Task 0.1 - Software Installation

This file contains the instructions to install the following software/ libraries:

1. **Python**
2. **Numpy**
3. **Sympy**
4. **Octave**
5. **Octave Symbolic Package**
6. **Octave Control Package**
7. **Arduino IDE**

Note:- Installation of software is tested on Windows 10

1. Python

- Download Python 3.7 for Windows here.
- On the first download screen, enable the "Add Python 3.7 to PATH" option.

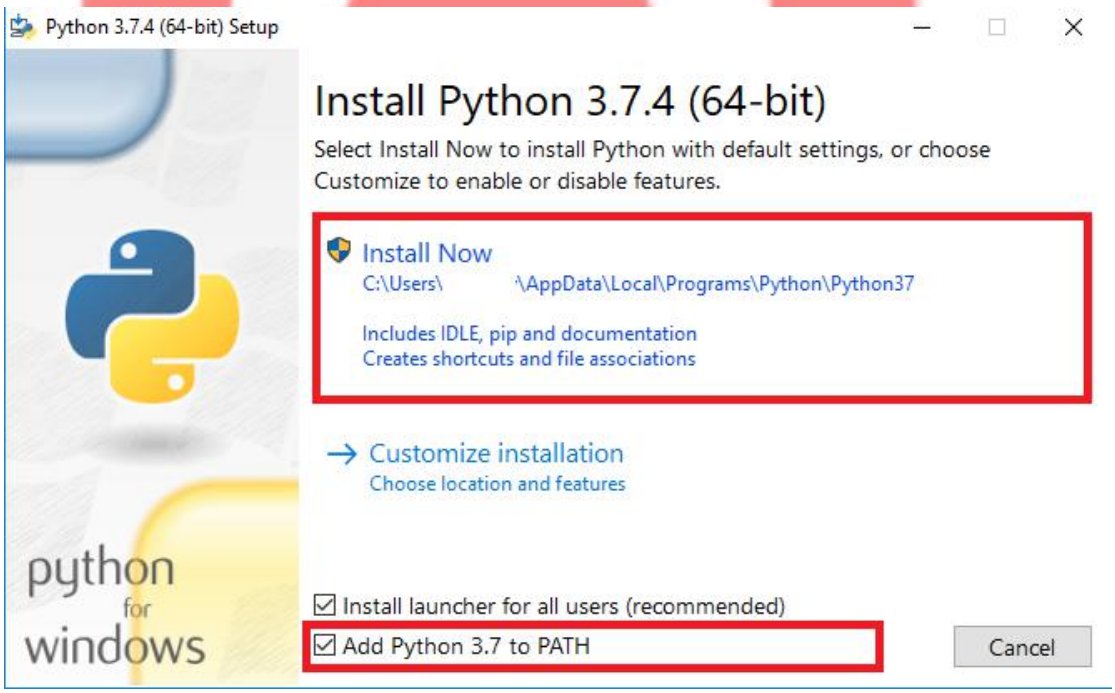

Figure 1: Python Installation

- In order to verify the installation of Python:
  - Open command prompt, type *python -V* and press Enter. (If you already have python 2.7 installed on your system, you should type *py -3 -V* to confirm the installation of Python 3
  - You should see the prompt as shown in Figure 2.

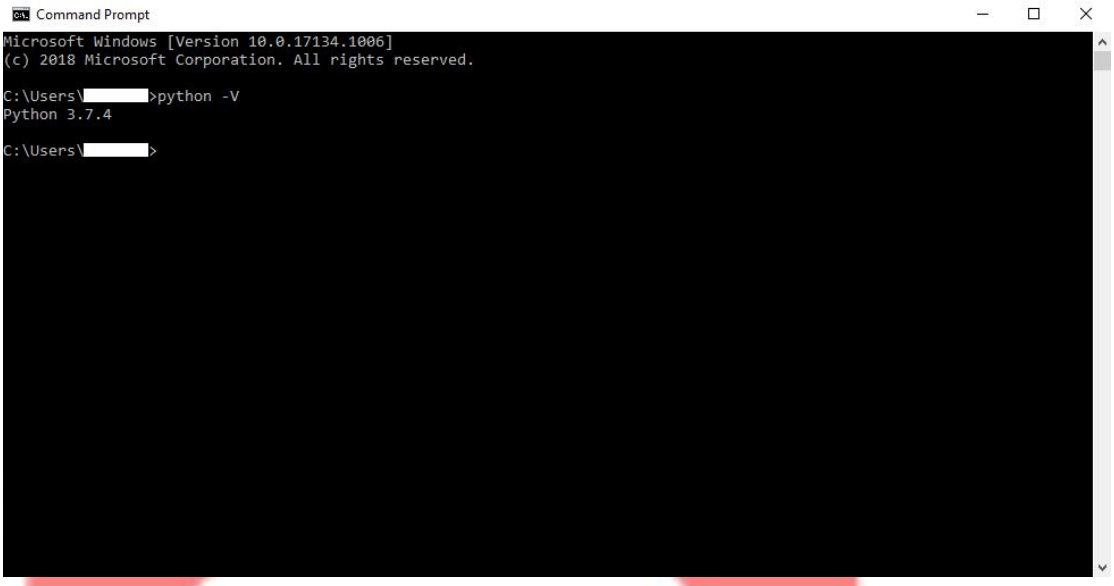

Figure 2: Verify Installation

Note - All programming in Stage 1 is to be done in Octave Programming Language. Python is required because some libraries of octave require Python to be installed.

2. Numpy

- To install Numpy, open the command prompt and type the following command and press Enter:

  pip install numpy

  In case you already have Python 2.7 installed, you should use the pip3 command instead of pip

  pip3 install numpy

- In order to verify the installation, type the following command in command prompt and press Enter:

  python -c "import numpy; print("numpy.__version__")"

- You should see the command prompt as shown in Figure 3.

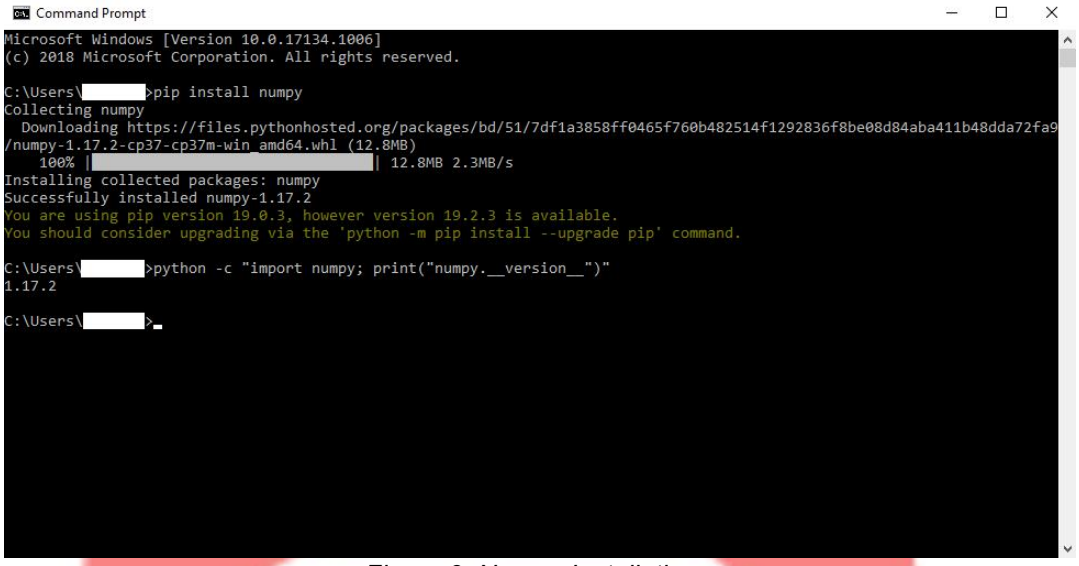

Figure 3: Numpy Installation

3. Sympy

- To install Sympy, open the command prompt and type the following command and press Enter:

  pip install sympy

  Use pip3 command if python 2.7 is already installed.
- In order to verify the installation, type the following command in command prompt and press Enter:

  python -c "import sympy; print("sympy.__version__")"
- You should see the command prompt as shown in Figure 4.

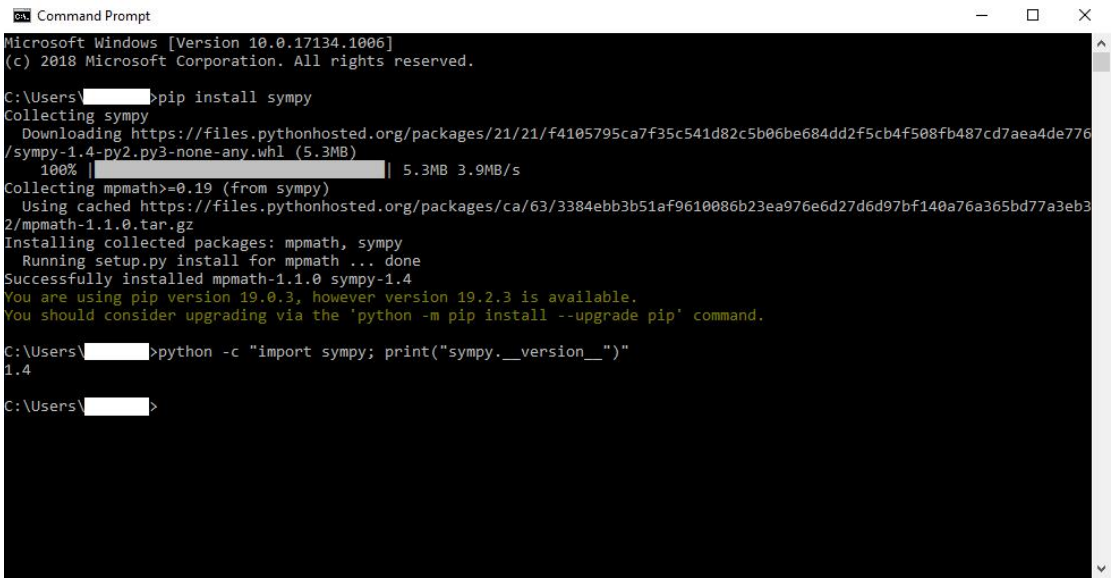

Figure 4: Sympy Installation

4. Octave

- Download Octave 5.1.0 version for Windows from here.
- Click on the installer. You will see the window as given in Figure 5(a).
- Keep on clicking **Next** till installation is completed. You should see the following window as seen in Figure 5(b).

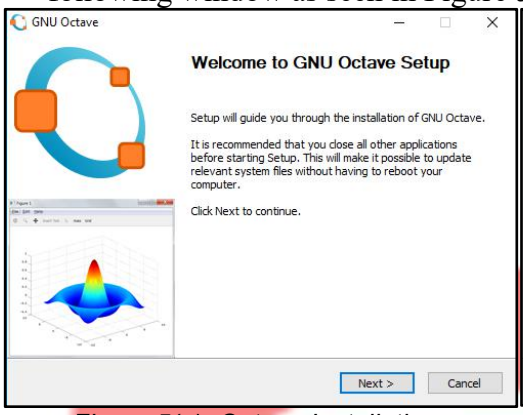

Figure 5(a): Octave Installation

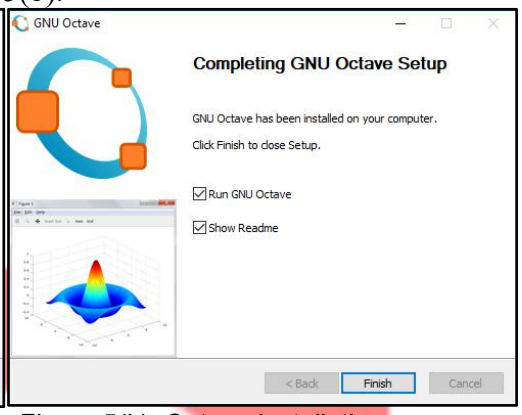

Figure 5(b): Octave Installation

- Add Octave to PATH. Navigate to the **Octave-5.1.0.0** folder where it is installed in your system.
- Navigate to the ***Octave-5.1.0.0\mingw64\bin.*** Copy the full path of the bin folder. The whole path should be similar to

  C: Octave\Octave-5.1.0.0\mingw64\bin
- Open command prompt and execute the following command:

  setx PATH=%PATH%;C:Octave\Octave-5.1.0.0\mingw64\bin

  Note: The path specified should be the same as the path where octave is installed on your system.

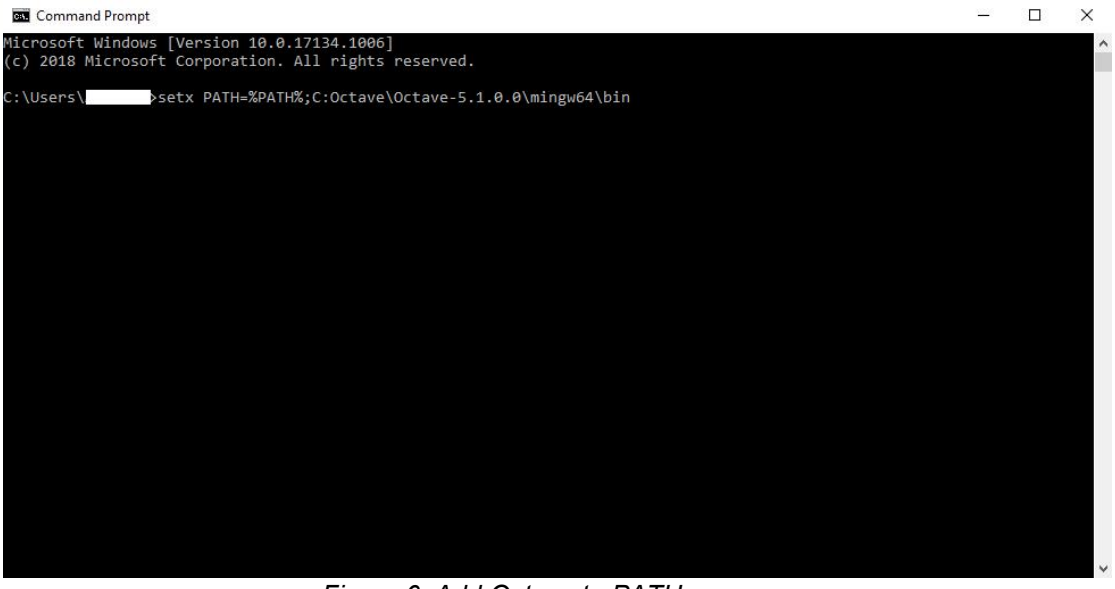

Figure 6: Add Octave to PATH

- Open command prompt and type octave. The Octave Prompt should appear. This means octave has been installed properly on your system.

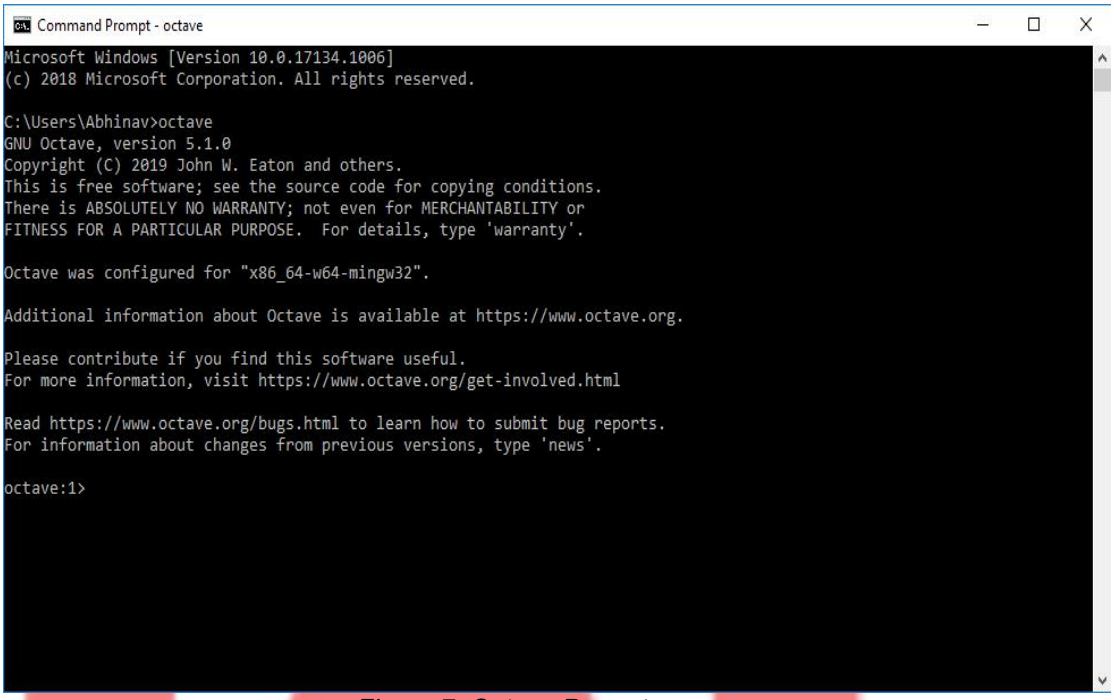

Figure 7: Octave Prompt

5. Octave Symbolic Package

- Open the Octave software installed in your system. Type the following command in the command window and Press Enter:

```
pkg install -forge symbolic
```

- Type the following command to check if symbolic has been installed correctly.

```
pkg load symbolic
```

- If symbolic has been properly been installed, the command should execute without any error.

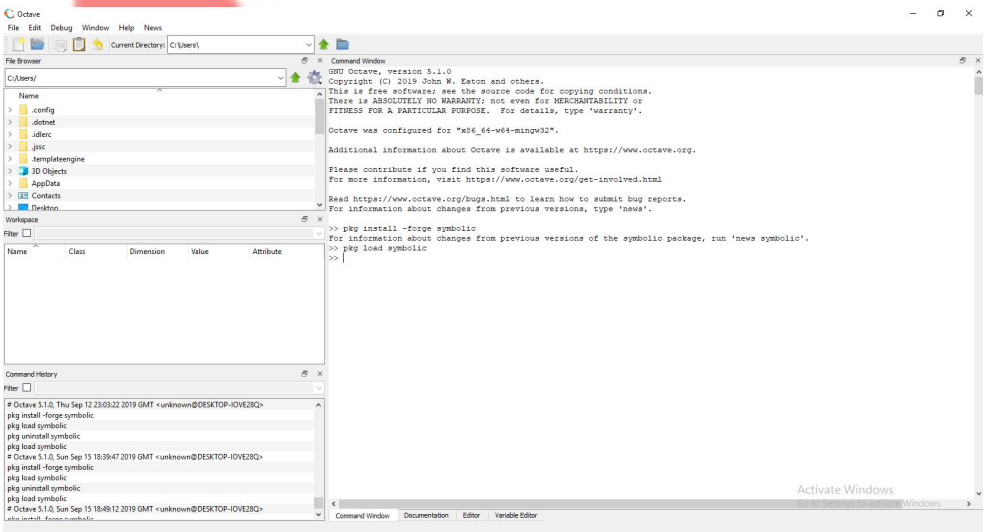

Figure 8: Install Symbolic

6. Octave Control Package

- Open the Octave software installed in your system. Type the following command in the command window and Press Enter:

```
pkg install -forge control
```

- Type the following command to check if control has been installed correctly.

```
pkg load control
```

- Type the following command to see if the proper version of control is installed.

```
pkg list
```

- The total list of packages and their versions should show up. Control package latest version that needs to be installed is 3.2.0

7. Arduino IDE

- Download the Web Installer for Arduino from here.
- Run the installer and Install the Arduino Software on your system.

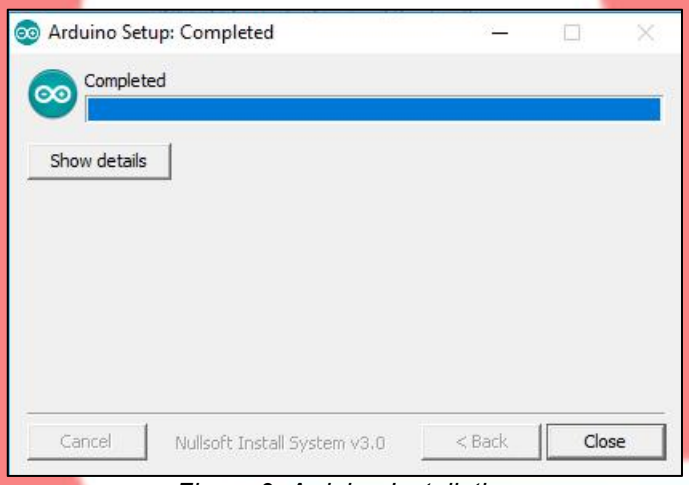

Figure 9: Arduino Installation