Assignment No 1

Title: - Setup a wired LAN using Layer 2 Switch .It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrating the PING packets captured traces using **Wireshark Analyzer Tool.**

Problem Statement:-Part A: Setup a wired LAN using Layer 2 Switch and then IP switch of minimum four computers. It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrate the PING packets captured traces using Wireshark Packet Analyzer Tool.

Part B: Extend the same Assignment for Wireless using Access Point.

Outcomes:

1. A wired LAN using Layer 2 Switch and then IP switch of minimum four computers
2. The packets captured traces using Wireshark Packet Analyzer Tool.

Software and Hardware Requirements:

Hardware:

1. Crimping tool
2. Line tester
3. CAT cable
4. RJ 45 connector

Software:

1. Wireshark Packet Analyzer Tool.

Theory:-

Introduction

A **computer network** is a system in which multiple computers are connected to each other toshare information and resources.

Characteristics of a Computer Network

Share resources from one computer to another.

Create files and store them in one computer, access those files from the other computer(s) connected over the network.

Connect a printer, scanner, or a fax machine to one computer within the network and let othercomputers of the network use the machines available over the network.

LAN

LAN refers to a group of computers that all belong to the same organization and that are linked within a small geographic area using a network and often the same technology. A local area network is a network in its simplest form. Data transfer speeds over a local area network can reach up to 10 Mbps, such as for an Ethernet network.

MAN

MAN, consists of a computer network across an entire city, college campus or small region. A MAN is larger than a LAN, which is typically limited to a single building or site. Depending on the configuration, this type of network can cover an area from several miles to tens of miles. A MAN is often used to connect several LANs together to form a bigger network; generally this type of network is specifically designed for a college campus. MANs connect multiple geographically close LANs (over an area of up to several dozen miles) to one another at high speeds. Thus, a MAN lets two remote nodes communicate as if they were part of the same local area network.

Wide Area Network

A wide area network, or WAN, occupies a very large area, such as an entire country or the entire world. A WAN can contain multiple smaller networks, such as LANs or MANs. The Internet is the best-known example of a public WAN.

What is Network Cabling?

Cable is the medium through which information usually moves from one network device to another. There are several types of cable which are commonly used with LANs. In some cases, a network will utilize only one type of cable, other networks will use a variety of cable types. The type of cable chosen for a network is related to the network's topology, protocol, and size. Understanding the characteristics of different types of cable and how they relate to other aspects of a network is necessary for the development of a successful network.

The following are the types of cables used in networks.Unshielded
Twisted Pair (UTP) Cable
Shielded Twisted Pair (STP) Cable
Coaxial Cable

Network Cables

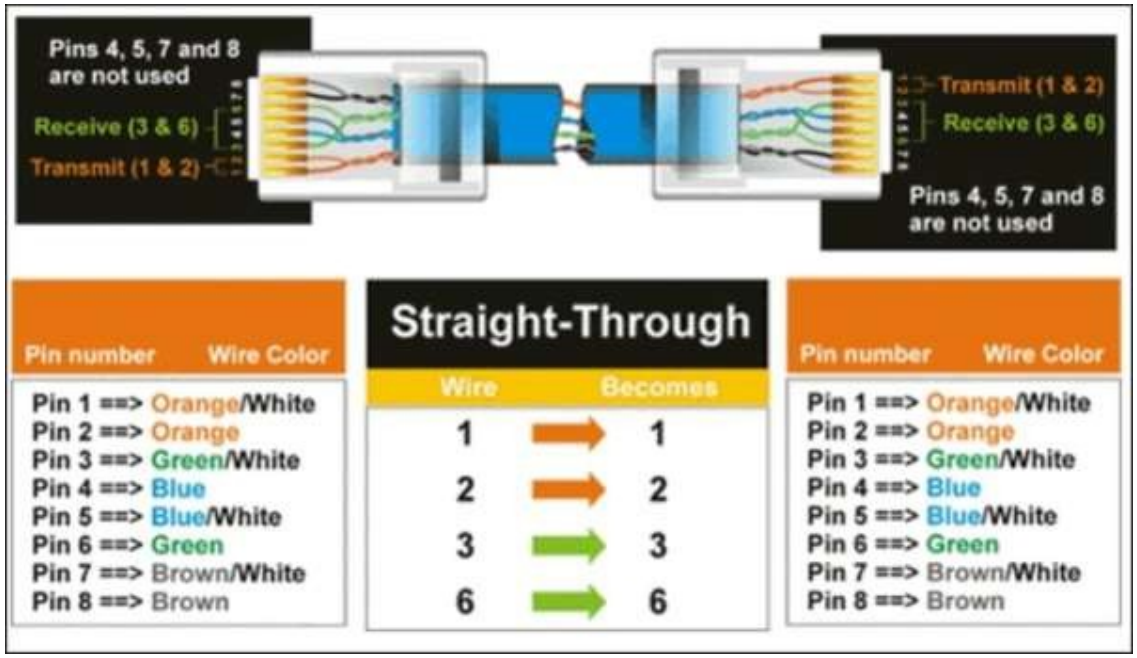
Network cables are used to connect computers. The most commonly used cable is CAT cable& RJ-45.

Network Card

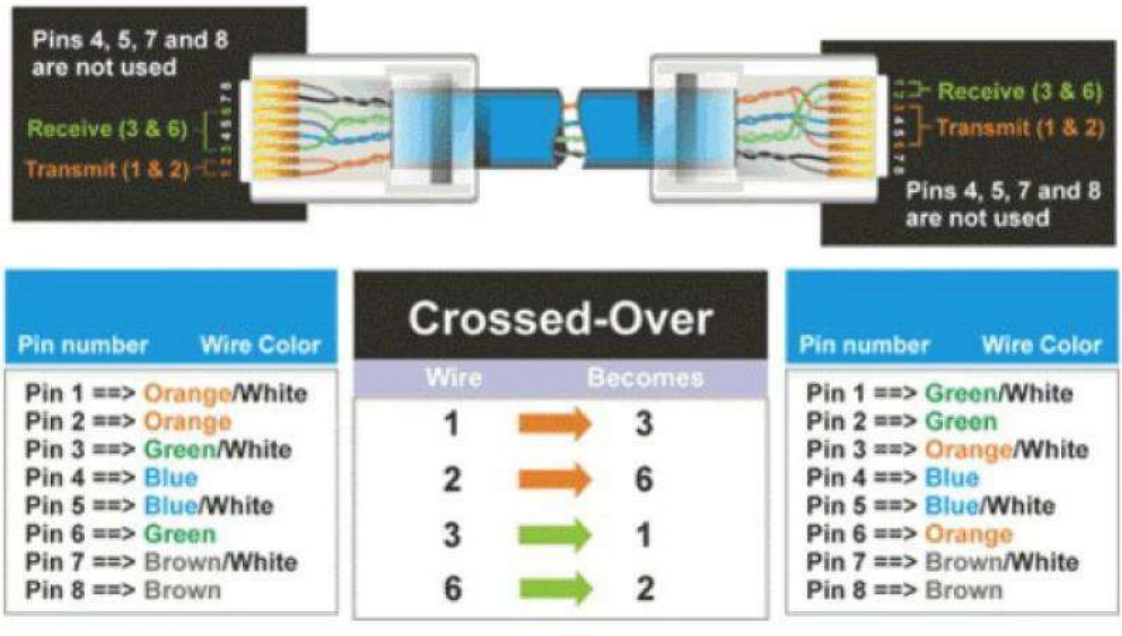
Network card is a necessary component of a computer without which a computer cannot be connected over a network. It is also known as the network adapter or Network Interface Card (NIC). Most branded computers have network card pre-installed. Network cards are of two types: Internal and External Network Cards.

Straight-Through Ethernet Cable and Crossed-Over cable

The information listed here is to assist Network Administrators in the color coding of Ethernet cables. Please be aware that modifying Ethernet cables improperly may cause loss of network connectivity.



Crossed-Over Ethernet Cable



Assignment Related Questions:

1. Explain LAN, CAN, MAN & WAN?

2. Write down the Difference between TCP/IP Model & OSI Model?

3. Which Topology you have implemented in your laboratory? Why?

4. Explain various IEEE Standared for Wireless LAN?

5. How to Configure Wireless LAN Explain step by Step?

6. Which security protocols are used in Wireless LAN?

7. Explain Ping, Traceroot, Telnet, Ipconfig Commands?

Conclusion:

Hence we conclude that we have implemented the Wired LAN setup successfully.