

COMPUTER ENGINEERING
Escuela Politécnica Superior
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Cables

Task 2, Part 2 (Hardware Laboratory)

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1. Introduction

This document shows the procedures to assemble Ethernet and Serial cables. It also explains the tools and materials that are needed to perform the assembly and how to use them.

1.1 Purpose of the Document

The goal of this document is to learn how to assemble RJ45 and Serial cables, and the tools and materials that are needed to do so.

1.2 Document Structure

The document is composed by 3 chapters. Each chapter will contain the basic information about the topic that is declared at the title.

- **Chapter 1:** Introduction. Brief introduction about the document contents, purpose of the document and its structure.
- **Chapter 2:** the tools, materials and processes to assemble a RJ45 cable are explained.
- **Chapter 3:** the tools, materials and processes to assemble a Serial cable are explained.

1.3 Acronyms and Definitions

- | | |
|--------|--------------------|
| ● RJ45 | Registered Jack-45 |
| ● RX | Reception |
| ● TX | Transmission |
| ● GND | Ground |

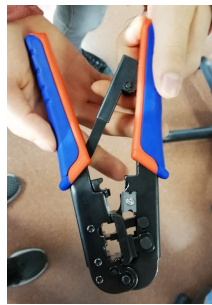
2. RJ45

This cable is world wide used to perform wire communications between electronics.

Tools and Materials

In order to make this cable, some tools are required.

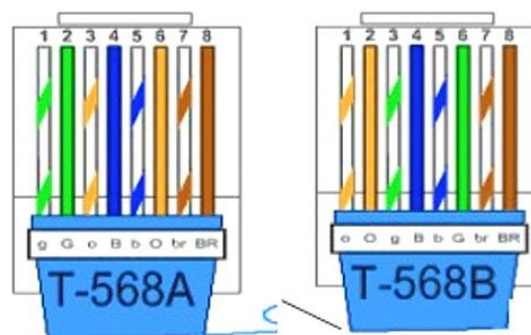
Crimper: this tool allows us to cut and peel out the plastic cover of the cables. On its side it has a special hole to introduce de RJ45 header and fix it to the cables by applying pressure on it.



1.Crimper

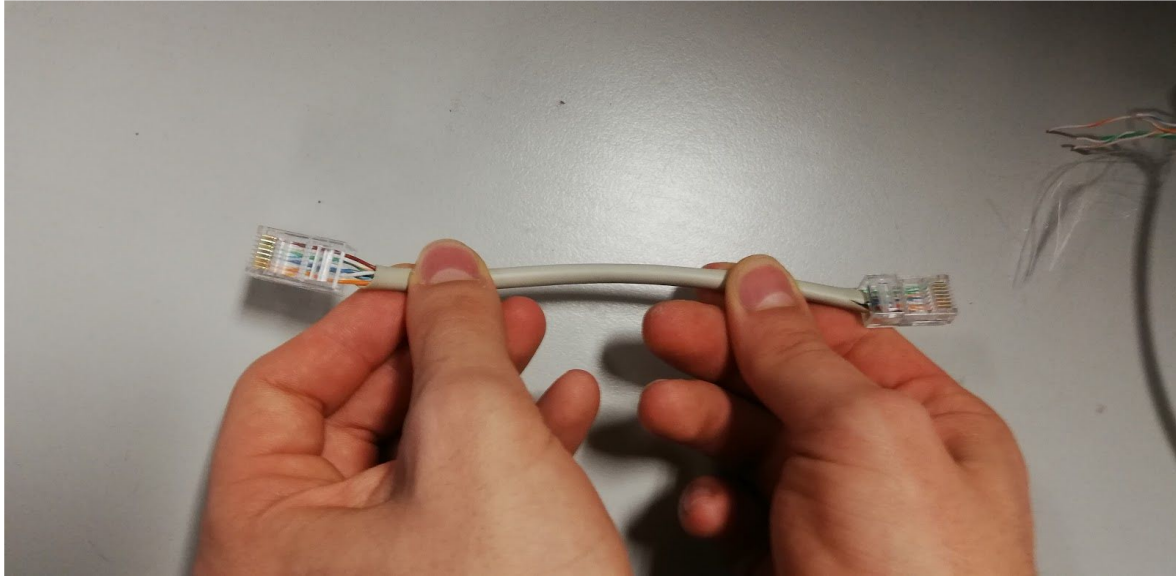
Assembly

First, we have to cut the white plastic cover of the wire to get the eight single colour cables. When we have every single wire separated it is time to place them in the right position just like in the image below.



2.RJ45 Cables Position

So we need two headers (A and B). Once we have placed the wires we have to use the crimper to get the eight cables cut at the same level. Now, we introduce them in the header properly. Finally, we must use the crimper by introducing the header in the special hole to apply enough pressure until we get a unified cable like the one shown below.



3.RJ45 Final Result

All the step that have been explained can also be seen in the following video:

https://www.youtube.com/watch?v=14P1cOFM_1k

To ensure that our cable is well connected, we test it by connecting one side of it to our computer and the other to a RJ45 tester and performing a simple connection test with it.

3. Serial

Serial cables are used to perform a serial communication among computers.

Tools and Materials

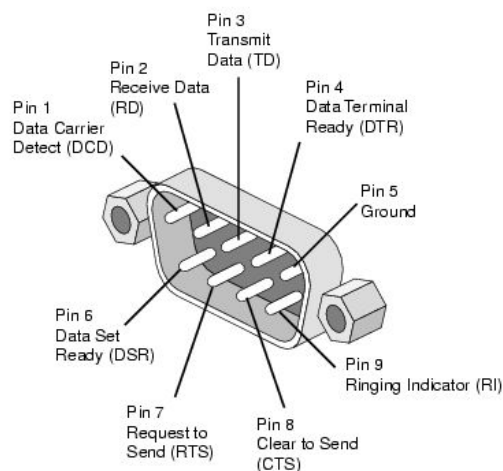
In order to built this cable we will need a solder and soldering iron that allow us soldering by putting both metals in contact. And for sure we will need a cable peeler to peel every needed wire.



4.Serial Tools

Assembly

We must start the serial cable built by taking off the insulator in both sides of the cable. We will need three wires, we have chosen blue ,orange and red but it does not matter. Once we have the wires peeled they must be placed by soldering them in pins 2 (RXD Receive Data) ,3 (TXD Transmit Data) and 5 (GND) on one side and swap the RX and TX cables on the other side.



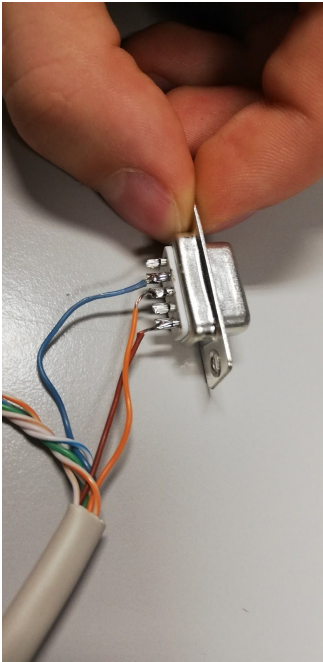
5.Serial Connections

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The final result must be similar to the cable shown in the pictures. To test its functionality you must connect the Serial cable among two computers, configure a Putty session and try to communicate through the console between them by writing something on one of the keyboards.



6.Serial Final Result

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