

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.

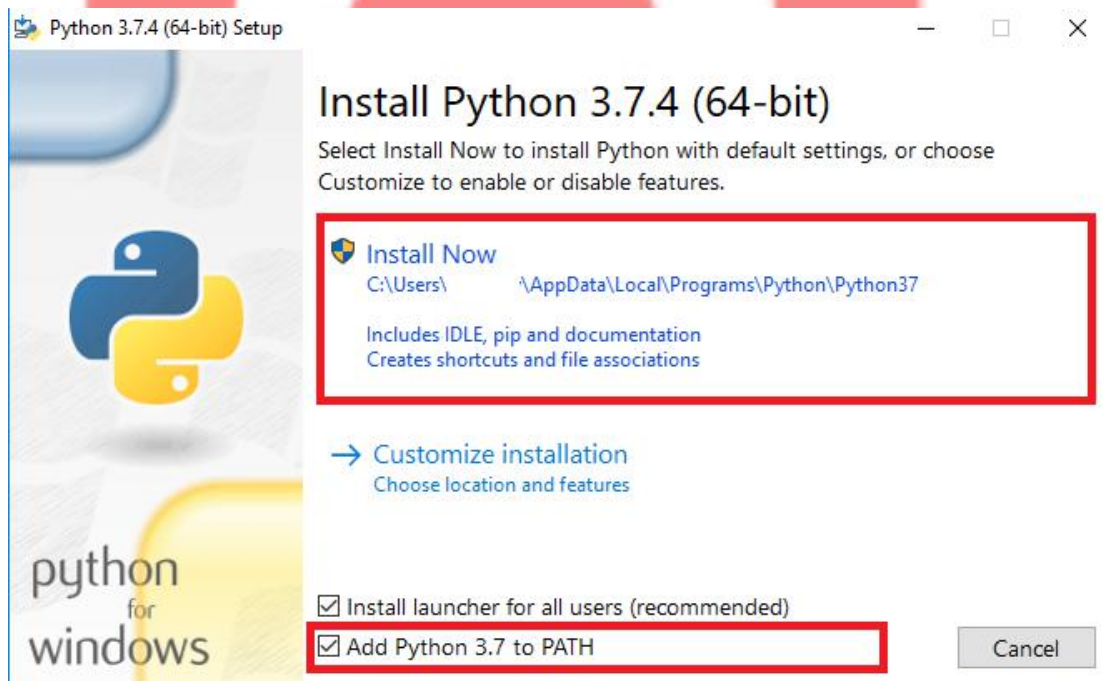
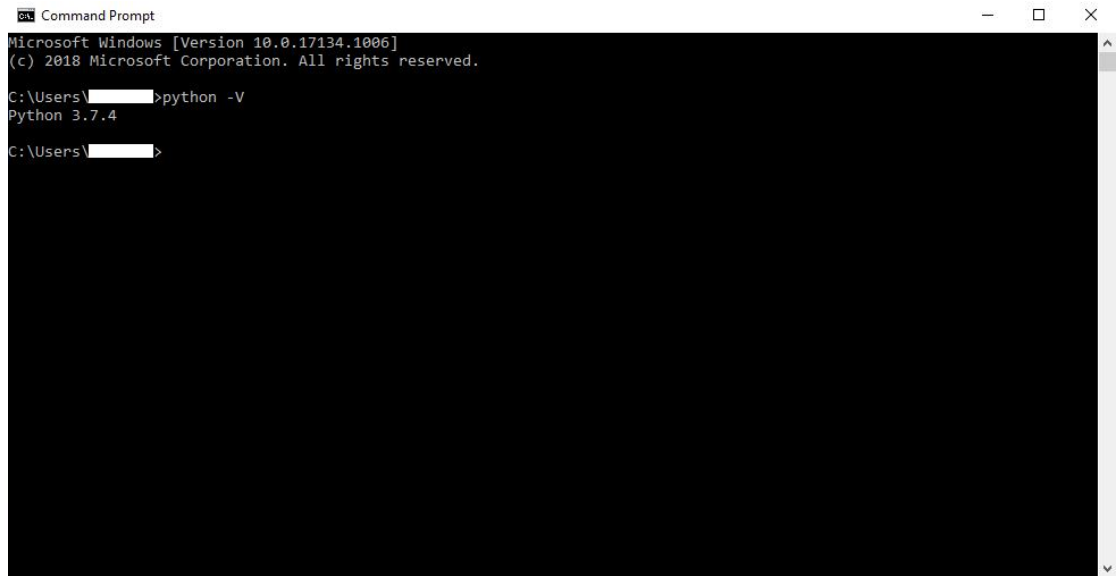


Figure 1: Python Installation

- 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.



```

Command Prompt
Microsoft Windows [Version 10.0.17134.1006]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\>python -V
Python 3.7.4

C:\Users\>
    
```

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.

```

Command Prompt
Microsoft Windows [Version 10.0.17134.1006]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\>pip install numpy
Collecting numpy
  Downloading https://files.pythonhosted.org/packages/bd/51/7df1a3858ff0465f760b482514f1292836f8be08d84aba411b48dda72fa9
/numpy-1.17.2-cp37-cp37m-win_amd64.whl (12.8MB)
  100% | 12.8MB 2.3MB/s
Installing collected packages: numpy
Successfully installed numpy-1.17.2
You are using pip version 19.0.3, however version 19.2.3 is available.
You should consider upgrading via the 'python -m pip install --upgrade pip' command.

C:\Users\>python -c "import numpy; print('numpy.__version__')"
1.17.2

C:\Users\>
  
```

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.

```

Command Prompt
Microsoft Windows [Version 10.0.17134.1006]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\>pip install sympy
Collecting sympy
  Downloading https://files.pythonhosted.org/packages/21/21/f4105795ca7f35c541d82c5b06be684dd2f5cb4f508fb487cd7aea4de776
/sympy-1.4-py2.py3-none-any.whl (5.3MB)
  100% | 5.3MB 3.9MB/s
Collecting mpmath>=0.19 (from sympy)
  Using cached https://files.pythonhosted.org/packages/ca/63/3384ebb3b51af9610086b23ea976e6d27d6d97bf140a76a365bd77a3eb3
2/mpmath-1.1.0.tar.gz
Installing collected packages: mpmath, sympy
  Running setup.py install for mpmath ... done
Successfully installed mpmath-1.1.0 sympy-1.4
You are using pip version 19.0.3, however version 19.2.3 is available.
You should consider upgrading via the 'python -m pip install --upgrade pip' command.

C:\Users\>python -c "import sympy; print('sympy.__version__')"
1.4

C:\Users\>
  
```

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).

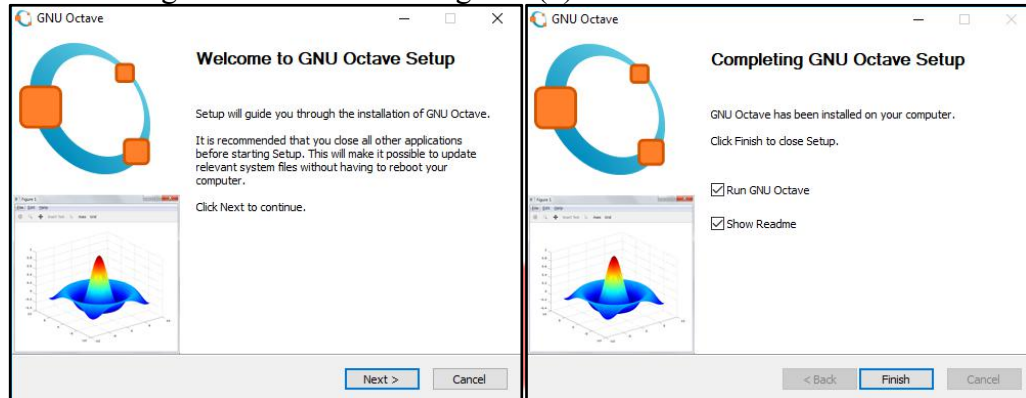


Figure 5(a): Octave Installation

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.

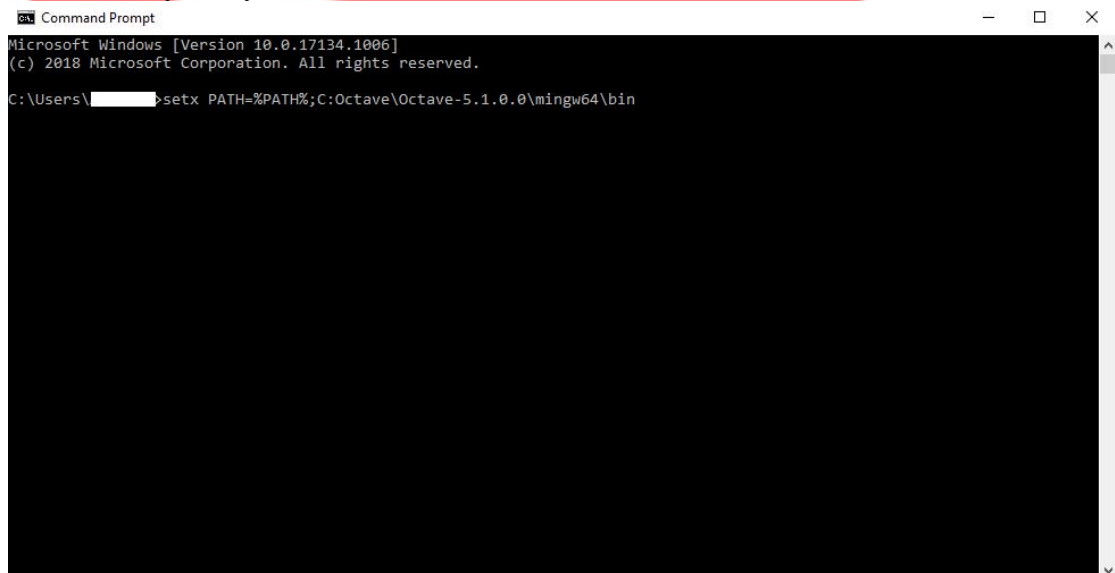


Figure 6: Add Octave to PATH

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


```

Command Prompt - octave
Microsoft Windows [Version 10.0.17134.1006]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Abhinav>octave
GNU Octave, version 5.1.0
Copyright (C) 2019 John W. Eaton and others.
This is free software; see the source code for copying conditions.
There is ABSOLUTELY NO WARRANTY; not even for MERCHANTABILITY or
FITNESS FOR A PARTICULAR PURPOSE. For details, type 'warranty'.

Octave was configured for "x86_64-w64-mingw32".

Additional information about Octave is available at https://www.octave.org.

Please contribute if you find this software useful.
For more information, visit https://www.octave.org/get-involved.html

Read https://www.octave.org/bugs.html to learn how to submit bug reports.
For information about changes from previous versions, type 'news'.

octave:1>
  
```

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.

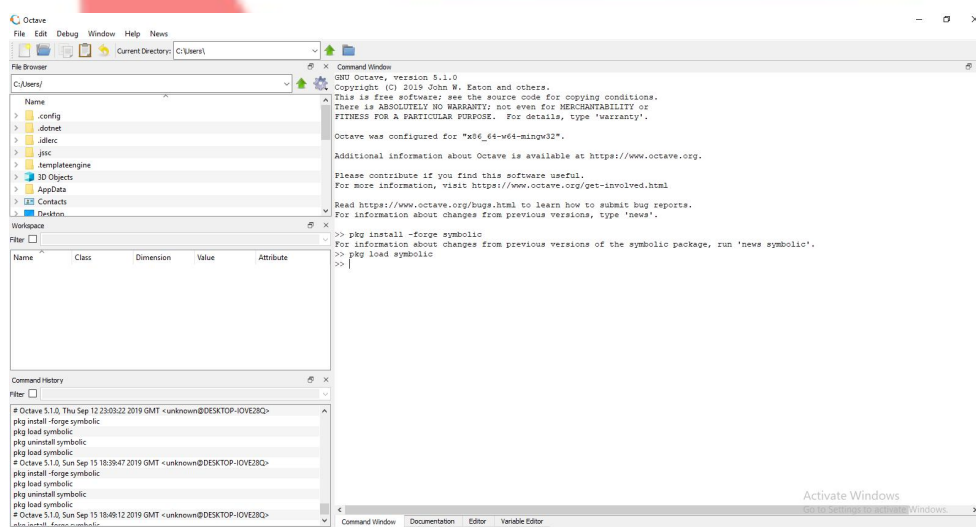


Figure 8: Install Symbolic

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.

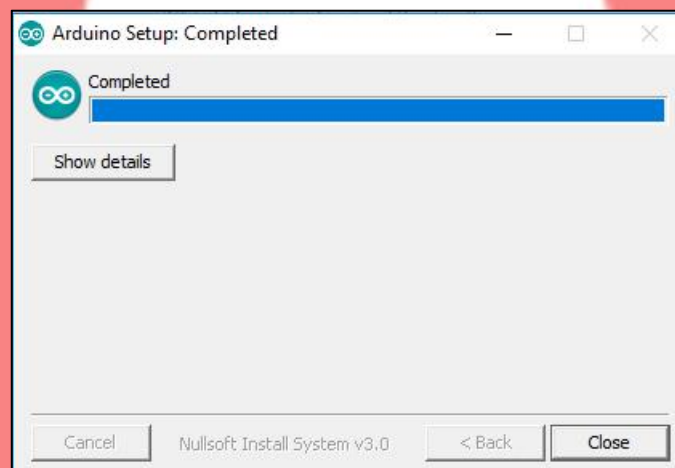


Figure 9: Arduino Installation