Practical Worksheet 1

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# Learning Objectives

1. Register for an AWS account and explore the user interface
2. Obtain API keys and secret
3. Install VirtualBox and an Ubuntu 16.04 VM
   1. On the Ubuntu 16.04 instance
      1. Install AWS CLI on VM
      2. Install a virtual environment with Python 3.6
   2. Configure the AWSCLI environment with API details and default region
   3. Create an EC2 instance using a python boto script

## Technologies Covered

Ubuntu

AWS

AWS EC2

Python/Boto/awscli/bash scripts

**NOTE**: Whilst some of the work that has been outlined in the labs can be done on lab machines, it is strongly recommended that you use your own laptop for this work. Likewise, you can create virtualenvs on your laptop but it is recommended that you do this on the VM using VirtualBox. Instructions are only provided for this configuration.

## AWS Accounts and Log In

[1] Register for an AWS account

<https://www.awseducate.com/Registration?apptype=student&courseview=true>

Select: The University of Western Australia and Cloud Computing – CITS5503

**NOTE**: Use your student email account to access the account.

You will be allocated $50 credit on the account – however, you should at all times use free tier resources unless specifically directed and you are responsible for terminating and cleaning up resources immediately after use.

[2] Make sure you can log into your account

[3] Search and open Identity Access Management

[a] Add user – choose a user name and select Programmatic access and AWS Management Console access

[b] Set your password and uncheck Require password reset

[c] In Permissions – select Attach existing policies directly and choose AdministratorAccess

[d] Once created, select the user and choose Security Credentials: Create and Access Key and make a note of the Access key ID and the secret access key

**NOTE**: Treat the Access key ID and secret very carefully. If stolen, these details allow someone to create large numbers of resources and do other things with the account

## Virtual Box and Ubuntu VM

[1] Download and install the appropriate version of VirtualBox <https://www.virtualbox.org/wiki/Downloads>

[2] Download Ubuntu 16.04.4 LTS iso <https://www.ubuntu.com/download/desktop> (approximately 1.62GB)

[3] Follow the instructions here to set up the VM using the Ubuntu image – remember that when you create the virtual disk, you can put it on an external USB drive

<https://medium.com/@tushar0618/install-ubuntu-16-04-lts-on-virtual-box-desktop-version-30dc6f1958d0>

## AWSCLI, Boto and Python 3.6

[1] Install Python 3.6

sudo add-apt-repository ppa:jonathonf/python-3.6

sudo apt-get update

sudo apt-get install python3.6

[2] Install a virtual environment with python3.6

sudo add-apt-repository ppa:jonathonf/python-3.6  
sudo apt-get update  
sudo apt-get install python3.6  
  
cd ~  
python3.6 -m venv virtualenv --without-pip  
cd virtualenv/  
source bin/activate

sudo apt install curl  
curl https://bootstrap.pypa.io/get-pip.py | python3

When you type python -V you will get 3.6

Remember that whenever you want to use this environment, you need to do a source bin/activate

You can put this into your .bashrc file (search for how)

[3] Install awscli - instructions are here <https://docs.aws.amazon.com/cli/latest/userguide/installing.html>

pip install awscli --upgrade --user

if you have any issues, sometimes you also have to install it using pip3

[4] Configure aws using aws configure **NOTE** use your own credentials!

<https://docs.aws.amazon.com/cli/latest/userguide/cli-chap-getting-started.html>

aws configure

WS Access Key ID [None]: AKIAIOSFODNN7EXAMPLE

AWS Secret Access Key [None]: wJalrXUtnFEMI/K7MDENG/bPxRfiCYEXAMPLEKEY

Default region name [None]: ap-southeast-2

Default output format [None]: json

**NOTE** if you have any issues with clipboard copy paste from your machine to the VM, you have to enable clipboard copying from the Devices menu of VirtualBox. You will need to run and install the VirtualBox Guest Additions first from the same menu (On 18.04 you need to install build tools first sudo apt install linux-headers-$(uname -r) build-essential dkms

)

[5] Install boto3

pip3 install boto3

You are now set!!

**NOTE** Choice of editor on Ubuntu. My favourite editor is Emacs – Vi is already installed – you have to install Vim or Emacs if you need it. You can also install other editors – just be careful of memory

## Exploring and testing the environment

[1] Test the aws environment by running:

aws ec2 describe-regions –output table

[2] Test the python environment

python3

>>> import boto3

>>> ec2 = boto3.client(‘ec2’)

>>> response = ec2.describe\_regions()

>>> print(response)

This will create an un-tabulated response.

[3] Put this code into a python file and tabulate the print to have 2 columns with Endpoint and RegionName

[4] Spend some time looking at VirtualBox and especially the configuration for its CPU, RAM, Disk, Network

## Submission and Quiz

[1] Submit your python script

[2] Take the quiz

[1] How many regions does describe-regions list?

[A] 20

[B] 18

[C] 15

[D] 10

[2] VirtualBox by default configures how much base memory for a Linux VM

[A] 1024 MB

[B] 2048 MB

[C] 512 MB

[D] 1536 MB