Installation Guide for Rivet

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The installation and use of the Rivet system requires a Linux operating system or a bash shell on Windows/Mac. On Windows 10, access to a bash shell can be gained through the Windows 10 Anniversary update. Rivet also requires the installation of several packages for its execution, including the Rosie Pattern Language (RPL), and requires PyCharm for its suite of unit tests.

This installation guide is targeted toward Ubuntu/Debian distributions with the apt-get package management system. Instructions on how to gain access to the correct version of bash and install the necessary packages are below.

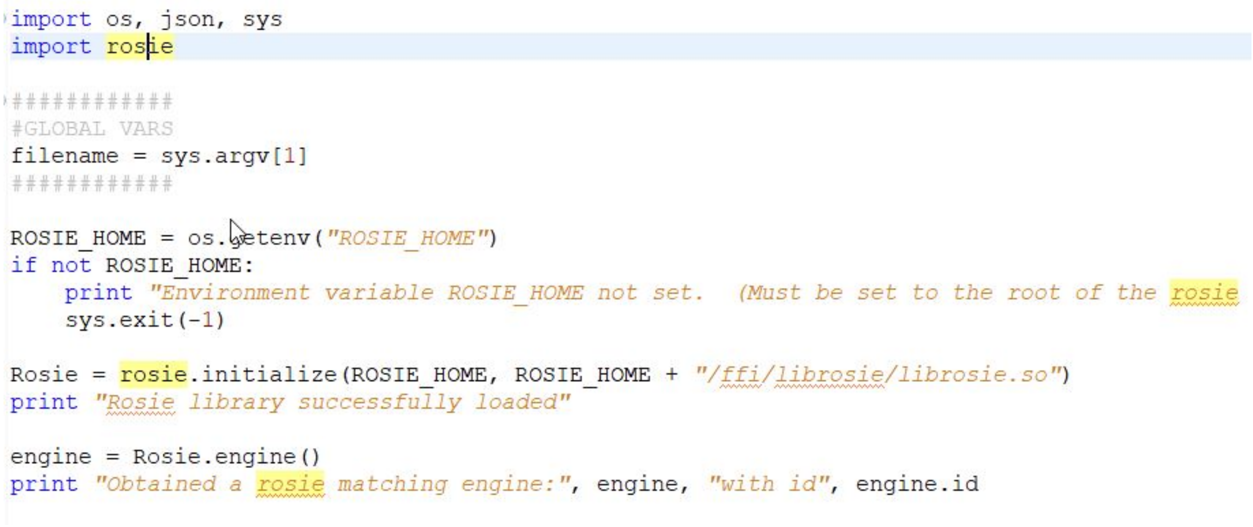
- Gain access to bash. All commands listed later in this document are executed in the bash shell.
  - Ubuntu Linux version 14.04 and higher all contain access to bash. The following link contains instructions on how to install Linux on your PC.
    - Linux Installation Instructions
  - If you have a Windows 10 machine, you may also gain access to bash by updating to the Windows 10 Anniversary Update, enabling developer options, and turning the Windows Subsystem for Linux feature on. Instructions on how to do this are linked below:
    - Windows 10 Anniversary Bash Installation
  - If you are not able access to Linux/Mac/Windows 10 Anniversary using the instructions above, the final option for access is installing a virtual box on your machine and running a Linux image on it. Instructions, Downloads, and Documentation are included below at VirtualBox.org:
    - VirtualBox.org Linux Docs
- Install Rosie required Packages
  - The packages below are necessary for Rivet/Rosie's execution. If you encounter errors when running either system, ensure that these are installed and up-to-date
    - `sudo apt-get install build-essential`
    - `sudo apt-get install make`
    - `sudo apt-get install libreadline-dev`
    - `sudo apt install default-jdk`
    - `sudo apt install pip`
    - `sudo apt-get install python-cffi`
    - `sudo apt install git`
    - Install the latest version of gcc. The instructions below are for gcc 4.8, but you may need to install 7.2.

            - gcc installation instructions
- Install Rosie v0.99
        - Rosie can be placed anywhere in the file system, but for this guide we will install it in the user home directory (`~/`)
        - `cd ~`
        - `git clone https://github.com/jamiejennings/rosie-pattern-language.git`
        - `git checkout v0.99`
    - Make Rosie
        - `cd ~/rosie-pattern-language/`
        - `make`
        - `sudo make install`
- Install Rivet
    - `cd ~`
    - `git clone https://github.ncsu.edu/engr-csc-sdc/2017FallTeam11.git`
- Install Rivet required packages
    - `sudo apt-get install python-numpy cython`
    - `sudo apt install python-pip`
    - `sudo pip install --upgrade pip`
    - `sudo pip install wheel`
    - `sudo pip install progressbar`
    - `sudo pip install coverage`
- Install PyCharm for automated Unit Testing
    - From the Linux Command Line:
        - `sudo add-apt-repository ppa:ubuntu-desktop/ubuntu-make`
        - `sudo apt-get update`
        - `sudo apt-get install ubuntu-make`
        - `umake ide pycharm-professional`
    - Additional Setup
        - Open Pycharm
        - Click next through all prompt defaults:
            - Do not Import settings
            - Evaluate Free
            - Accept
            - UI Theme
            - Launcher Script
            - Featured Plugins

        - Set Python Interpreter to 2.7 for Rivet in PyCharm
            - Warning: Run unit tests with Coverage is not supported by PyCharm Community Edition, it only comes with PyCharm Professional Edition
            - File → Settings → Project: Rivet → Project Interpreter
            - Select Project Interpreter Drop-down → Show all…
            - Click + → Add Local → New Environment
            - Select /usr/bin/python2.7 → Click OK → Click OK
            - Add required Packages
                - In Settings --> Project:Rivet → Project Interpreter, click “+”
                - Coverage 4.4.2
                - Mock 2.0.0
                - cffi 1.11.2
                - Apply
        - Run Unit Tests with Coverage

          In Pycharm Package Explorer:
            - Right click on Rivet/test folder
            - Select “Run ‘Unittests in test’ with Coverage”
            - If prompt: *“Do you want to display coverage data for 'Unittests in test Coverage Results'?”*
                - Select “Add to Active Suites”
- Attempting to run `python` programs that access the Rosie Library like the code in Figure 1 requires “`ROSIE_HOME`” to be set, and a local directory copy of the `librosie.so` library
- Set environment variable ROSIE_HOME=~/rosie-pattern-language/
        - Update /etc/environment such that the path is set for all users all the time. Additional help for this step is available at the debian wiki
    - Make the `librosie.so` file (so that Rivet can access it)
        - `cd ~/rosie-pattern-language/ffi/librosie/`
        - `make`
    - And copy it to the Rivet directory
        - `cp ~/rosie-pattern-language/ffi/librosie/librosie.so ./`

Figure 1



```
import os, json, sys
import rosie

############
#GLOBAL VARS
filename = sys.argv[1]
############

ROSIE_HOME = os.getenv("ROSIE_HOME")
if not ROSIE_HOME:
    print "Environment variable ROSIE_HOME not set.  (Must be set to the root of the rosie
    sys.exit(-1)

Rosie = rosie.initialize(ROSIE_HOME, ROSIE_HOME + "/ffi/librosie/librosie.so")
print "Rosie library successfully loaded"

engine = Rosie.engine()
print "Obtained a rosie matching engine:", engine, "with id", engine.id
```