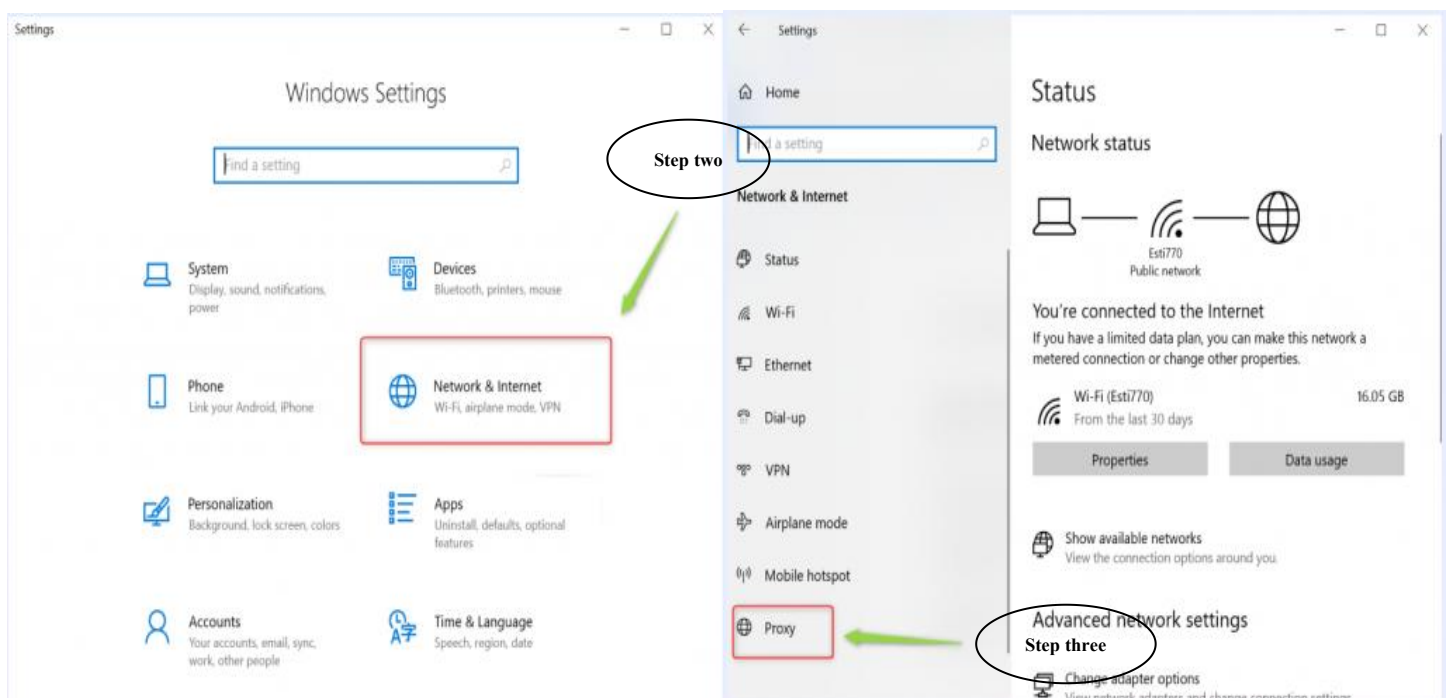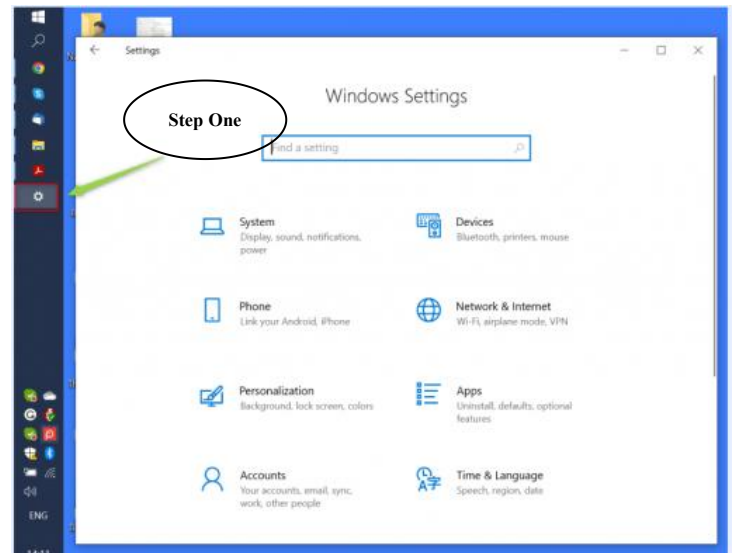Here is a complete step-by-step guide for your convenience:
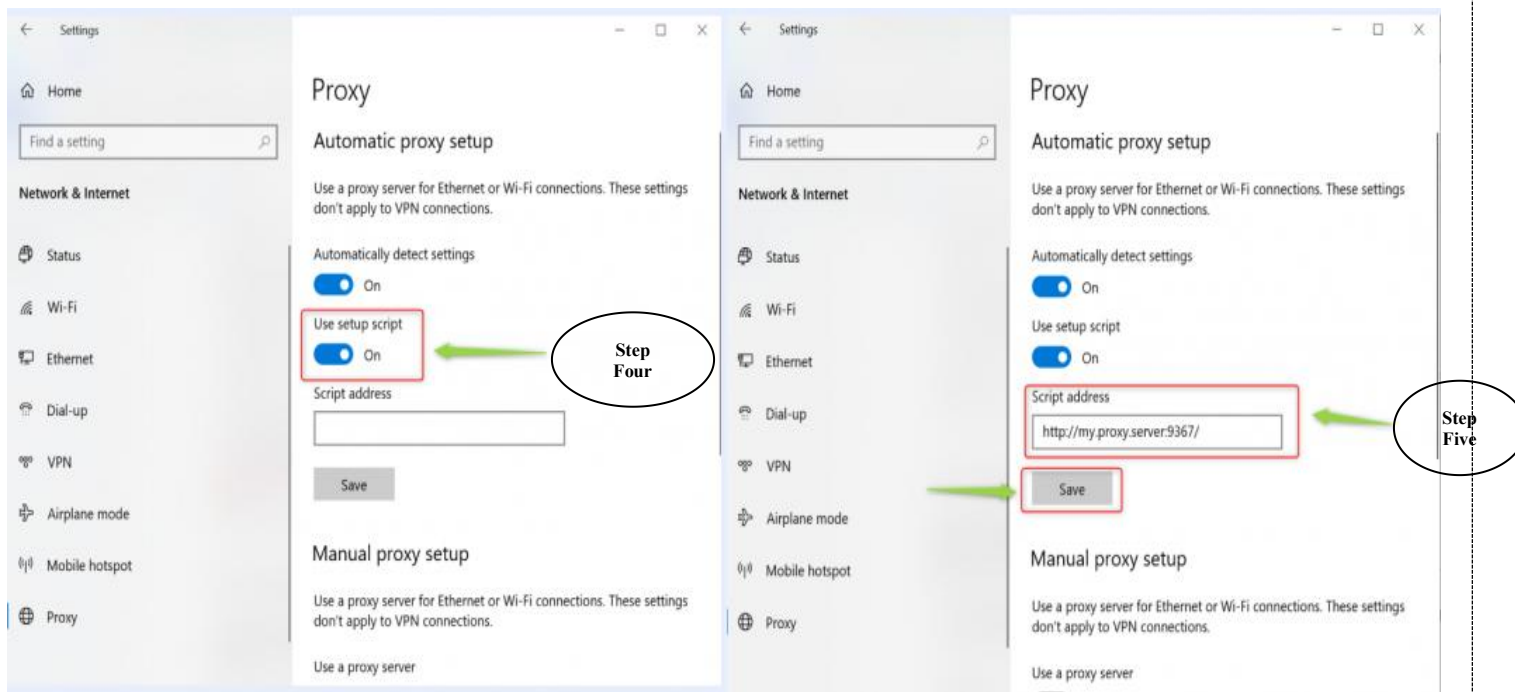
Step One: Click on 'Settings'

Step Two: Hit 'Network & Internet'

Step Three: Click on 'Proxy'

**Step Four**: Toggle the 'Use Setup Script' to 'on'

**Step Five**: Copy, and paste the script address, then hit 'Save'

Now close 'Settings', that's it – yourproxy is all set up.

Alternatively, if you would like to manually **add an IP address and port number** then you could scroll down in the 'Proxy' section to where it reads 'Manual proxy setup'. Here you will want to add your desired target IP address, and port number as follows:
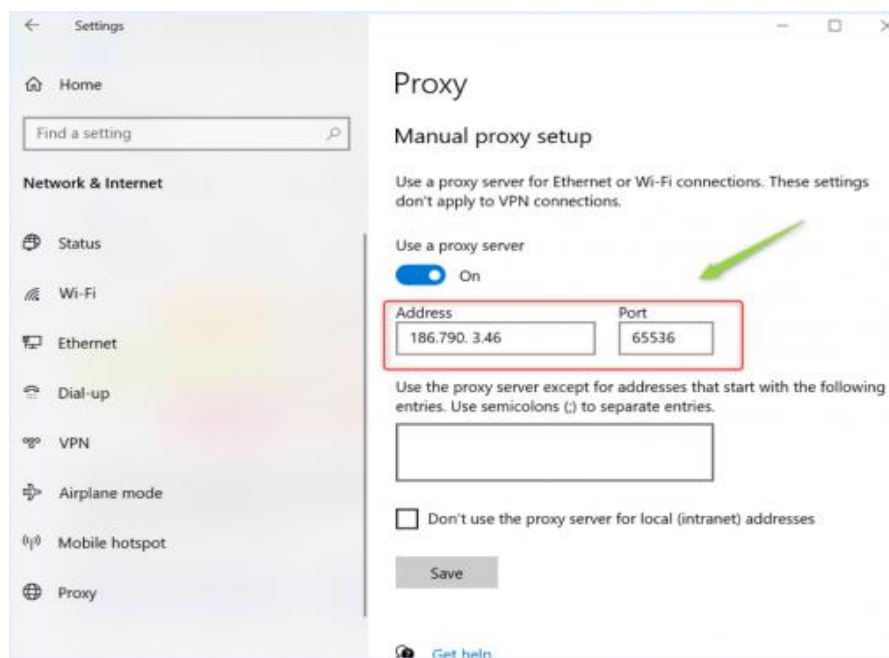
❖ **VPN (Virtual Private Network)**: is like a secure passage on the internet. It uses encryption to protect your data and creates a private online space for you.

VPN vs Proxy
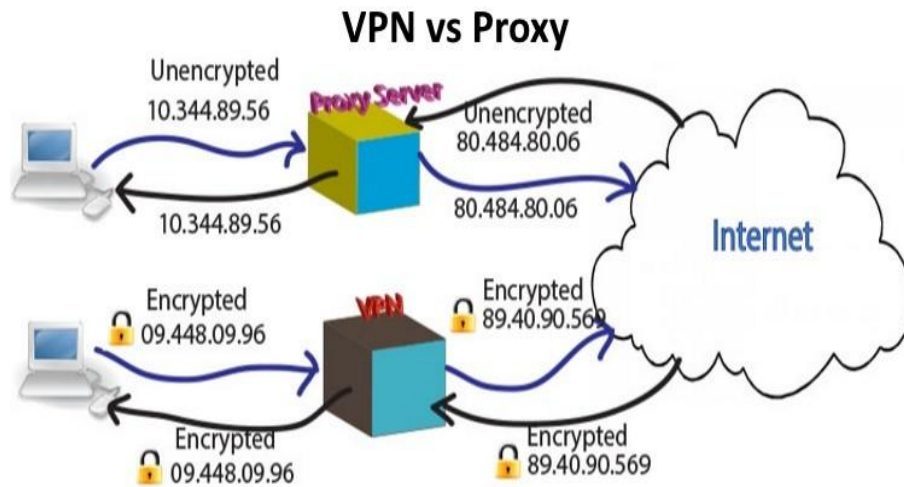
<u>Comparison between VPN and proxy.</u>

Feature	VPN	Proxy Server
Privacy & Anonymity	Strong privacy protection, hides IP	Some privacy protection, hides IP
Security	Secure with encryption	Limited security, not always encrypted
Data Encryption	Encrypts all data	May or may not encrypt data
Location Spoofing	Can change your virtual location	Can change your virtual location
Use Cases	Enhanced privacy, security	Content filtering, some anonymity

NOTE: While both VPNs and proxy servers can help with privacy ,VPNs generally offer stronger security and encryption, while proxies are often used for specific content filtering and anonymity to a lesser extent. The choice between them depends on your specific needs and priorities.