

# **Lab Report – 1**

## **Connection of Network Devices Using Ethernet**

### **Objective**

The objective of this laboratory experiment is to prepare Ethernet cables using RJ45 connectors and to verify their correctness by creating straight-through and crossover cables and testing them with a cable tester.

### **Apparatus / Tools Required**

- UTP Ethernet cable (Category 5e / Category 6)
- RJ45 connectors
- Crimping tool
- Wire stripper
- Network cable tester

### **Theory**

Ethernet cables are widely used in local area networks (LANs) to connect networking devices such as computers, switches, and routers. RJ45 connectors are attached to the ends of twisted-pair Ethernet cables following standard wiring schemes.

Two commonly used Ethernet cable types are straight-through cables, used to connect dissimilar devices, and crossover cables, used to connect similar devices. Correct wiring and crimping are essential for reliable data transmission.

### **Procedure – Straight-Through Cable**

1. The Ethernet cable was cut to the required length.
2. About one inch of the outer jacket was stripped from both ends.
3. The wires were arranged according to the T568B standard:
  - Pin 1: White–Orange
  - Pin 2: Orange
  - Pin 3: White–Green
  - Pin 4: Blue
  - Pin 5: White–Blue
  - Pin 6: Green
  - Pin 7: White–Brown
  - Pin 8: Brown
4. The wires were trimmed evenly and inserted into the RJ45 connector.
5. The connector was crimped securely and tested using a cable tester.

### **Procedure – Crossover Cable**

1. One end of the cable was wired using the T568A standard.
2. The other end was wired using the T568B standard.
3. Both ends were trimmed, inserted into RJ45 connectors, and crimped.
4. The cable was tested using a cable tester.

### **Testing and Observation**

The cable tester showed proper continuity for all wire pairs. Straight-through cables showed identical pin order, while crossover cables showed expected pair crossing.

### **Result**

Both straight-through and crossover Ethernet cables were successfully prepared and tested without any wiring faults.

### **Conclusion**

This lab demonstrated the correct preparation and testing of Ethernet cables using RJ45 connectors. The experiment reinforced practical networking skills essential for LAN installation and maintenance.

### **Precautions**

- Ensure correct wire order before crimping.
- Avoid excessive untwisting of wire pairs.
- Always test the cable after crimping.

### **Output**

- Present in the output folder