Linux Software Installation – Exercises 1

Part 1. Setup Conda

1.1 Login to the BioHPC machine and download the installer

Login (ssh) to the machine that you are assigned for this workshop (assigned machines: https://biohpc.cornell.edu/ww/machines.aspx?i=128). Prepare the working directory, and download the latest version of Miniconda/python3 installer into the working directory.

```
mkdir /workdir/$USER
cd /workdir/$USER
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh
```

1.2 Run the installer

```
chmod u+x Miniconda3-latest-Linux-x86_64.sh
./Miniconda3-latest-Linux-x86_64.sh
```

- The "chmod u+x" command makes the file executable.
- During the installation, you will be asked for multiple questions:
  1) "Please, press ENTER to continue": press "ENTER" key;
  2) "More": keep pressing "SPACE" key until you reach next question;
  3) "Do you accept the license terms?": enter "yes"
  4) "Miniconda3 will now be installed into this location … ": press "ENTER" key and accept the default "/home/xxxxx/miniconda3".
  5) **"Do you wish the installer to initialize Miniconda3"** : Press ENTER to accept the default **"no";**

1.3 Miniconda is ready.

Part 2. Install and run a simple software in Conda

2.1 Install bwa in Conda

```
source $HOME/miniconda3/bin/activate
conda install -c bioconda bwa
```

2.2 Run bwa in Conda

Next time you login, to run bwa that you installed:

```
source $HOME/miniconda3/bin/activate
bwa
```

- While you are at this step, you might want to use “which” command to check which copy of “bwa” you are running.

```
which bwa
```

Part 3. Work with Conda environment

3.1 Create a virtual environment and give it a name “pysam”, install pysam the virtual environment

```
conda create -c bioconda -n pysam pysam
```

- The command “conda create -n aligners” would create an environment called “pysam” (you can use any names), and install the pysam package into it.

3.2 Start the pysam environment, and run python

```
conda activate pysam
which python
python -V
which pip
```

- “which python” “which pip”would tell you which python and pip you are using .

3.3 Install other python modules in this environment

```
 pip install numpy
```

- The “pip” command would install numpy in the environment.

3.4 End the environment

```
conda deactivate
```

3.5. Now you installed pysam and numpy in miniconda3 in the home directory. Next time you need to use it in a new session, run these commands

```
source $HOME/miniconda3/bin/activate
conda activate pysam
# after the work is done
conda deactivate
```

Part 4. Create a Python2.7 environment in Miniconda3

```
conda create -n myNewPipeline python=2.7
conda activate myNewPipeline
which python
python -V    ##use  capital V
conda deactivate
```

Note in the first command there is no package name. This step would create an empty python2.7 environment, within which you can use pip to install other python modules.