

## Pre Lab 2

August 24, 2021

Delivery date: August 24, 2021

# **Introduction to Python programming on the Raspberry Pi**

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# **1 Answer the following questions:**

## **1.1 What is Grove Pi+?**

Is an add-on board to easily connect sensors designed for Grove Products.

## **1.2 How does the Raspberry Pi communicate with the Grove Pi+?**

The Raspberry Pi uploads the code via SPI Port, but the Grove Sensors communicate via the I2C protocol, acting as the master the Raspberry Pi and the slave the Grove Pi.

## **1.3 What micro controller does the Grove Pi+ use?**

ATMEGA328P

## **1.4 What type of ports does the Grove Pi+ has?**

As the reference from seedstudio (2) says:

- 7 Digital(5V)
- 3 Analog(5V)
- 3 I2C(5V)
- 1 SERIAL: Connect to ATMEGA328P D0/1(5V)
- 1 RPISER: Connect to Raspberry Pi(3.3V)
- 1 ISP

## **1.5 Which Grove Pi+ sockets support PWM?**

As the reference from Dexter Industries (1) says, the digital ports D3. D5 and D6 support PWM

## **1.6 In what languages can you program the Grove Pi+?**

As the reference from Dexter Industries (1) says, it supports Scratch, Python, NodeJS, Go, C and C++.

## **1.7 Read the Python library's documentation for the Grove Pi+ and then describe the type of functions that it has.**

It divides in three main parts: Basic Arduino Functions, Grove Specific Functions and the Private Functions for Communication.

The Basic Arduino are functions similar to the Arduino language, setting basic actions like pinMode, digitalWrite and analogWrite.

The grove specific are functions that do not exist on the arduino environment but the authors created to facilitate the use of some sensors like temp or ultrasonicRead. The Private Functions for communication are not meant for the common user to use, these are for specific purpose and should not be use.

## **1.8 List and describe at least 5 Grove Sensors that you like. Explain how each sensor communicates with the Grove Pi+.**

1. NFC: is a set of short-range wireless technologies and can communicate via I2C and UART
2. OLED display: Meant to display small images and communicates via I2C
3. Electromagnet: is a type of magnet in which the magnetic field is produced by electric current. Communicates via a digital pin
4. Line Finder: Designed for line-following robot using an IR Led and a phototransistor. Communicates via a digital pin.
5. Collision sensor: detects any collision movement or vibration. Communicates via a digital pin.

## **2 Bibliography**

1. <https://www.dexterindustries.com/GrovePi/engineering/>
2. [https://wiki.seeedstudio.com/GrovePi\\_Plus/](https://wiki.seeedstudio.com/GrovePi_Plus/)
3. <https://github.com/matias-vazquez/SistemasEmbebidos>