

## **Lab 1: Ethernet-Based Connection of Network Devices**

### **Step 1: Making an Ethernet Cable Using RJ45 Connectors**

#### **Required Equipment:**

- Ethernet cable (Cat5e / Cat6)
- RJ45 connectors
- Crimping tool
- Wire stripper - Network cable tester

#### **Procedure:**

##### **1. Straight-Through Ethernet Cable**

- Measure the required length of the Ethernet cable and cut it accordingly.
- Remove approximately one inch of the outer insulation from both ends.
- Separate and straighten the wire pairs, then arrange them according to the T568B standard:
- Pin configuration (T568B):
  1. White-Orange
  2. Orange
  3. White-Green
  4. Blue
  5. White-Blue
  6. Green
  7. White-Brown
  8. Brown
- Trim all wires evenly so they align properly.
- Insert the wires fully into the RJ45 connector while maintaining the correct order.
- Use a crimping tool to firmly attach the connector.
- Repeat the same process on the other end using the identical wiring sequence.
- Verify the cable using a cable tester.

##### **2. Crossover Ethernet Cable**

- Cut the Ethernet cable to the required size and strip the outer jacket from both ends.
- Arrange one end of the cable following the T568A standard:
- Pin configuration (T568A):

- 1. White-Green
  - 2. Green
  - 3. White-Orange
  - 4. Blue
  - 5. White-Blue
  - 6. Orange
  - 7. White-Brown
  - 8. Brown
- Arrange the other end using the T568B wiring standard.
  - Pin configuration (T568B):
    - 1. White-Orange, 2. Orange, 3. White-Green, 4. Blue, 5. White-Blue, 6. Green,
    - 7. White-Brown, 8. Brown
  - Ensure all wires are trimmed evenly before insertion.
  - Insert the wires into the RJ45 connectors carefully.
  - Crimp both ends securely using the crimping tool.
  - Test the completed cable using a cable tester to confirm proper crossover connections.

## **Cable Testing Procedure**

- Connect one end of the Ethernet cable to the main unit of the cable tester.
- Attach the opposite end to the remote unit.
- Switch on the tester and monitor the LED indicators.
- Straight-through cables should display continuity from pins 1 to 8 in sequence.
- Crossover cables should show crossed pairs (1↔3 and 2↔6Output: Straight

## Output: Straight



## Output: Crossover



## CONCLUSION

The experiment was completed successfully using a cable tester. The cables showed proper connectivity with no wiring faults. The results for straight-through and crossover cables were observed and documented.