Protocols for Communication by Makers

Overview of Protocols to make your devices and gadgets talk to each other or/and their shields.

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Developers Conference - 18 May 2018

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Made with love using beamer, LaTeX and git.
You can view at `https://github.com/Pritvi-DevConMRU-MSCC/ProtocolsForCommunicationByMakers`

An introduction to the Mauritius Makers Community - Part 1

The Mauritius Makers Community - Who are We?

The is a group of people established primarily in Mauritius who are

- Passionate Makers
- Hackers
- Enthusiasts
- Hardware Developers
- Inventors
- Designers
- Tinkerers
- Craftman

An introduction to the The Mauritius Makers Community - Part 2

The Mauritius Makers Community - What we are passionate about

geared primarily toward technological innovation such as

- Electronics
- Open Hardware
- Internet Of Things
- Robotics
- Small Board Computers
- Microcontrollers
- Embedded Software
- Printed Circuit Board Design
- DIY - Do It Yourself
- DIWO - Do It With Others
- CAD - Computer Aided Designing
- Wearables
- 3D Printing
- Plastic, Wood & Metal Work

Pritvi Jheengut

Who am I?

- Name : Pritvi Jheengut
- Empl : Meteorological Services
- Post : Senior Meteorological Telecommunication Technician
- Work : Maintain and repair Linux Workstations and Automatic Weather Stations
- Else : Co-founder of Mauritius Makers Community during Jochen's Keynote and Introduction Of The MSCC at the Developers Conference 2015
- Else : Vice-President of The Linux User Group Meta
- Else : Craftman At MSCC
- Want : Create the Mauritius Local Guide
- Want : Corsairs Hackers Reboot - October 2018

What is Communication!

Communication theory

Communication involves two parties, one a sender, the second one a receiver.

Why we need Communication?

WHY???

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Communication Protocols used by Makers

Some Communication Protocols used by Makers

- SPI
- I^2C
- CAN
- SMBus

SPI

Apropos SPI - Serial Peripheral Interface

- SPI, Serial Peripheral Interface is a single master, multi-slaves four wire variable speed synchronous message serial protocol.
- It was originally developed by Motorola in the 1980's and has become a de facto standard
- SPI is widely used by microcontrollers to talk with sensors, eeprom and flash memory, codecs and various other controller chips, ADC & DAC converters, and more.

I^2C

Apropos I^2C - Inter-Integrated Circuit

- I^2C, Inter-Integrated Circuit is a multi-master, multi-slave two-wire variable speed synchronous packet switched serial protocol used in many microcontroller applications.
- It was originally developed by NXP, Philips in the 1980's and provides an inexpensive bus for connecting many types of devices with infrequent or low bandwidth communications needs.
- I^2C is widely implemented in embedded systems.
- Since October 10, 2006, no licensing fees are required to implement the I^2C protocol. However, fees are required to obtain I^2C slave addresses allocated by NXP.
  Source :: wikipedia

CAN

Apropos CAN - Controller Area Network

- CAN, Controller Area Network is a multi-master, two or more wires variable speed message based serial protocol to connect two or more nodes.
- It was originally developed by Bosch which has widespread use in automation, embedded devices, marine, industrial, medical, automotive as well as aeronautical fields.
- Communication can be allowed over a USB or Ethernet port.
  With one common cable and implemented on both hardware and software, the CAN protocol enables several piece of electronic equipment to be connected to each other.

SMBus

Apropos SMBus - System Management Bus

- SMBus, System Management Bus is a multi-master, multi-slave two-wire variable speed synchronous packet switched serial protocol used in many microcontroller applications.
- It is a subset of I^2C and heavily used in many Computer Motherboards especially those having an Intel Chipset for reading sensor values such as temperature, voltage, fan speed,...
- Modern I^2C is compatible with SMBus.

Apropos PMBus - Power Management Bus

A special mention : PMBus, Power Management Bus is a variant of SMBus targeting power supplies.

UART

Apropos UART - universal asynchronous receiver-transmitter

UART, Universal Asynchronous Receiver Transmitter is a hardware device for asynchronous serial communication in which the data format and transmission speeds are configurable.