231901012 **M Janany**

EXPERIMENT NO. 01

AIM: Study of RJ45 and CAT cabling and connection using crimping tool.

RESOURCES REQUIRED:

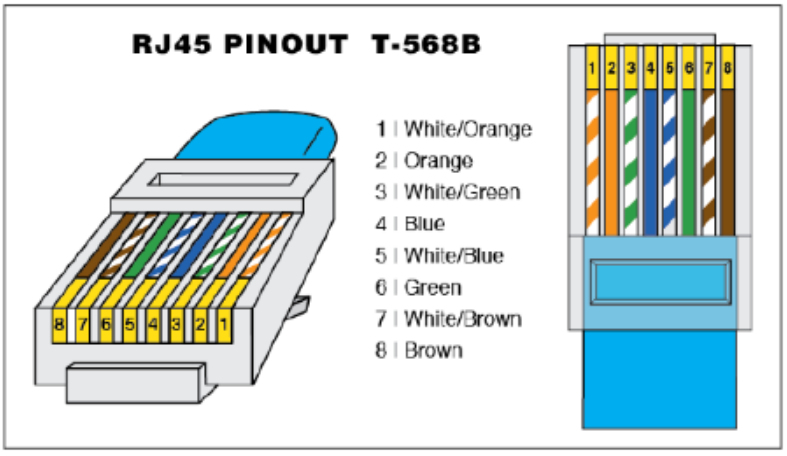
H/W Requirements: RJ45, CAT cables, Crimping Tool, Printer, and Internet Connection.

S/W Requirements: Cisco Packet Tracer.

THEORY:

RJ45:

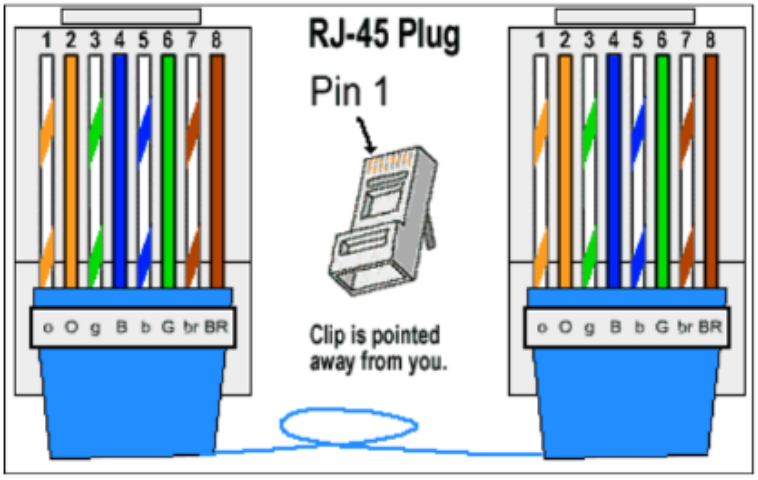
RJ45 cable is used for connect the ALL HMI and engineer station through a switch to communicated each other. It is used to download the any modification and which is made in graphics in engineering station.RJ45 cable also used for communicate the printer with computer. There are four pairs of wires in an Ethernet cable, and an Ethernet connector (8P8C) has eight pin slots. Each pin is identified by a number, starting from left to right, with the clip facing away from you.



There is two kinds of Ethernet cable is used for communication.

1. Straight Through
2. Cross over cable

Straight Through cable: STRAIGHT THROUGH Ethernet cables are the standard cable used for almost all purposes, and are often called "patch cables". It is highly recommend you duplicate the color order as shown on the left. Note how the green pair is not side-by-side as are all the other pairs. This configuration allows for longer wire runs.

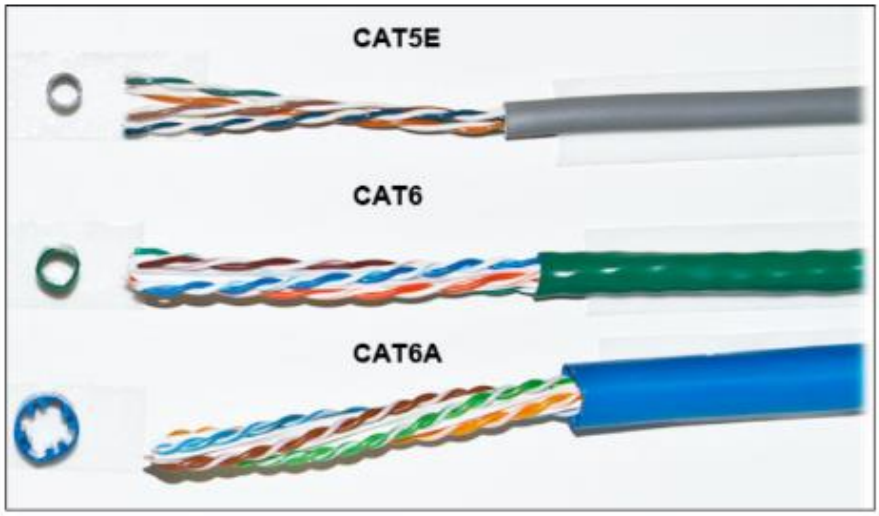


CROSSOVER CABLES: The purpose of a Crossover Ethernet cable is to directly connect one computer to another computer (or device) without going through a router, switch or hub.

CAT Cables:

The Cat, as you might know, is short for **"Category**." The term "Category" refers to the different levels of performance in signal bandwidth, attenuation and crosstalk associated with each cable's design. Category 1 cables are a 2-pair copper UTP designed for POTS (plain old telephone systems). **CAT 5e** is currently the most commonly used cable, mainly due to its low production cost and support for speeds faster than Cat 5 cables.

A Cat6 cable has a bandwidth capacity of 250 MHz, for example, and it offers you speeds of up to 10 Gbps. It's also compatible with both Cat5 and Cat5E cables. "A Cat6 cable is used mainly for computer networks reaching a GB, 1000 Mbps or one Gbps of data transfer speed (DTR) or higher,"



Crimping Tool:

Crimpers are tools used to make cold weld joints between two wires or a wire and aconnector, such as lugs. Ideally, the electrical and mechanical properties of the weld joint are as strong as the parent materials. Crimping tools are sized according to the wire gauges (using AWG - American Wire Gauge) they can accept. Some come with interchangeable die heads that allow for a wider range of wire sizes and connectors.

How to use: First you will need to strip the length of wire that you want to crimp. Then, attach the connector. For crimping tools with interchangeable dies, you will need to select the right die head for the connector by matching wire gauge ratings. For dieless crimpers, you will need to match to the proper groove. Finally, apply pressure, take out the newly crimped connector, and give a few tugs to make sure you have a solid and secure connection.