Week 1 Programme

By:

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Basic RPi

- Basic RPi electronics:
  - On board connectors, GPIO (more details in week 2), voltages, safe use of RPi, and different specs for different RPi models.
- Environment:
  - Other supported languages
  - Linux OS

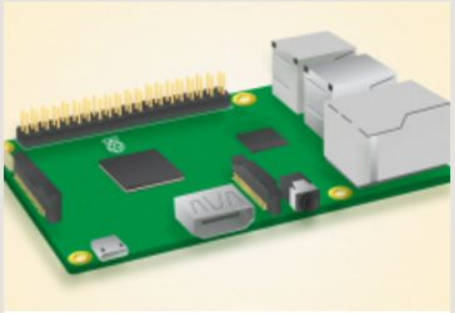
Get the party started !

+ Collect your kits

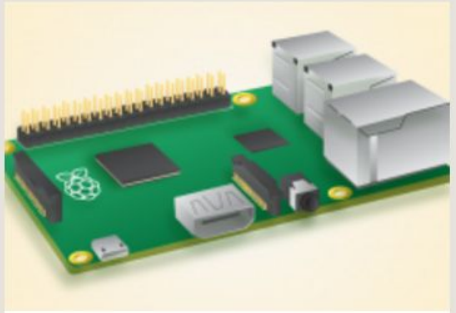
+ See your Syllabus https://github.com/ICL-DE/Gizmo/tree/2017-updates/Syllabus

Note: This Github repo is designed to be like a growing software where it will get updated in the future.

RASPBERRY PI PRODUCTS...

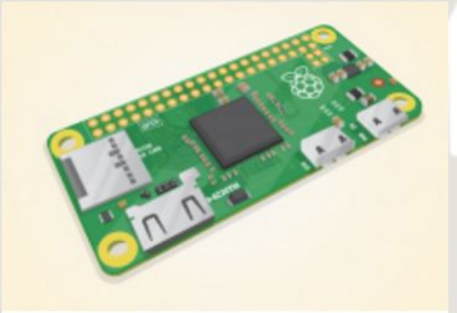


RASPBERRY PI 3 MODEL B

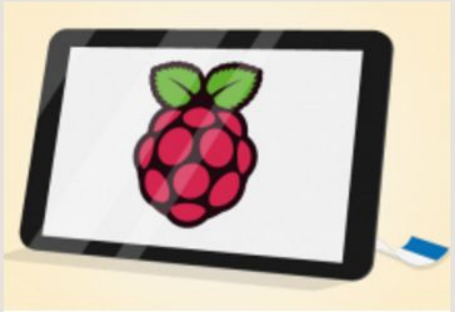


RASPBERRY PI 2 MODEL B

RASPBERRY PI 1 MODEL A+

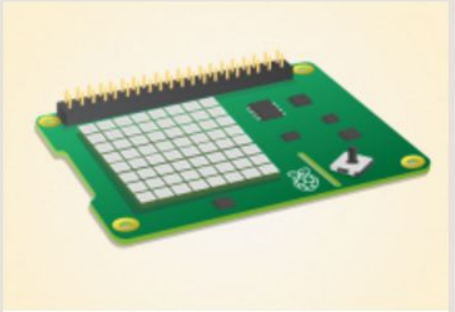


RASPBERRY PI ZERO

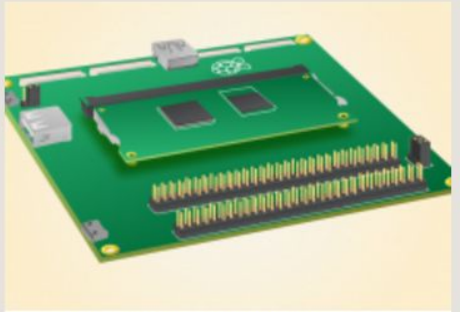


RASPBERRY PI TOUCH DISPLAY

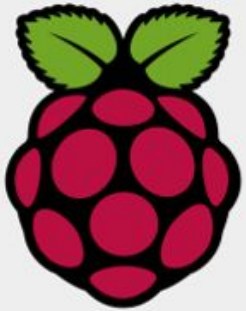
RASPBERRY PI CASE



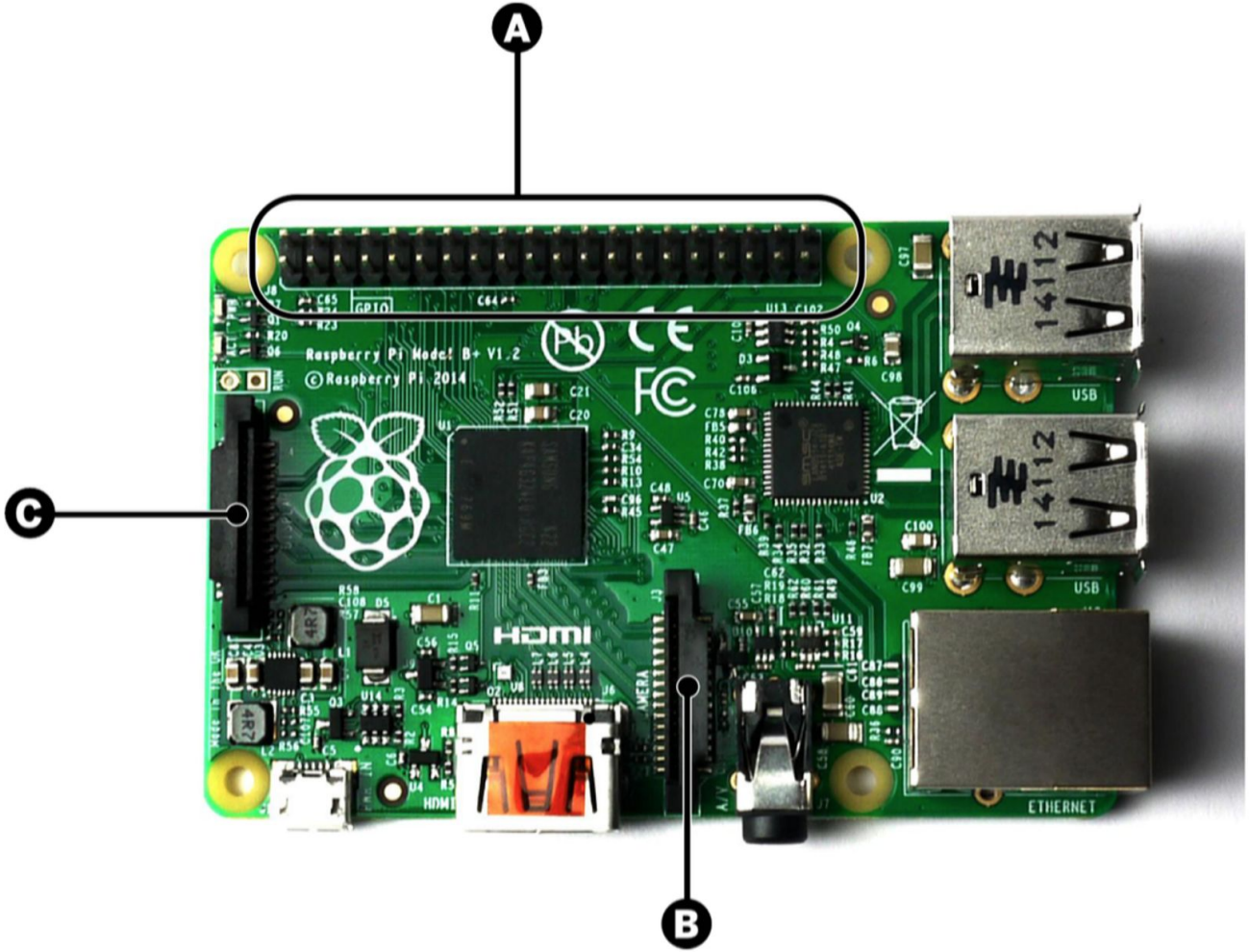
SENSE HAT



COMPUTE MODULE DEVELOPMENT KIT



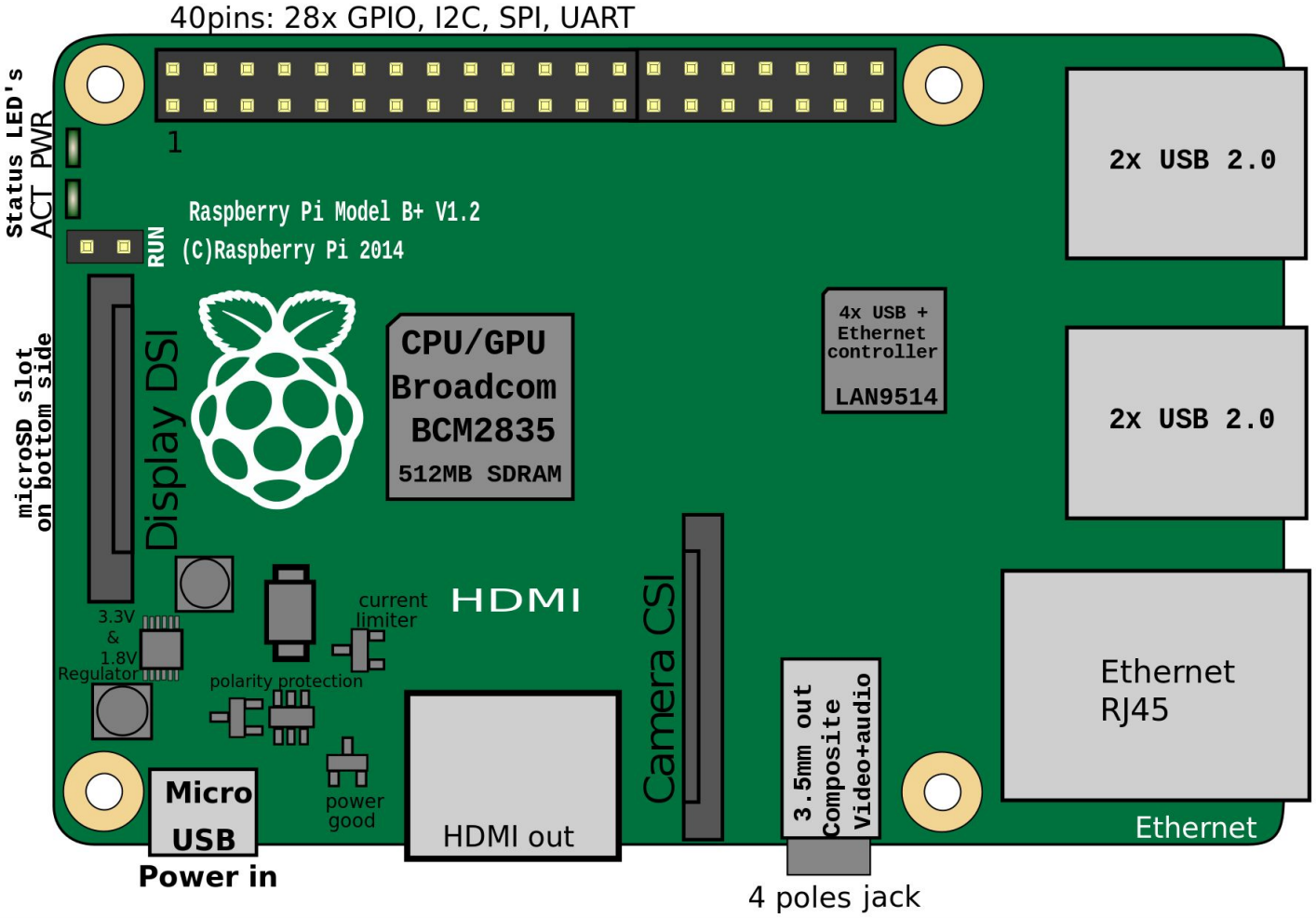
	Raspberry Pi 3 Model B	Raspberry Pi Zero	Raspberry Pi 2 Model B	Raspberry Pi Model B+
Introduction Date	2/29/2016	11/25/2015	2/2/2015	7/14/2014
SoC	BCM2837	BCM2835	BCM2836	BCM2835
CPU	Quad Cortex A53 @ 1.2GHz	ARM11 @ 1GHz	Quad Cortex A7 @ 900MHz	ARM11 @ 700MHz
Instruction set	ARMv8-A	ARMv6	ARMv7-A	ARMv6
GPU	400MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV
RAM	1GB SDRAM	512 MB SDRAM	1GB SDRAM	512MB SDRAM
Storage	micro-SD	micro-SD	micro-SD	micro-SD
Ethernet	10/100	none	10/100	10/100
Wireless	802.11n / Bluetooth 4.0	none	none	none
Video Output	HDMI / Composite	HDMI / Composite	HDMI / Composite	HDMI / Composite
Audio Output	HDMI / Headphone	HDMI	HDMI / Headphone	HDMI / Headphone
GPIO	40	40	40	40
Price	$35	$5	$35	$35



A: General Purpose I/O

B: Camera Serial Interface

C: Display Serial Interface



Note: This is RPi 2 B+.

Important

+ Always make sure you supply only 5 V to the RPi.
+ Unlike Arduino, RPi does not have internal power protection system (yet), be careful when making GPIO connections.
+ Please DO NOT connect over 3.3V or less than + 0V as input.
+ Never demand that any output pin source or sink more than 16 mA
+ Pins can supply only maximum 50 mA.

2. Setting up Raspberry Pi

+ You have to access to the guide in your laptops:

https://github.com/ICL-DE/Gizmo/blob/2017-updates/Chapter_2/RPi_setup.md

3. WiFi Setup :

- Step by step guide
  - Setting wpa_supplicant conf to access Imperial-WPA
  - Encrypt password

user: ic\guest655907
pass: 9isjjWqg
Note: This guest account will expires sometime in December.

4. First step toward Internet of Things (IoT) - Remot3.it:

+ Setup and configure remot3.it account on RPi (including registering an account)
+ Instructions: https://github.com/ICL-DE/Gizmo/blob/2017-updates/Chapter_5/Remote_Rpi.md
+ Connect to registered Pi remotely

5. Python in Pi:

- Running Python in RPi
  - Different environments: Terminal or in a text editor (e.g. X terminal, Scratch, nano, Vim, etc)
  - Linux text editors: nano, vim, emacs
    - There is a Linux Command Line Cheatsheet to help you with this: https://github.com/ICL-DE/Gizmo/tree/2017-updates/Introductory_Material
  - Run python
    - Directly in the interpreter, command line
    - Run python script

HOMEWORK

- Check out the “"Links” in your Syllabus.
- Learn and get familiar with Github
  - Sign up a Github account and register Github Educate if you haven’t have one:
    - https://education.github.com/pack
  - Under Git related section, do the following:
    - Github basic on-demand course: https://services.github.com/on-demand/
    - Read through collaboration workflow. Please do feel free to try it with your friends before next class.