THE INTERNET

COMPUTER NETWORKING

Time: 60 mins

Introduction

In this class, the student/s will learn about the computer network and the internet, how data is transferred from one device to another using the internet and simulate a computer network using Cisco packet tracer.

Vocabulary

- **The Internet** is the global system of interconnected computer networks.
- **IP (Internet Protocol) address** is a unique numerical identifier for every device or network that connects to the internet.
- **Network simulator** is a software program that can predict the performance of a computer network.
- **Packet Tracer** is a cross-platform visual simulation tool that allows users to create network topologies and imitate modern computer networks by simulating the configuration of Cisco routers and switches using a simulated command line interface.

Learning Objectives

Student/s should be able to:

- ***Recall*** that the apps they created require the internet to propagate.
- ***Explain*** how ip addresses are used to communicate with other computers.
- ***Demonstrate*** how to simulate a computer network using Cisco packet tracer.

Activities

1. **Class Narrative:** *(3 mins)*

    - Brief the student/s of the various technologies that rely on the internet.
    - Introduce the characters and how they decide to understand the working of the network as they faced the lagging connection issues.

2. **Concept Introduction Activity:** *(4 mins)*

    - Let the student/s undertake the explore-activity to observe the submarine cables that are used to connect network devices around the world.

      Note: Ask the student/s to click on any of the cables to view the countries they connect. Majority of the internet uses the submarine cables and underground cables as its cheaper and faster than connecting to satellites.

    - Brief the student/s that the workings of the internet will be explored in four stages.

- Inform the student/s that the internet is a collection of interconnected devices such as:
    - Routers
    - Computers
    - Servers
    - Switches
    - Printers and many more.
- Discuss the applications of the internet and the network simulators that are used to understand the computer network.
- Using the slides, explain that the student/s will learn:
    - to install and explore the packet tracer
    - to connect two computers
    - to assign IP addresses

3. **Activity 1: Install And Explore The Packet Tracer** *(14 mins)*

    Teacher Activity: *(7 mins)*

- Demonstrate how to create an account on skills for all, download, install and explore the Cisco packet tracer.

    Student Activity: *(7 mins)*

- Guide the student/s to create an account on skills for all, download, install and explore the Cisco packet tracer.

4. **Activity 2: Connect Two Computers** *(12 mins)*

    Teacher Activity: *(6 mins)* .

- Explain the different types of network connections, the technologies and cables used to connect computers.
- Demonstrate how to connect two computers using the Cisco packet tracer.

    Student Activity: *(6 mins)*

- Guide the student/s to connect two computers in the workspace of the packet tracer.

5. **Activity 3: Assign IP Addresses** *(12 mins)*

    Teacher Activity: *(6 mins)*

- Introduce the student/s to the IP address by comparing it to the home address.
- Explain about the different IP classes and the parts that are used for network address and host address.
- Explain how a hub is used to connect more than two computers.
- Demonstrate how IP addresses are assigned, multiple devices are connected using a hub, and connection is tested using a simulator.

  Student Activity: *(6 mins)*

- Guide the students to assign IP addresses, connect multiple devices, and test the connection.

6. **Introduce the Post class project:** *(2 min)*
   - Set the IP address and connect the devices given in the workspace.
7. **Test and Summarize the class learnings:** *(5 mins)*
   - Check for understanding through quizzes and summarize learning after respective missions.
   - Summarize the overall class learning towards the end of the class.
8. **Additional activities:**
   - Encourage the student/s to add a few more devices, connect them and set their IP address.
   - Encourage the student/s to connect a PC to a printer and set their IP address.
9. **State the Next Class Objective:** *(1 min)*
   - In the next class, student/s will learn to create a WAN connection.

U.S. Standards:

CSTA: 2-CS-02, 2CS-03, 2-NI-04, 2-AP-10, 2-AP-19

Links Table		
Activity	**Activity Name**	**Link**
Class Presentation	The Internet	https://s3-whjr-curriculum-uploads.whjr.online/4cd7e7a3-c8fa-434f-98a0-0196079ce30d.html
Explore Activity	The Internet	https://www.submarinecablemap.com/
Teacher Activity 1	Install and Explore the Packet Tracer	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS-BP

Teacher Reference: Teacher Activity 1 Solution	Install and Explore the Packet Tracer	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS
Student Activity 1	Install and Explore the Packet Tracer	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS-BP
Teacher Reference: Student Activity 1 Solution	Install and Explore the Packet Tracer	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS
Teacher Activity 2	Connect Two Computers	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS-BP
Teacher Reference: Teacher Activity 2 Solution	Connect Two Computers	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS
Student Activity 2	Connect Two Computers	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS-BP
Teacher Reference: Student Activity 2 Solution	Connect Two Computers	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS
Teacher Activity 3	Assign IP Address	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS-BP
Teacher Reference: Teacher Activity 3 Solution	Assign IP Address	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-TAS
Student Activity 3	Assign IP Address	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS-BP
Teacher Reference: Student Activity 3 Solution	Assign IP Address	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS
Student's Additional Activity 1	Add a Few More Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS-BP
Teacher Reference: Student's Additional Activity 1 Solution	Add a Few More Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS
Student's Additional Activity 2	Connect Two Different Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS-BP
Teacher Reference: Student's Additional Activity 2 Solution	Connect Two Different Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-SAS
Post Class Project	Connect the Network Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-PCP-BP
Teacher Reference: Post Class Project Solution	Connect the Network Devices	https://github.com/Tynker-Computer-Networks/TNK-M14-C105-PCP