Bahria University,

Karachi Campus



LAB EXPERIMENT NO.

\_\_\_02\_\_\_

LIST OF TASKS

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| TASK NO | OBJECTIVE |
| 01 | Define following network terminologies:   * EIA/TIA 568A and 568B standards: * Color combination of straight and cross Ethernet cable: * Unshielded Twisted Pair (UTP) & Shielded Twisted Pair (STP): * Straight Through and Cross-over Ethernet Cable: * RJ-45 connector |
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**Task 01:** Define following network terminologies:

1. **EIA/TIA 568A and 568B standards:**

The Difference Between TIA/EIA 568A and TIA/EIA 568B are:

* These standards determine the order of the wires placed in a RJ45 connector.
* It is the placement of cable pairs on set pins, functionally both standards are the same.
* These are telecommunications standards established by the Electronic Industries Association (EIA) and the Telecommunications Industry Association (TIA) in the United States.
* EIA/TIA 568A and 568B define the pin arrangements for connectors (such as RJ-45) used in Ethernet cables. These standards ensure that network cables are wired consistently to enable proper communication between devices.

1. **Color combination of straight and cross Ethernet cable:**

* A straight-thru is used as a patch cord in Ethernet connections. A crossover is used to connect two Ethernet devices without a hub or for connecting two hubs. A crossover has one end with the orange set of wires switched with the green set.
* Ethernet cables can be categorized into straight-through, and crossover cables based on how the wires inside the cable are connected to the connectors.
* In a straight-through cable, both ends follow the same color code (either 568A or 568B).
* In a crossover cable, one end follows 568A while the other end follows 568B. This configuration allows for the direct connection of two similar devices, such as two computers.

1. **Unshielded Twisted Pair (UTP) & Shielded Twisted Pair (STP):**

* Shielded twisted pair cable (STP) has individual pairs of wires wrapped in foil, which are then wrapped again for double protection. Unshielded twisted pair cable (UTP) has each pair of wires twisted together.
* UTP is a type of Ethernet cable in which pairs of copper wires are twisted together to reduce electromagnetic interference. It is widely used in networking due to its affordability and effectiveness in most environments.
* STP is another type of Ethernet cable where each twisted pair is enclosed in a metallic shield. This shielding provides additional protection against electromagnetic interference, making STP suitable for more demanding or noisy environments.

1. **Straight Through and Cross-over Ethernet Cable:**

* Straight through cable connects a computer with a cable or DSL modem's LAN port. Crossover cable connects with a router's LAN port with switch/hub normal port. We should use straight-through cable when we want to connect two devices of different types.
* A straight-through Ethernet cable is used to connect devices of different types, such as a computer to a switch or a router to a modem. Both ends of a straight-through cable have the same pin configuration (either 568A or 568B).
* A crossover Ethernet cable is used to connect devices of the same type, such as two computers or two switches. One end of a crossover cable follows the 568A standard, while the other end follows the 568B standard, allowing for the exchange of signals between similar devices.

1. **RJ-45 connector:**

* Registered jack-45 (RJ45) is an eight-wire connector used to connect computers on local area networks. They were initially used as a telephone-only standard but have since been applied to high-speed modems and other computer networks.
* The RJ-45 connector is a standardized network connector used for Ethernet connections. It has eight pins that correspond to eight wires inside an Ethernet cable.
* RJ-45 connectors are commonly used in networking equipment, including computers, switches, routers, and wall outlets, to connect devices to a local area network (LAN). They are a crucial component in creating wired Ethernet connections.