Making of cross cable and straight cable.

UTP cabling

- Eight wires make up a UTP cable. Four pairs of wires make up this collection.
- There are two twisted wires in each pair.
- The first wire has a single plastic coating with a colour code, but the second wire has same colour plus a white colour striped coating.
- For the brown wire pair, for instance, one wire has a coating that is entirely brown, while the other wire has a coating that is striped with brown and white.
- A UTP cable is shown in the figure below.

Exactly why are the cables twisted?

- Electromagnetic interference results from the passage of electrical current through copper wires (EMI). The electrical signals travelling via nearby wires, including those that are a part of the same cable, are hampered by EMI.
- It is referred to as the cross talk. Cross talk is eliminated by twisting the wires in pairs.

RJ-45 (UTP cable) connector

- Both the switch port and the NIC include an eight-pin RJ-45 (UTP cable) slot.
- The RJ-45 connection is utilized to link these pins to the wires of a UTP cable.
- The RJ-45 connector has eight physical locations, known as pin positions or simply pins, into which the eight wires of the UTP cable can be inserted.
- These pins make it possible for the ends of copper wires to make contact with NIC or switch port pins.

An RJ-45 connector is shown in the picture below.

Constructing a UTP cable:-

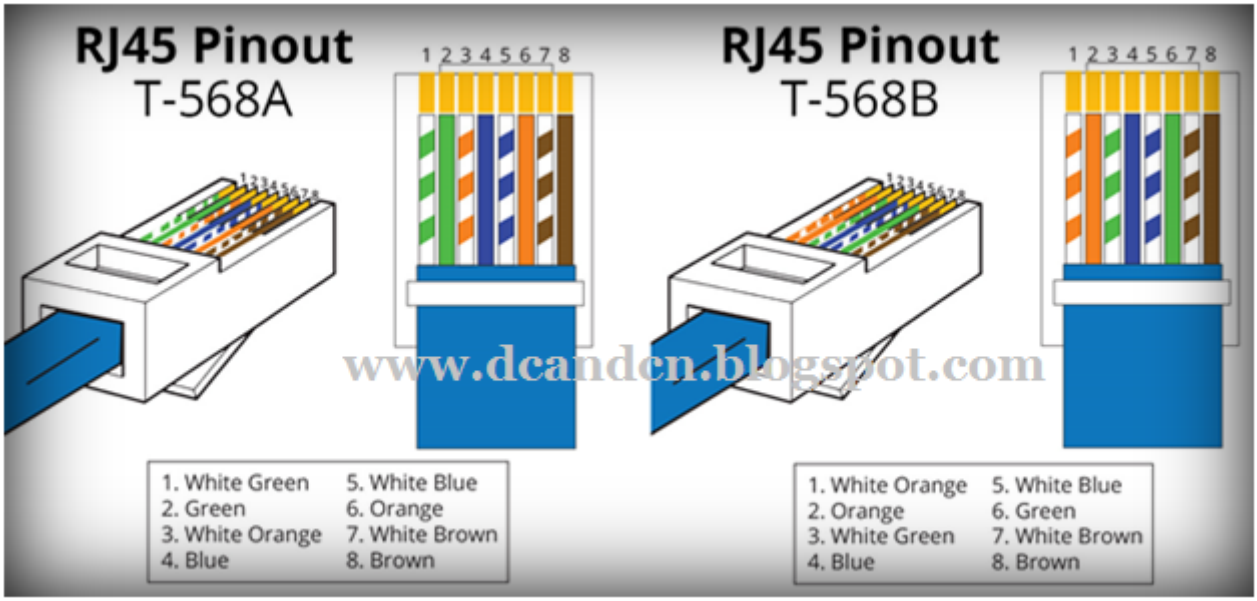
- Pins 1 and 2 are used by a NIC to send data. Using pins 3 and 6, it receives data. A switch makes it do the reverse.
- Data is transmitted from pins 3 and 6 while being received on pins 1 and 2.

- A UTP cable can be created in two different methods depending on the type of end devices.
- The first kind of connection, referred to as a straight-through cable, links two various end devices, such as a PC and a switch.
- The second kind of cable, called a cross-over cable, links two identical end devices, like a PC and a PC or a Switch and a Switch.
- Let's examine both forms of cable's construction in more depth.

Ethernet Straight-through cable

- The conductors in this cable are positioned the same way at both ends.
- The cable's pin 1 at one end is connected to pin 1 at the other end by a wire.
- Pin 2 on one end of the cable is connected to pin 2 on the other end, and so on.
- The wire positions for the straight-through cable on both sides are listed in the following table.

Side A	Side B
Green White	Green White
Green	Green
Orange White	Orange White
Blue	Blue
Blue White	Blue White
Orange	Orange
Brown White	Brown White
Brown	Brown



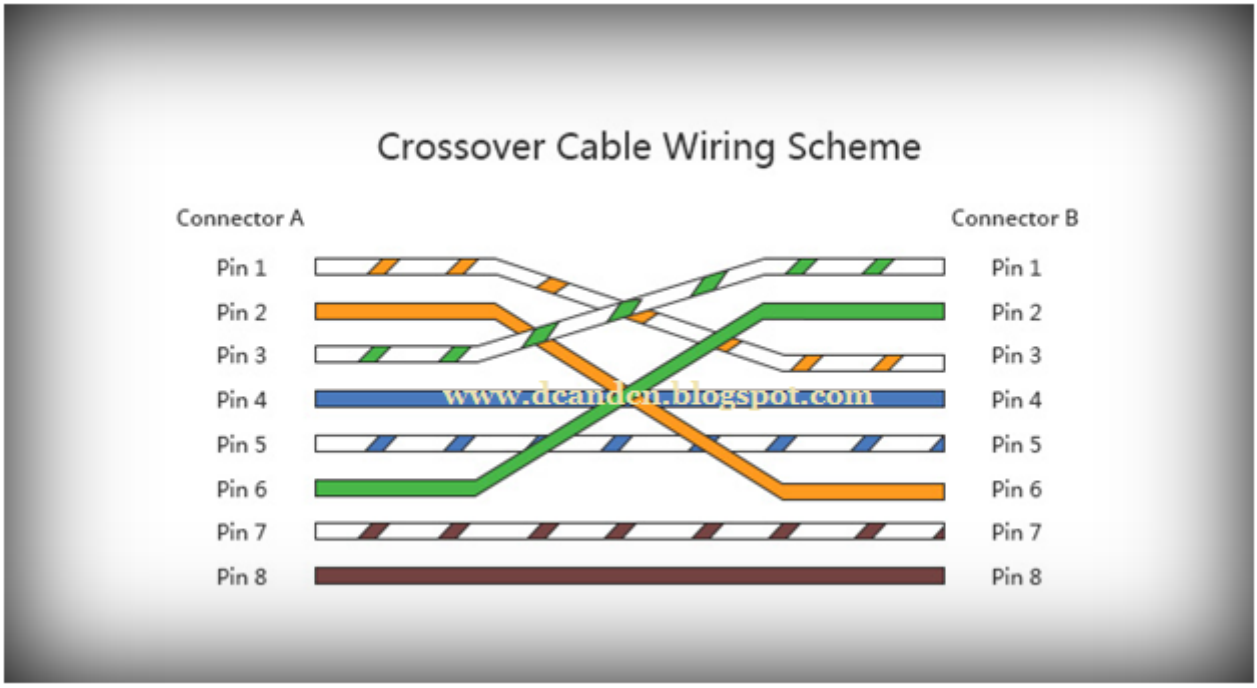
A straight-through cable is used to connect the following devices.

- PC to Switch
- PC to Hub
- Router to Switch
- Switch to Server
- Hub to Server

Ethernet cross-over cable

- The receiving pins on one side of this cable are connected to the sending pins on the other.
- The cable's pin 1 on one end and pin 3 on the other end are connected by a wire. On the opposite end of the cable, pin 6 is connected to the wire at pin 2. The remaining wires join at both ends in the identical locations.
- The cross-over cable's wire placements on each side are listed in the following table.

Side A	Side B
Green White	Orange White
Green	Orange
Orange White	Green White
Blue	Blue
Blue White	Blue White
Orange	Green
Brown White	Brown White
Brown	Brown



The cross-over cable is used to connect the following devices.

- Two computers
- Two hubs
- A hub to a switch
- A cable modem to a router
- Two router interfaces