Project:

To setup virtual application development environment with Docker Containers on AWS Cloud.

Tools Used:

AWS Free Tier
Ubuntu 18.04 Instance
Docker CE
Git, Vim, Build Essential, Apache Tomcat, Java

Note:

The pre-requisites and testing for the project has been made manually by running the commands and installing them individually on a separate Ubuntu machine post that it has been implemented through Docker in a new Ubuntu instance.

Flow of Execution:

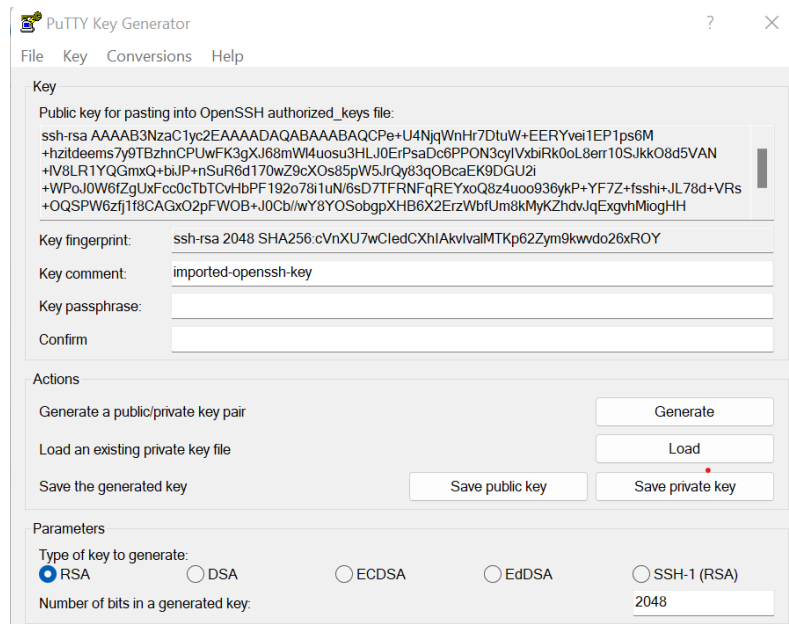1. First setup an AWS Free Tier account to deploy the Ubuntu Instance
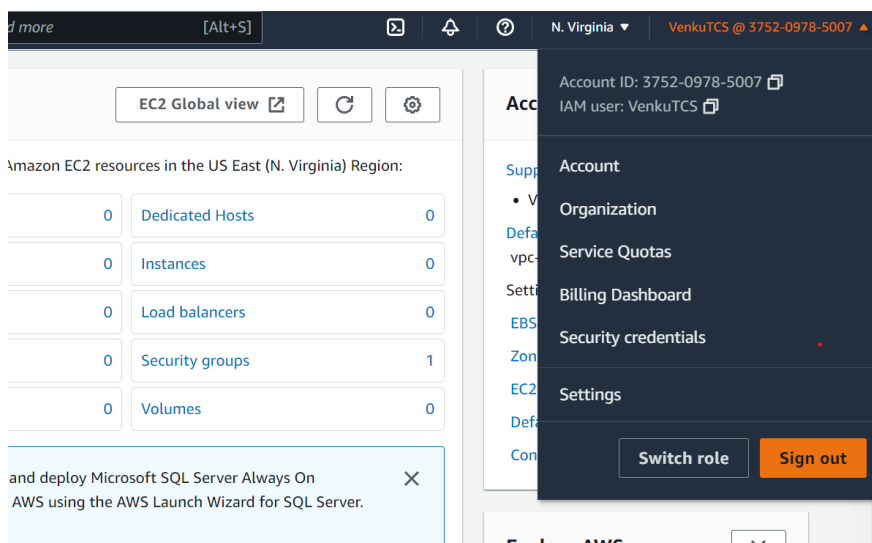
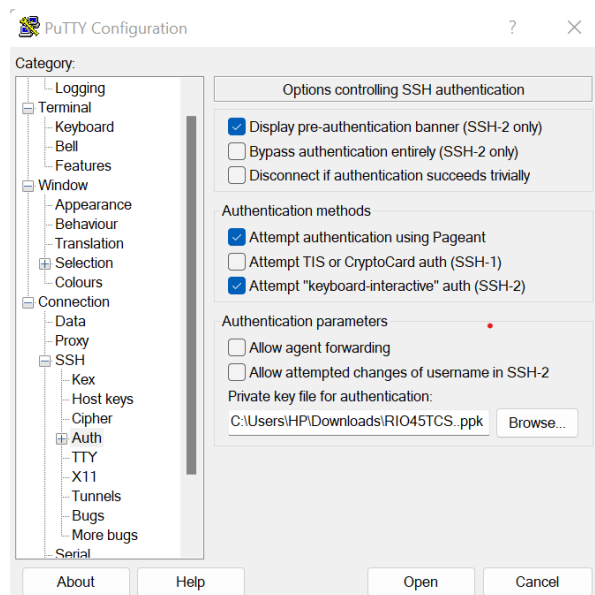2. Deploy an Ubuntu 18.04 instance on AWS cloud using EC2 Service.
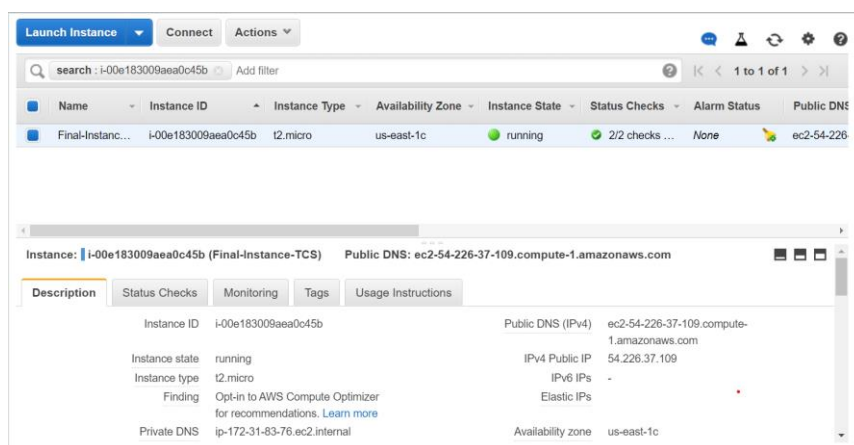
3. Login to the Ubuntu Instance

Setting up the ppk using the Puttygen

Login using the putty through and by placing the ppk file in Auth section

4. Install Docker on the ubuntu through the Official Docker Documentation with the available commands or through convenience script.

```
curl -fsSL https://get.docker.com -o get-docker.sh

$ sudo sh get-docker.sh
```

root@ip-172-31-83-76:~/Docker# docker --version
Docker version 20.10.17, build 100c701   ----------------*Successfully installed Docker*

5. **Creating the Docker file to install Git, Vim, Build- essential , JDK and Apache Tomcat.**

Docker File:

```
FROM ubuntu:18.04
RUN apt-get update
RUN apt-get install git -y
RUN apt-get install vim -y
RUN apt-get install build-essential -y
RUN apt-get install default-jdk -y
RUN apt-get install default-jre -y
RUN apt-get -y update && apt-get -y upgrade
RUN apt-get -y install wget
RUN mkdir /usr/local/tomcat
RUN wget http://dlcdn.apache.org/tomcat/tomcat-8/v8.5.81/bin/apache-tomcat-8.5.81.tar.gz    -O
/tmp/tomcat.tar.gz
RUN cd /tmp && tar xvfz tomcat.tar.gz
RUN cp -Rv /tmp/apache-tomcat-8.5.81/* /usr/local/tomcat/
EXPOSE 8080
CMD /usr/local/tomcat/bin/catalina.sh run
```

6. **Creating an Image of the above Docker file through the Docker Build named tcsfinal through**
   docker build -t tcsfinal .

   Verifying through docker images command.

```
root@ip-172-31-83-76:~/Docker# docker images
REPOSITORY    TAG       IMAGE ID       CREATED           SIZE
tcsfinal      latest    802c5c0cffc1   About a minute ago   1.06GB
ubuntu        18.04     8d5df41c547b   13 hours ago       63.1MB
```

7. **Creating a container through the image tcsfinal through docker run command and exposing the**
   host port 8080 to container port 8080

```
root@ip-172-31-83-76:~/Docker# docker run -d -p 8080:8080 tcsfinal
949c79c04de2e4db8ea5b0224bf06f57d4d253188de3043bed02ff63e3aeb3c5
```

Verifying   through   docker   ps   command.

```
root@ip-172-31-83-76:~/Docker# docker ps
CONTAINER ID   IMAGE      COMMAND           CREATED       STATUS        PORTS                                        NAMES
949c79c04de2   tcsfinal   "/bin/sh -c '/usr/lo…"   2 minutes ago   Up 2 minutes   0.0.0.0:8080->8080/tcp, :::8080->8080/tcp   modest_elion
```

**Now checking whether the Apache Tomcat is accessible or not through the link
http://54.226.37.109:8080/**