Preface

An environment must be set up to prepare the contents of the class. You can also install the python dependencies with Ubuntu and Mac by yourself. Windows-Users may will have problems with Atari-gym and Tensorboard. Moreover, commands and important hints are written in **bold**.

Python Dependencies

- Python 3.5.5
- numpy==1.14.3
- opencv-python==3.4.0.12
- tensorflow==1.5.0
- pandas==0.22.0
- matplotlib==2.2.2
- gym==0.10.5 (for Atari installation see here)
- gym-retro==0.5.4 (.sha files in data folder of site-packages must be renamed to .md or .ai, see here for more information)

Environment (Windows 10 Home)

This approach uses VirtualBox. You should have 15 GB free disk space. Datasets are already downloaded and eclipse is already configured.

Step 1: Install VirtualBox

- Windows, Mac, Linux
- Ensure Hyper-V is disabled (Windows 10 Professional only)

Step 2: Download VirtualBox-Image (.vdi file)

- Download .vdi-file from here and place it to any appropriate place

Step 3: Import Image

- Click New-Button
- Type an appropriate name for the image
- Setup Typ Linux and Version Ubuntu (64 Bit)
- Choose Use an existing virtual hard drive file
- Click on the folder button and browse for the .vdi file which you downloaded in step 2
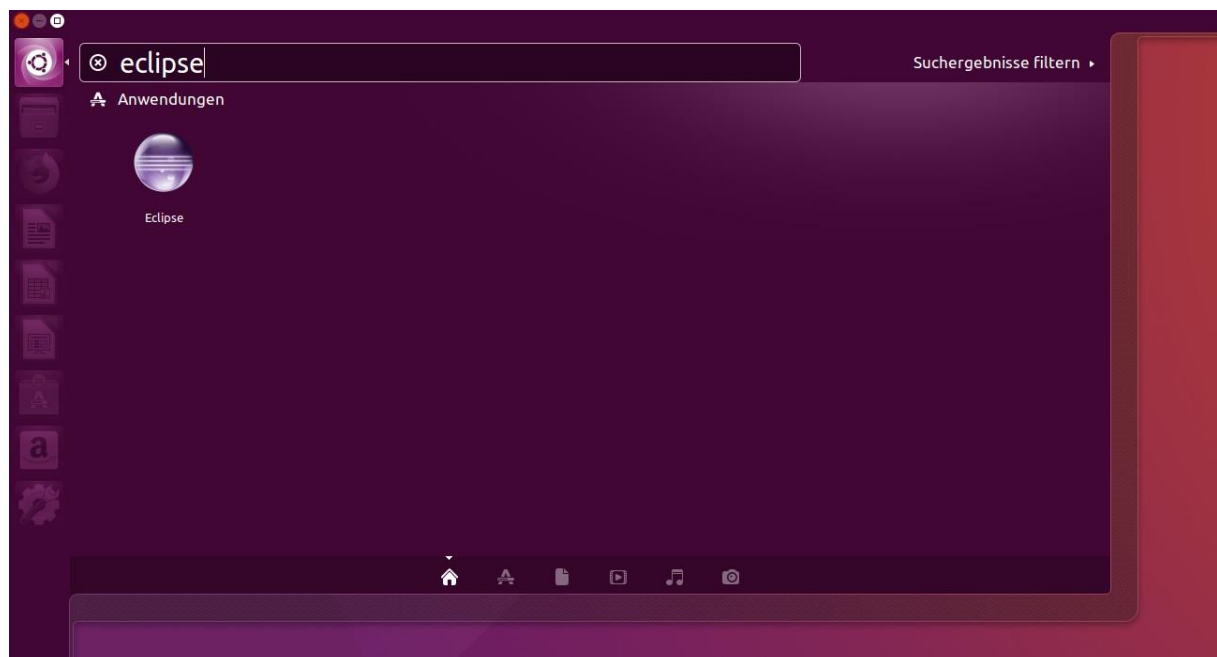- Click Create
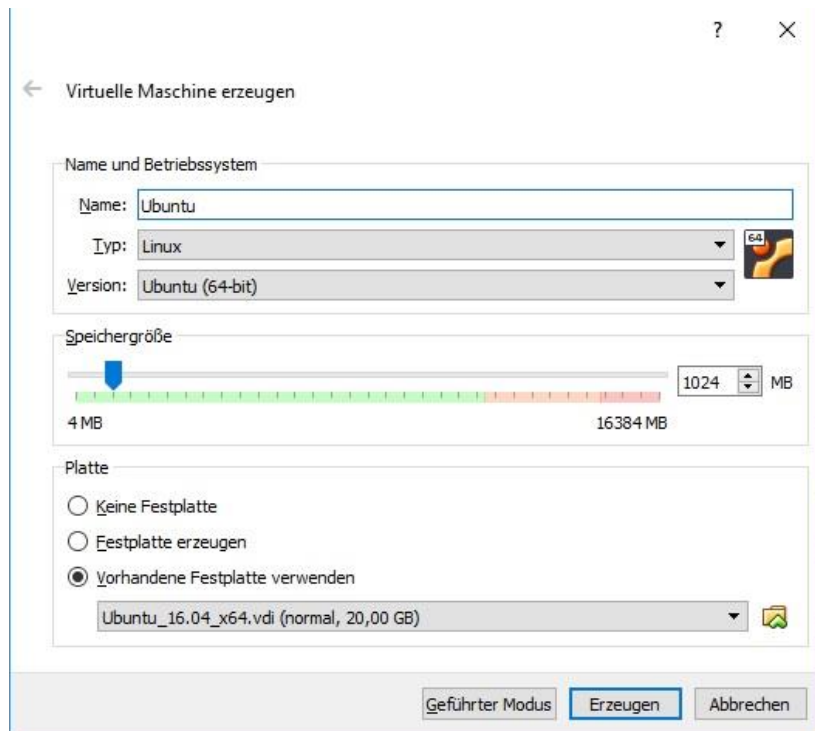
Step 4: Start Image

- Double-Click on new created image
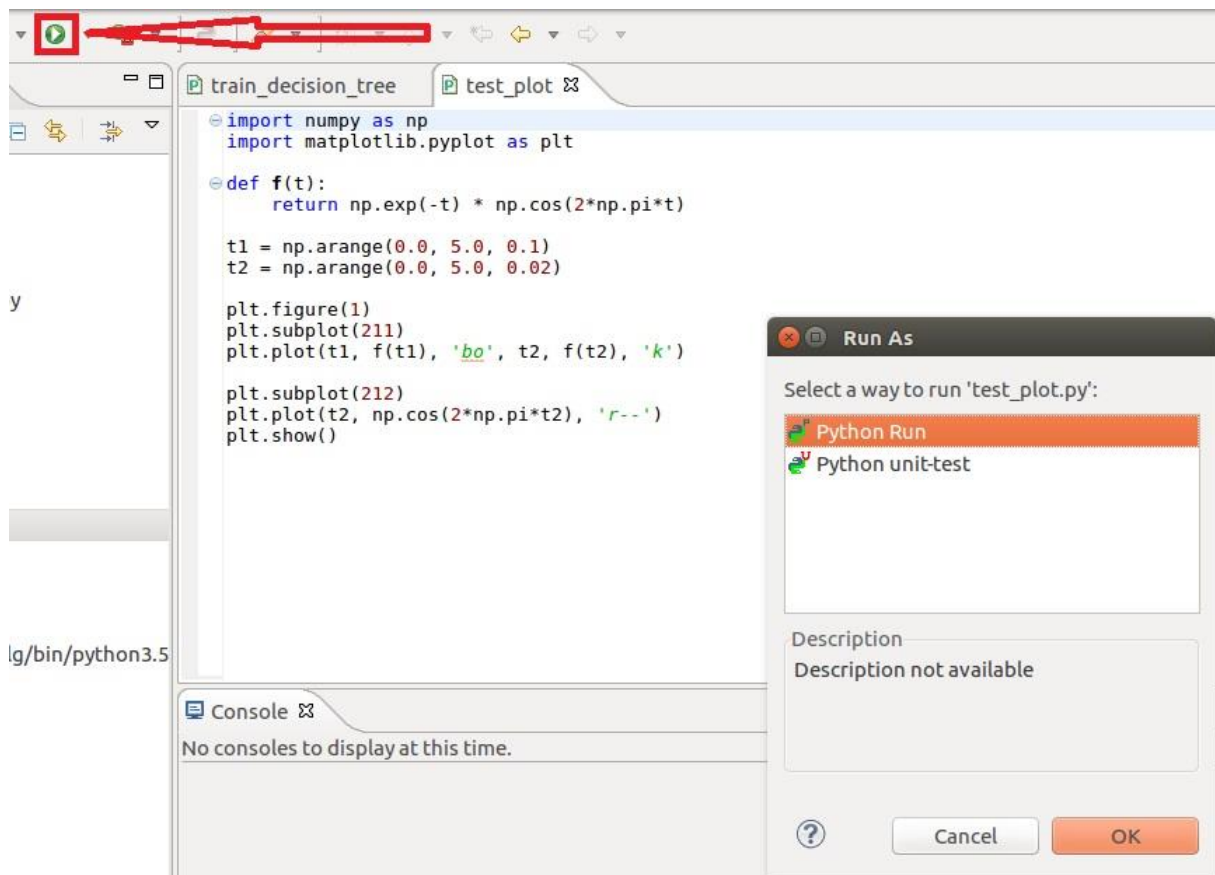- Login as **modalg** with password **12345678**

Step 5: Start eclipse

- Click on Ubuntu-Button and search for **eclipse**
- Execute eclipse
- Click ok when workspace dialog appears

Step 6: Run Test Project

- Open **test** folder in **modalg181**-Project
- Double click on any of the files

- Execute file with click on run button (run as **Python Run**)

Environment (Windows 10 Professional, Ubuntu, Mac)

Docker, Git and Real VNC Viewer are mainly used. You should have 8 GB free disk space.

Step 1: Install Docker
- Windows & Mac
- Ubuntu
- Location of docker files and memory usage can be configured (Windows, Mac, Ubuntu)

Step 2: Create Docker-Hub Account
- Sign in here

Step 3: Pull Docker Image
- Open Command Prompt (Windows, Ubuntu, Mac)
- Type **docker login** and press enter
  - If any error occur – restart Docker!
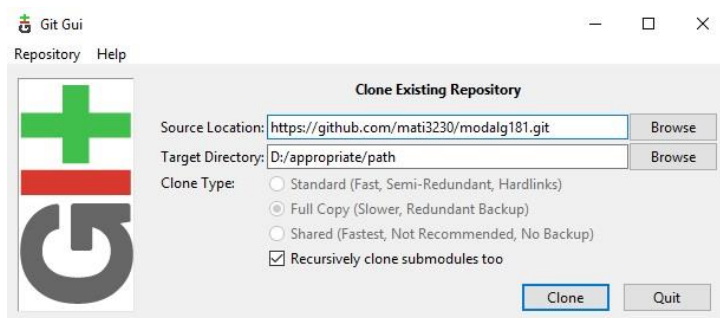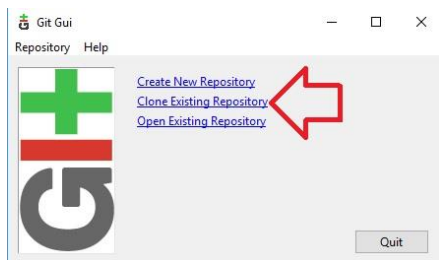- Type **docker pull mati3230/modalg181**

Step 4: Check Image
- Type **docker images**
- Type **docker run --rm -it --name test_container mati3230/modalg181 python --version**
- Output: Python 3.5.5

Step 5: Install Git

- [All operating systems](#)
- [More information](#) on how to install git

Step 6: Clone Repository

- Clone using [Git Bash](#)
  - Open Command Prompt ([Windows](#), [Ubuntu](#), [Mac](#))
  - Navigate to appropriate folder with - example: **cd D:/appropriate/path** (this example path will be used later in this document)
  - Type **git clone** [**https://github.com/mati3230/modalg181.git**](https://github.com/mati3230/modalg181.git)
- Clone using Git GUI

Step 7: Setup Docker

- The drive of D:/appropriate/path should be shared ([Ubuntu](#), [Mac](#))
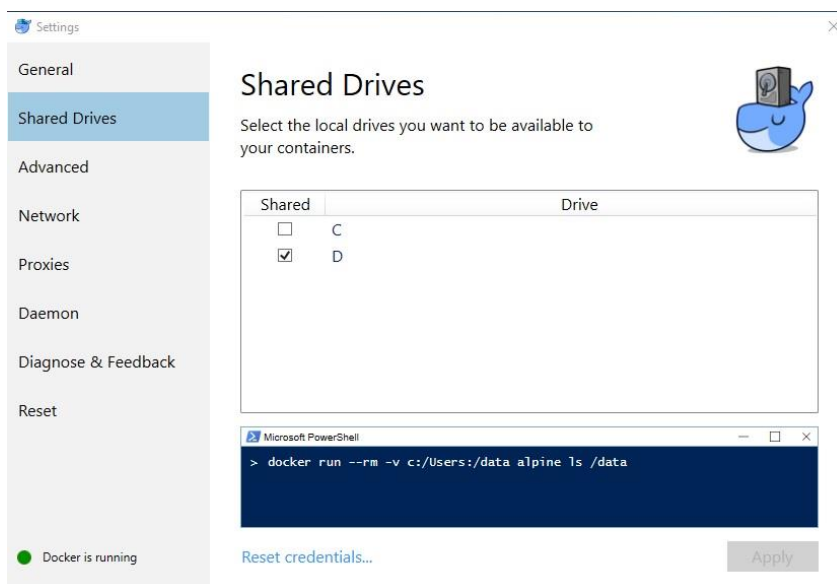
Step 8: Check Repository

- Open Command Prompt (Windows, Ubuntu, Mac)
- Type **docker run --rm -it --name test_container -v D:/appropriate/path/modalg181:/modalg181 mati3230/modalg181 python /modalg181/test/test_docker_devel.py**
- Output:

test

test2

test3

- Type **docker run --rm -it --name test_container -v D:/appropriate/path/modalg181:/modalg181 mati3230/modalg181 python /modalg181/test/test_tensorflow.py**
- Output:

Tensor("Const:0", shape=(), dtype=float32) Tensor("Const_1:0", shape=(), dtype=float32)

## Step 9: Install VNC-Viewer

- About VNC
- Install Real VNC Viewer

Step 10: Check UI of Docker Image

- Type **docker run --rm -it --name test_container -p 5901:5901 -v D:/appropriate/path/modalg181:/modalg181 mati3230/modalg181 bash**
- Type **vncserver**
- Start the Real VNC Viewer installed in Step 8
- Type in VNC-Server-Address **127.0.0.1:5901** and press enter
- Press continue in case of a warning
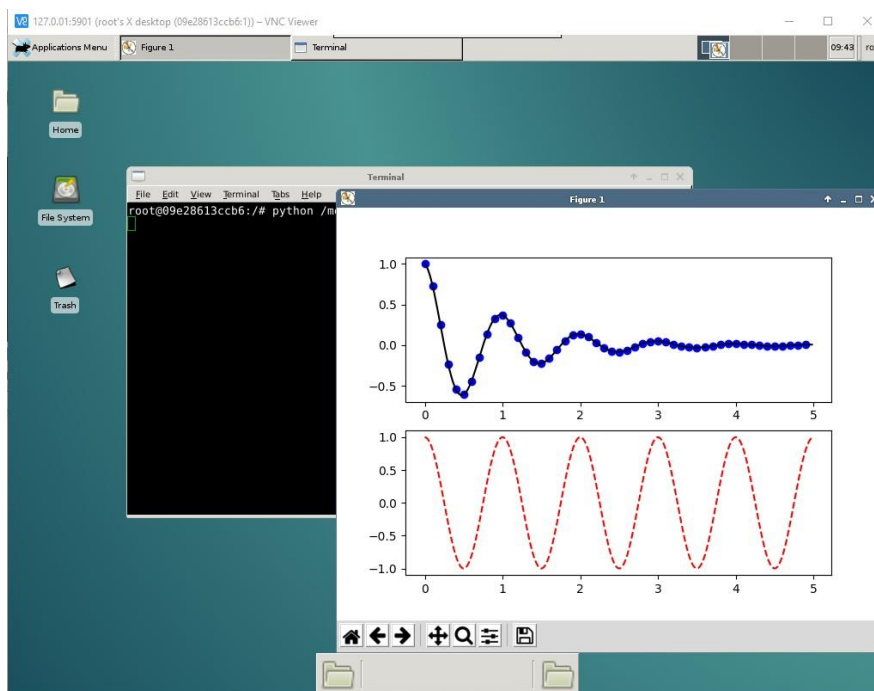- Type password **12345678**
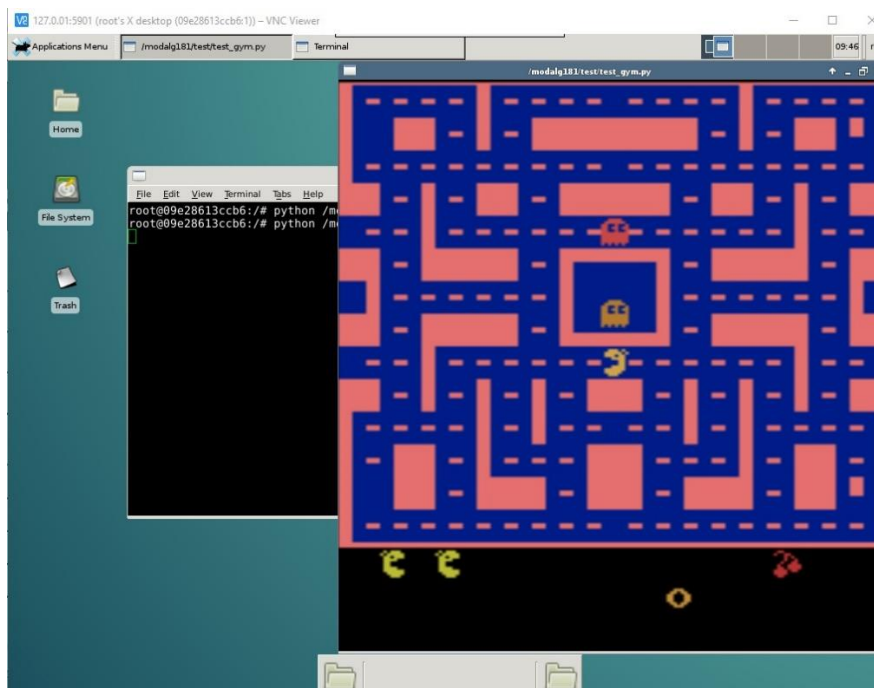
- Output:
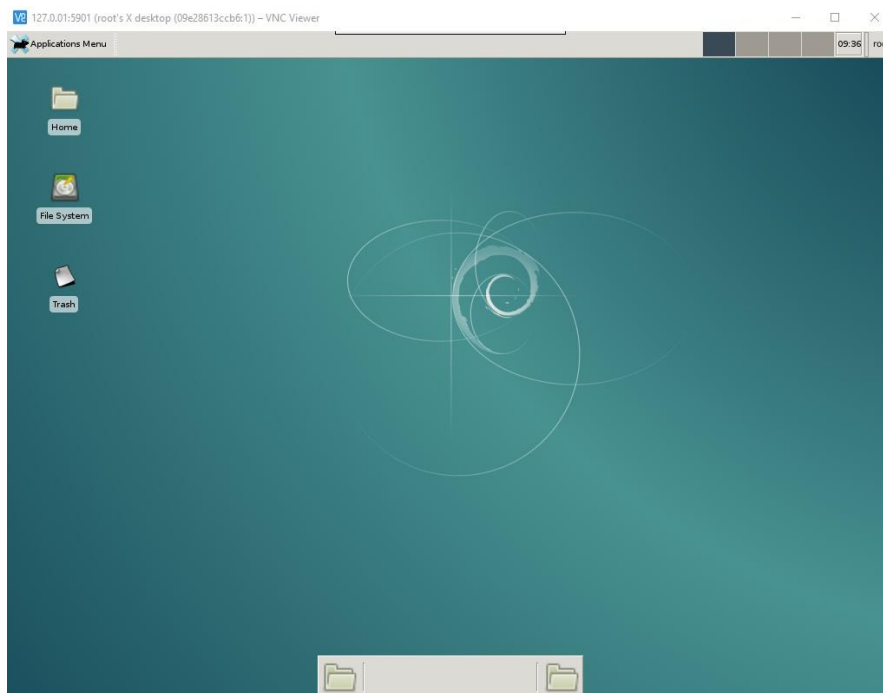
- Open Terminal:
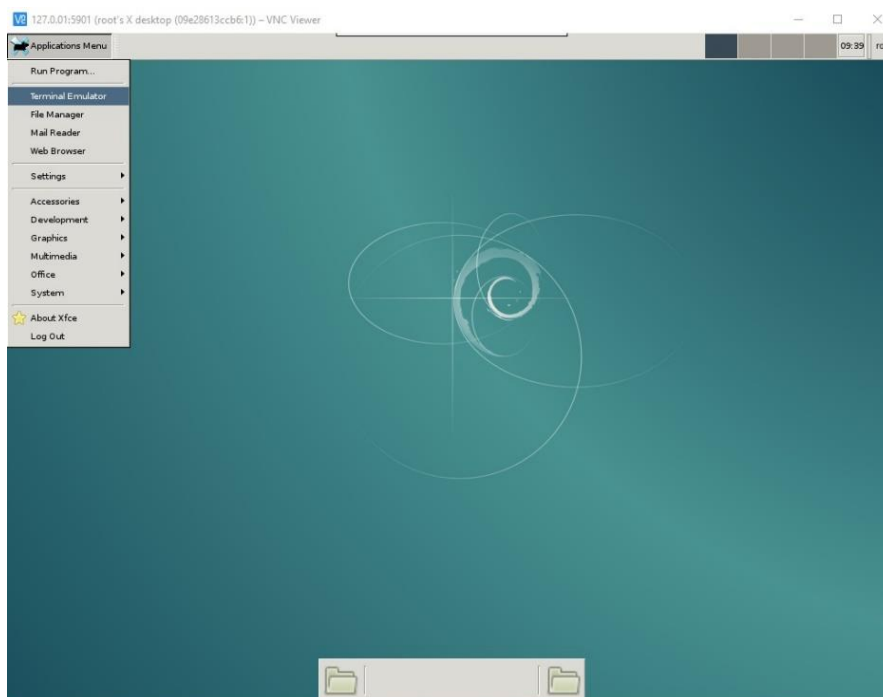
- Type: **python /modalg181/test/test_plot.py**

- Output:

- Close the plot window
- Type **python /modalg181/test/test_gym.py**
- Output:

- Close the [Real VNC Viewer](#) window
- Type in the bash of first step under Step 10 **vncserver -kill :1**
- Type **vncpasswd** to change the password
  - Answer "Would you like to enter a view-only password (y/n)?" with **n**
- Type **exit** to close the bash

Step 11: Start the IDE

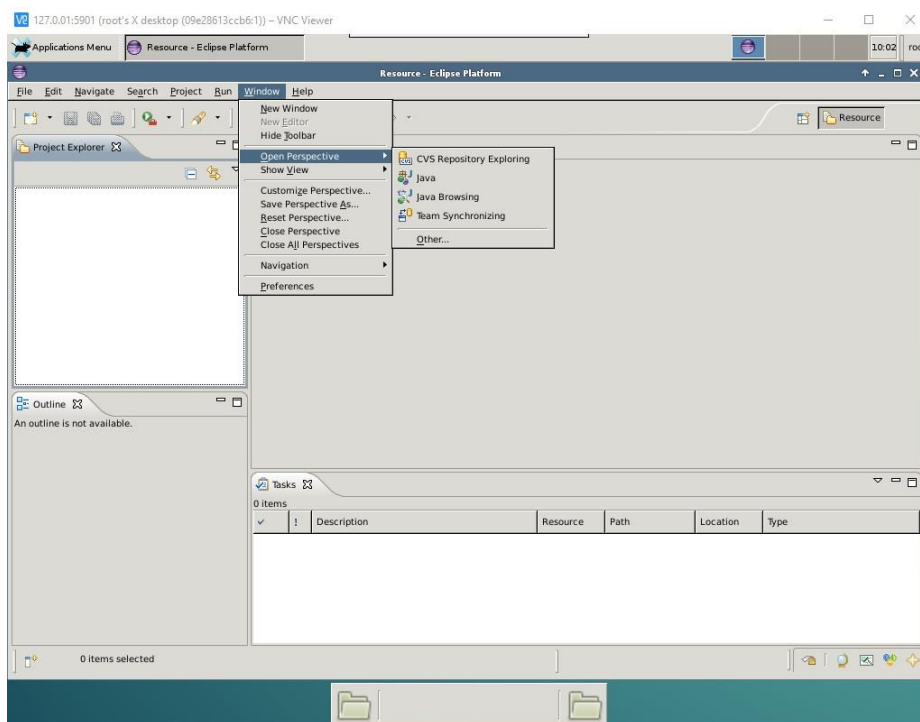- Bring up the UI with steps described under Step 10
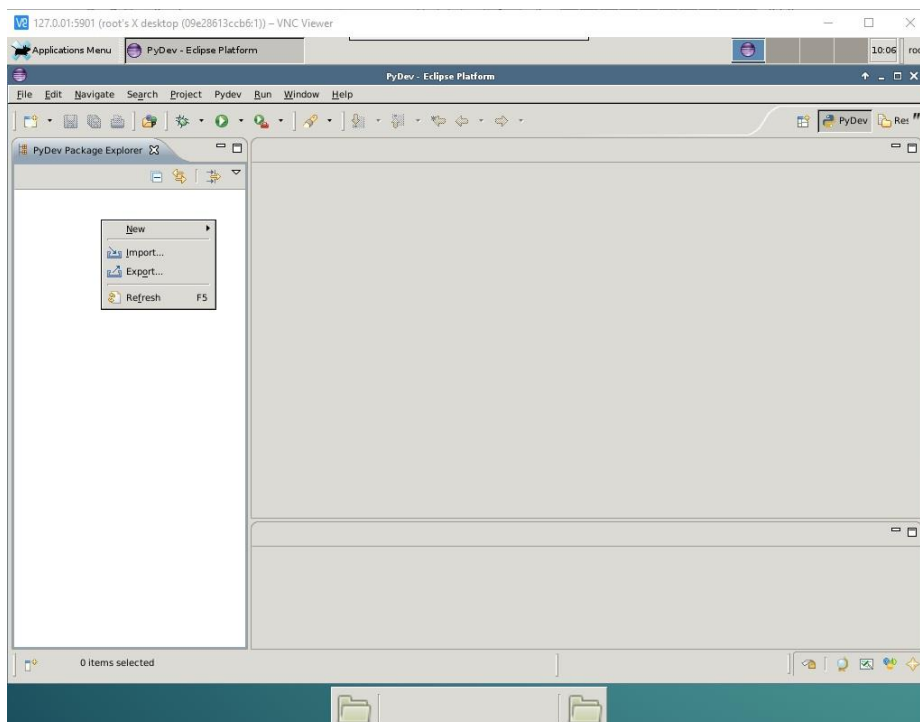- Start eclipse
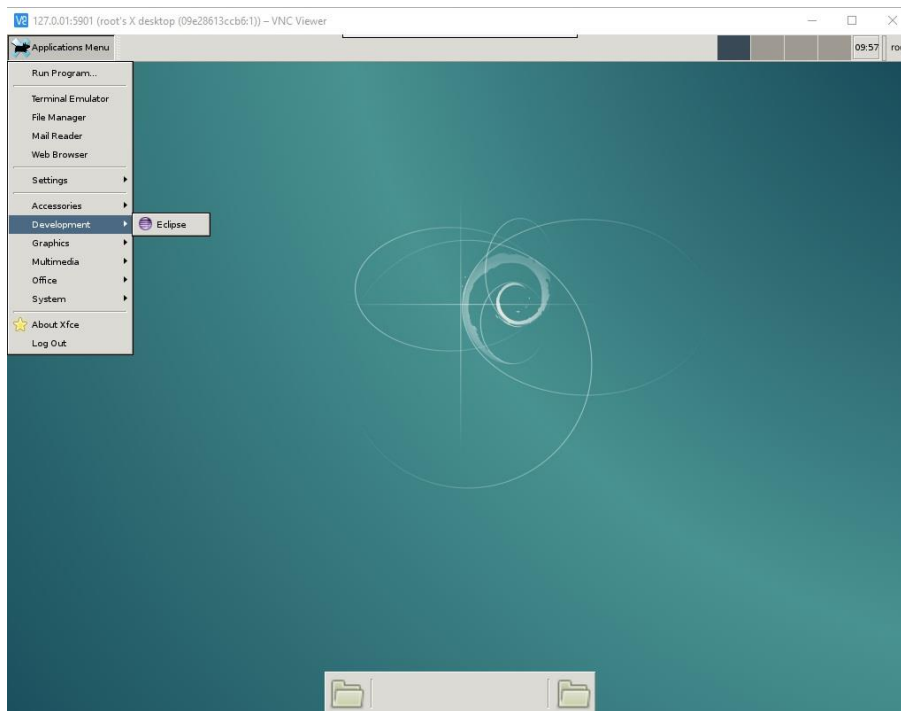
- Set Workspace to **/**
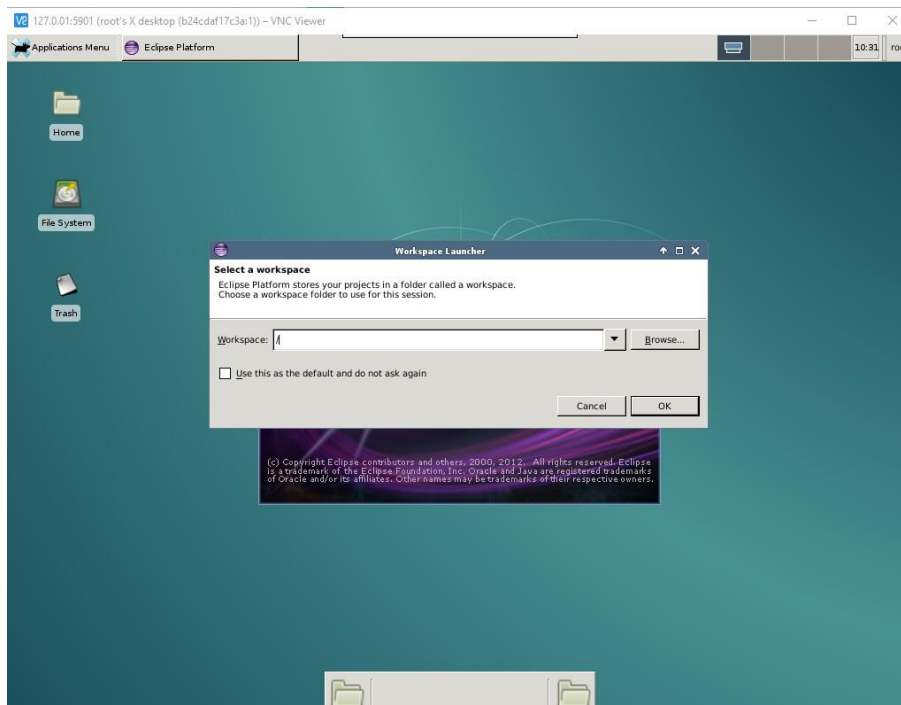
- Press **OK**
- Click on **Workbench**
- Go to **Window/Open Perspective/Other…** under menu bar

- Select **PyDev** and click **OK**
- Click with right mouse button in **PyDev Package Explorer** and click **New/Project…**
- Select **PyDev/PyDev Project** and click **Next >**

- Type Project name: **modalg181**
- Select **Gammar Version 3.0 – 3.5**
- Select Checkbox **Don't configure PYTHONPATH (to be done manually later on)**
- Click **Please configure an interpreter before proceeding** and click on button **Manual Config**
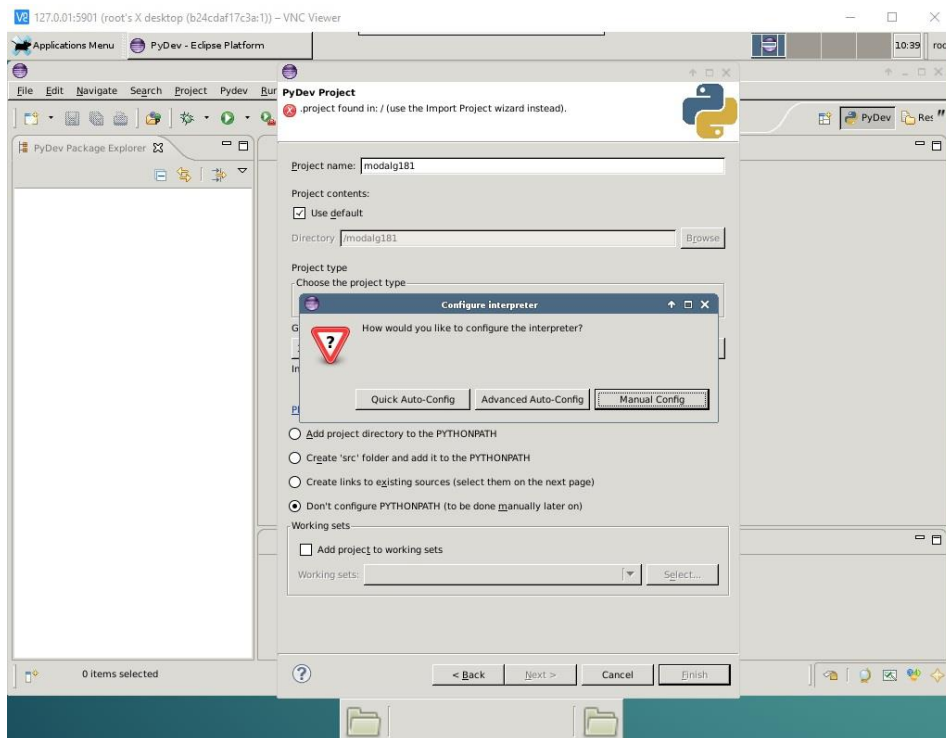

- Click on button **New…**
- Type in box Interpreter Name: **/usr/local/bin/python**
- Type in box Interpreter Executable: **/usr/local/bin/python**
- Click button **Select All** and **OK**
- Click button **Apply** and **OK**
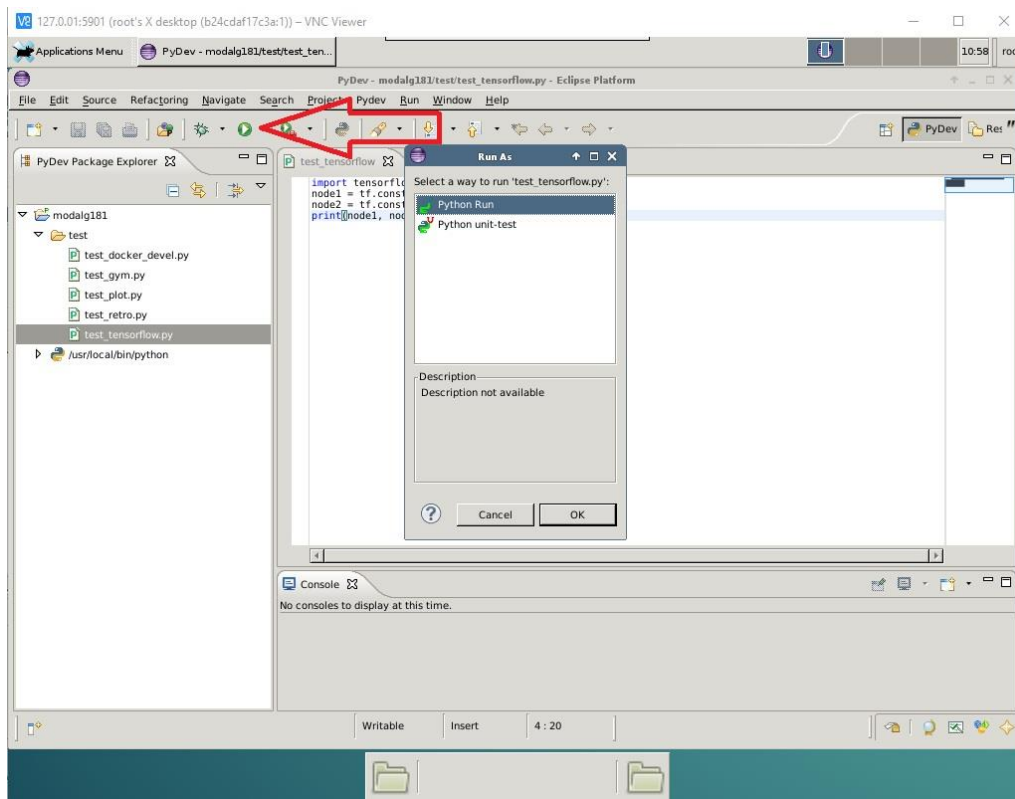
- Your configuration should look like this:
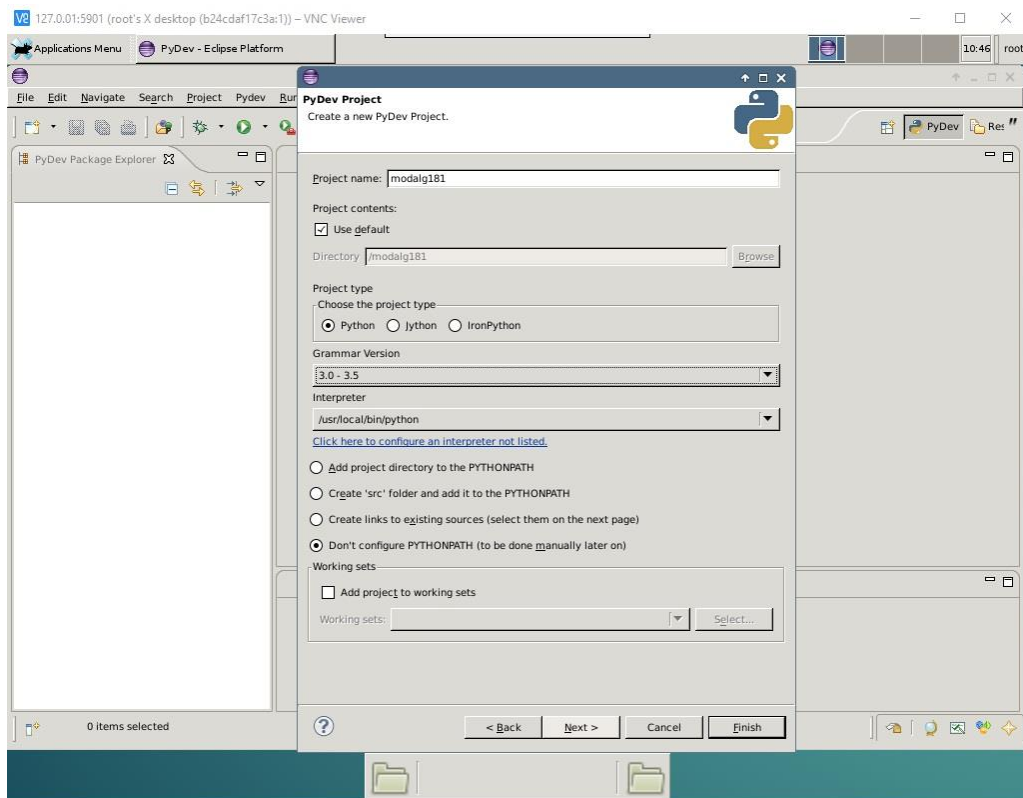
- Click button **Finish**
- Double-Click **modalg181/test/test_tensorflow.py** in PyDev Package Explorer, skip news message and apply Default Eclipse preferences for PyDev with **OK**
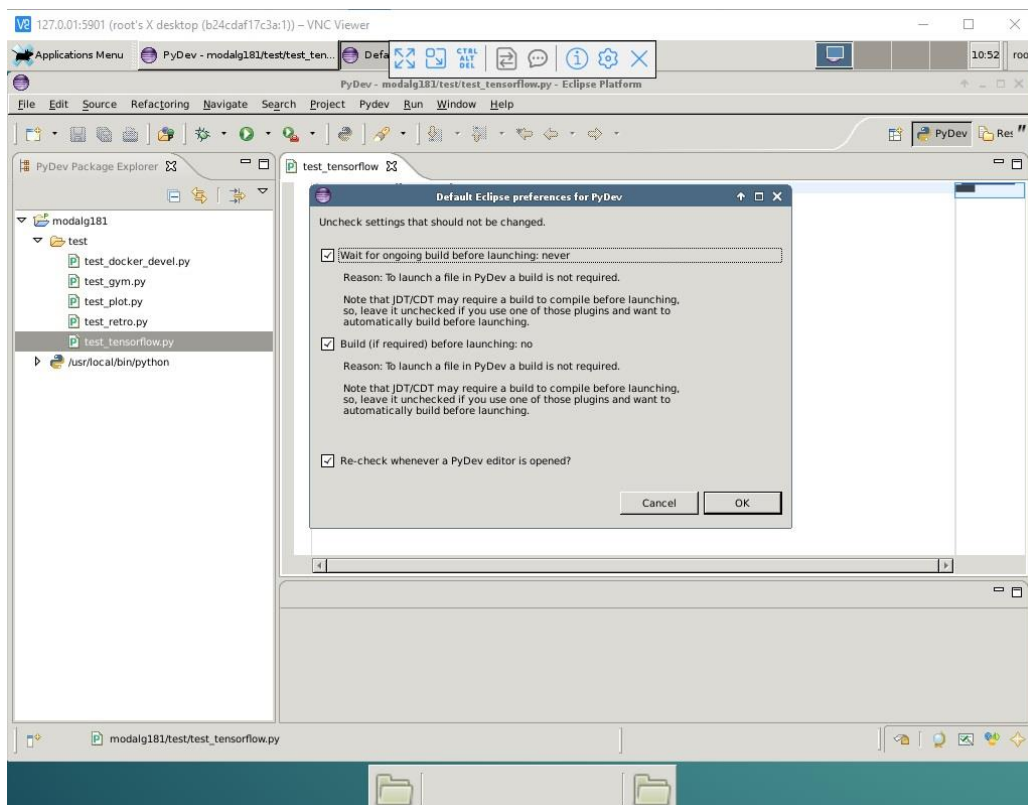
- Go to **Window/Show View** in menu bar and click **Console**
- Click in test_tensorflow code view and press **Run As…** button
- Select **Python Run** and click **OK**

- The Console should print:

Tensor("Const:0", shape=(), dtype=float32) Tensor("Const_1:0", shape=(), dtype=float32)

- Close eclipse
- Close Real VNC Viewer
- Type in bash **vncserver -kill :1**
- Press **STRG+p+q** to open terminal
- Type **docker commit test_container my_modalg**
- Type **docker attach test_container** and press two times enter
- Type exit

Step 12: Check your own Configuration

- Type **docker run --rm -it --name test_container -p 5901:5901 -v D:/appropriate/path/modalg181:/modalg181 my_modalg bash**
- You successfully saved an image with your own configuration
- If you now start eclipse with workspace **/** then project will be saved
- Close again VNC and **exit** container

Step 13: Download Datasets

- Download datasets from [Nextcloud](#)

- Unzip to get example path **D:/appropriate/path/datasets/stars_from_google_images**