IoT SETUP

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Abstract:	The rapid advancements in communication technologies and the explosive growth of the Internet of Things have enabled the physical world to invisibly interweave with actuators, sensors, and other computational elements while maintaining continuous network connectivity. The continuously connected physical world with computational elements forms a smart environment

Contents

1 Introduction

The rapid advancements in communication technologies and the explosive growth of the Internet of Things have enabled the physical world to invisibly interweave with actuators, sensors, and other computational elements while maintaining continuous network connectivity. The continuously connected physical world with computational elements forms a smart environment

2 References

The following referenced documents

[i.1] https://www.python.org/

[i.2] https://python-poetry.org/

3 Python Installation:

- Step 1 — Setting Up Python 3:
    - sudo apt update
    - sudo apt -y upgrade

let’s install pip, a tool that will install and manage programming packages we may want to use in our development projects.

- sudo apt install -y python3-pip
- pip3 install < package_name >
- sudo apt install -y build-essential libssl-dev libffi-dev python3-dev\

- Step 2 — Setting Up a Virtual Environment:
    - sudo apt install -y python3-venv
    - `mkdir environments`
    - `cd environments`
    - `python3 -m venv my_env`
    - ls my_env
- Step 3 — Upgrade:
    - sudo apt-get install python <version
- Step 4 — Uninstall:
    - sudo apt autoremove python
    - sudo apt purge python<version>-minimal

4 Python Poetry : Dependency Management for Python

Poetry helps you declare, manage and install dependencies of Python projects, ensuring you have the right stack everywhere.

- pip3 install poetry

  OR
- sudo apt install curl
- curl -sSL https://raw.githubusercontent.com/python-poetry/poetry/master/get-poetry.py | python3
- python get-poetry.py #Check the version

Updating:

- Poetry self update

uninstall:

- python get-poetry.py –uninstall
- poerty_uninstall=1 python get-poetry.py

5 Redis:

- Step 1 — Installing and Configuring Redis:
  - sudo apt update
  - sudo apt install redis-server

To check the status of the service, enter the following command:

- sudo systemctl status redis-server

restart the Redis service

- sudo systemctl restart redis-server

Allow port :

- sudo ufw allow proto tcp from 192.168.121.0/24 to any port 6379

To verify that everything is set up properly, you can try to ping the Redis server from your remote machine using the redis-cli utility:

- redis-cli -h <REDIS_IP_ADDRESS> ping

- Step 2 — Configuring Redis:
  - sudo nano /etc/redis/redis.conf

```
. . .

# If you run Redis from upstart or systemd, Redis can interact with your
# supervision tree. Options:
#   supervised no      - no supervision interaction
#   supervised upstart - signal upstart by putting Redis into SIGSTOP mode
#   supervised systemd - signal systemd by writing READY=1 to $NOTIFY_SOCKET
#   supervised auto    - detect upstart or systemd method based on
#                        UPSTART_JOB or NOTIFY_SOCKET environment variables
# Note: these supervision methods only signal "process is ready."
#       They do not enable continuous liveness pings back to your supervisor.
supervised systemd

. . .
```

- Step 3 — Testing Redis:
  - sudo systemctl status redis

- Step 3 — Uninstall Redis:
  - sudo apt-get purge --auto-remove redis-server

6 HDF5:

- sudo apt-get update -y
- sudo apt-get install -y hdf5-tools

Uninstall:

- sudo apt-get remove hdf5-tools
- sudo apt-get remove --auto-remove hdf5-tools
- sudo apt-get purge --auto-remove hdf5-tools

7 ZeroMQ:

- Install ZeroMQ:
- See below for quick step by step instructions of SSH commands
  - sudo apt-get update
  - sudo apt-get install libzmq3-dev

- Uninstall ZeroMQ:
  - sudo apt-get remove node-zmq
  - sudo apt-get remove --auto-remove node-zmq
  - sudo apt-get purge node-zmq
  - sudo apt-get purge --auto-remove node-zmq

8 Libsodium:

- Install Libsodium:

  See below for quick step by step instructions of SSH commands

  - sudo apt-get update -y
  - sudo apt-get install -y libsodium-dev

- Uninstall Libsodium:

  - sudo apt-get remove libsodium-dev
  - sudo apt-get autoremove libsodium-dev
  - sudo apt-get purge libsodium-dev
  - sudo apt-get autoremove --purge libsodium-dev

9 Nettle Crypto Library:

- Install Nettle Crypto:

  See below for quick step by step instructions of SSH commands

  - sudo apt-get update -y
  - sudo apt-get install -y nettle-dev

- Uninstall Nettle Crypto:
  - sudo apt-get remove nettle-dev
  - sudo apt-get remove --auto-remove nettle-dev
  - sudo apt-get purge nettle-dev
  - sudo apt-get purge --auto-remove nettle-dev

10 C/C++ cross compilers:

10.1 GCC compiler:

- Install Nettle Crypto:
  - sudo apt update
  - sudo apt install build-essential
  - sudo apt-get install manpages-dev
- Uninstall Nettle Crypto:
  - sudo apt-get install --reinstall gcc-4.9
  - sudo apt-get purge gcc-4.9

10.2 Clang compiler:

- Install Compiler:
  - wget -O - https://apt.llvm.org/llvm-snapshot.gpg.key | sudo apt-key add -
  - sudo apt-add-repository "deb http://apt.llvm.org/xenial/ llvm-toolchain-xenial-6.0 main"
  - sudo apt-get update
  - sudo apt-get install -y clang-6.0

- Uninstall Compiler:
  - sudo apt-get remove clang
  - sudo apt-get remove --auKBto-remove clang
  - sudo apt-get purge clang
  - sudo apt-get purge --auto-remove clang

11 Arduino IDE:

- Install Arduino:
  - sudo snap install arduino
- Uninstall Arduino:
  - sudo snap remove arduino

12 Codelite IDE:

- Install Codelite:
  - sudo apt-get purge codelite codelite-plugins
  - sudo apt-key adv –fetch-keys http://repos.codelite.org/CodeLite.asc
  - sudo apt-add-repository "deb http://repos.codelite.org/ubuntu/ $(lsb_release -sc) universe"
  - sudo apt-get update
  - sudo apt-get install codelite wxcrafter

- Uninstall Codelite:
  - sudo apt-get remove codelite
  - sudo apt-get autoremove codelite

13 C make:

- Install c make:
  - wget https://github.com/Kitware/CMake/releases/download/v3.15.2/cmake-3.15.2.tar.gz
  - tar -zxvf cmake-3.15.2.tar.gz
  - cd cmake-3.15.2

- ./bootstrap
- make
- sudo make install

- Uninstall c make:
  - sudo make uninstall

14 Pycharm:

- Install Pycharm:
  - sudo snap install pycharm-community --classic

- Uninstall Pycharm:
  - sudo snap remove pycharm-community

15 Gunicorn:

- Install Pycharm:
  - sudo apt-get update
  - sudo apt-get install gunicorn

- Uninstall Pycharm:
  - `sudo apt-get remove gunicorn`
  - sudo apt-get remove --auto-remove gunicorn