Topic	WRAP - UP NETWORKING	
Class Description	**Students will be revising all the concepts in the networking module**	
Class	**C-240**	
Class time	**45 mins (With ribbon entire doc)**	
Goal	• Revised network concepts	

Resources Required	• Teacher Resources:
	  ○ laptop with internet connectivity
	  ○ earphones with mic
	  ○ notebook and pen
	  ○ smartphone
	• Student Resources:
	  ○ laptop with internet connectivity
	  ○ earphones with mic
	  ○ notebook and pen	

Class structure	**Warm-Up** **Student-led Activity** **Wrap-Up**	**10 mins** **45 mins** **05 mins**
Credit & Permissions:	**Code samples used for Firebase-Google Authentication are licensed under the Apache 2.0 License.** **Expo documentation used from - https://expo.io** **If applicable**	
WARM-UP SESSION - 10 mins		

Teacher Action	Student Action
Hey <student's name>. How are you? It's great to see you! Are you excited to learn something new today? How's your overall experience with the networking module? Do you remember every concept which we learned in networking? Let's have a revision session on the same I will give you some challenges and you need to finish that!	**ESR**: Hi, thanks, Yes I am excited about it! **ESR:** Varied!
Q&A Session	
Question	**Answer**
Which method is used to close the Socket? A. Socket.flush() B. Socket.Close() C. Socket.close(D. Socket.dump()	C
How would the flow of information look like if you made bus topology on the Cisco packet tracer? A. Unidirectional B. Multidirectional C. Bidirectional D. Ring	C
Teacher Initiates Screen Share	

ACTIVITY • **Teacher Activity description(in bullet points)**	
Teacher Action	**Student Action**
This will be a revision class, either teacher can cover pending projects or can revise topics as mentioned below. Let's start from the very starting of networking! **What is the difference between a Mac address and an IP address?** Mac Address: MAC address is a unique number that is used to track a device in a network IP Address: An IP address is a unique address that identifies a device on the internet or a local network **How IPv4 is different from IPv6?** Sol: IPv4 and IPv6 are internet protocol version 4 and internet protocol version 6, IPv4: The IPv4 is a 32-bit address, IPv6: The IPv4 is a 64-bit address, **How you will check your computer's IP Address and Mac Address?** Sol: Using Command **ipconfig**	**ESR:** Varied!

What are Sockets and what's the use of sockets? Sol: Sockets are endpoints built for sending and receiving data. A single network will have two sockets -server socket, client socket. These sockets are a combination of an IP address and a Port. **Which module is used to create Graphical-User-Interface?** Sol: Tkinter **To make the connection between two devices what do we use in networking?** Sol: Sockets. **What is the use of FTP servers in file-sharing applications?** Sol: For upload and download content from a shared folder **Why do we use dummy Authorizer while resting FTP servers?** Sol: For Authentication **What we use Turn servers concept in Video Chat App?** Sol: In order to negotiate connections through firewalls, WebRTC uses TURN servers. In addition, when TURN is used to negotiate a firewall/NAT, the media (audio and	

video) from the call is routed through the TURN server.

Why do we use peer JS technology?

Sol: PeerJS simplifies peer-to-peer data, video, and audio communications over WebRTC. Peers are able to connect to a remote peer by simply providing their ID.

What protocol is used to send and receive Emails, and how many and what ports are used?

Sol: SMTP (Simple Mail Transfer Protocol) is the basic standard that mail servers use to send emails to one another across the internet. 25, 585, 467 ports are used to send emails.

What are the widely used methods to crack users' passwords?

Sol: Password cracking is the process of trying to crack a password. Brute Force Attack, Dictionary Attack is widely used to crack user's password

What do we need to keep in mind when we talk about secure passwords?

Sol: The strength of a password is determined by;

- **Length**: number of characters used in password
- **Complexity**: Combination of letters, numbers, and symbols
- **Unpredictability**: uncommon

How steganography is different from cryptography?

Sol:**Steganography:** Used to hide data in an image

Cryptography: Change data in no readable form and vice versa

What are the differences between asymmetric and symmetric cryptography?

Sol:

Asymmetric Cryptography	**Symmetric cryptography**
need two keys: Private and public	Need one key only public
Provides confidentiality and authenticity	Only confidentiality

How worm is different from a virus?

Worm: A worm is an independent malicious program that replicates and propagates itself

Virus: Viruses are triggered by the activation of their host

What is DBMS?

Database Management Systems (DBMS) are programs that control the creation, maintenance, and use of databases. A DBMS can be described as a File Manager that stores data in a database rather than storing it on a file system.

What is a Union operator?

UNION operator is used to combining the results of two tables, and it eliminates duplicate rows from the tables.

Internet scams are conducted by cyber-criminals in which users are convinced digitally to disclose confidential information. What type of attack did we call?

Sol: Phishing attack

SQL injection is an attack in which _____ code is inserted into strings that are later passed to an instance of SQL Server.

Malicious code

Great, You have learned a lot in this module.

Now, it's your turn!

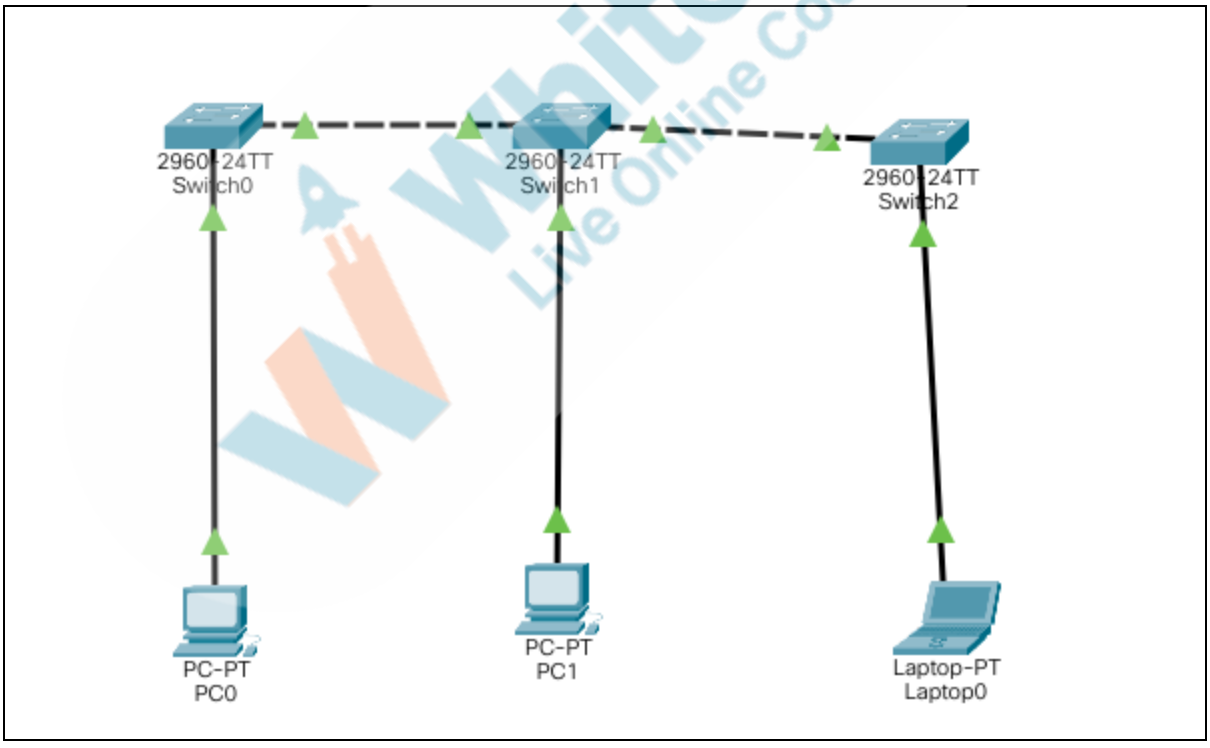
Teacher Stops Screen Share

STUDENT-LED ACTIVITY - 20 mins

- **Ask the student to press the ESC key to come back to the panel.**
- **Guide the student to start Screen Share.**
- **The teacher gets into Fullscreen.**

ACTIVITY

- **Student Activity description (in bullet points).**

Teacher Action	Student Action
How do the Bus, and Ring topologies differ from one another? *The student will design bus and Ring topology on cisco packet tracer on his/her own.*	
Bus Topology: In this topology when a node/PC wants to send the message over the network, it puts a message over the network, and all the stations available in the network will receive the message whether it has been addressed or not as the backbone cable is considered as a “single lane” through which the message is broadcast to all the stations	
	

Write a server-client program to establish a connection between the server and the client

Tell the student to write make server connection with the client

Create server.py

```
import socket
from  threading import Thread
IP_ADDRESS = '127.0.0.1'
PORT = 8080
SERVER = None
clients = {}


def acceptConnections():
    global SERVER
    global clients

    while True:
        client, addr = SERVER.accept()
        print(client, addr)


def setup():

    global PORT
    global IP_ADDRESS
    global SERVER


    SERVER  = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    SERVER.bind((IP_ADDRESS, PORT))
    SERVER.listen(100)

    print("\t\t\t\tSERVER IS WAITING FOR INCOMMING CONNECTIONS...")
    print("\n")

    acceptConnections()


setup_thread = Thread(target=setup)             #receiving multiple messages
setup_thread.start()
```

Make a **client.py**

```
import socket
from threading import Thread
from tkinter import *
from tkinter import ttk


PORT   = 8080
IP_ADDRESS = '127.0.0.1'
SERVER = None
BUFFER_SIZE = 4096



def setup():
    global SERVER
    global PORT
    global IP_ADDRESS

    SERVER = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    SERVER.connect((IP_ADDRESS, PORT))


setup()
```

Output:

```
Server has started...
```

Perfect! You establish a connection between server & client.

Teacher Guides Student to Stop Screen Share

WRAP-UP SESSION - 05 mins

Quiz Time - Click on In-Class Quiz

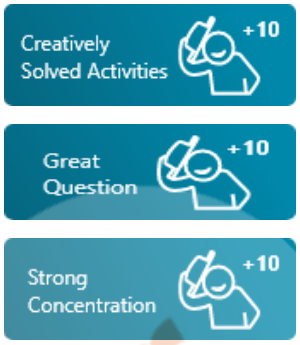
Question	Answer
Which network device should we use to connect two dissimilar networks? A. Modem B. Switch C. Router D. Bridge	**B**
Which one of the topologies is not used in LAN Topology? A. Ring Topology B. Band Topology C. Star Topology D. Bus Topology	**B**
Which method you will use to transmit data over the server-client connection? A. Socket.send(data) B. Socket.Send() C. SOCKET.SEND() D. Socket.data()	**A**

End the quiz panel

FEEDBACK

- **Appreciate students' efforts in the class.**
- **Ask the student to make notes for the reflection journal along with the code they wrote in today's class.**

Teacher Action	Student Action
You get "hats-off" for your excellent work! In the next class, We will learn about IoT	*Make sure you have given at least 2 hats-off during the class for:*

	
PROJECT OVERVIEW **Goal of the Project:** **Story:** I am excited to see your work. Bye!	
Teacher Clicks ✖ End Class	
ADDITIONAL ACTIVITIES	
Additional Activities *Encourage the student to write reflection notes in their reflection journal using markdown.* Use these as guiding questions:	*The student uses the markdown editor to write her/his reflections in the reflection journal.*

• What happened today?
  ○ Describe what happened.
  ○ The code I wrote.
• How did I feel after the class?
• What have I learned about programming and developing games?
• What aspects of the class helped me? What did I find difficult?	

ACTIVITY LINKS		
Activity Name	**Description**	**Link**
Student Activity 1	Topology	https://drive.google.com/file/d/1QhrXbTcknud2KvPkTzj42MWCmvLbwD46/view?usp=sharing
Student Activity 2	Server-Client	https://github.com/procodingclass/PRO_C240_StudentActivity