Parth Panara

CS643 – Cloud Computing

Programming Assignment: 1

Instruction to set the Cloud Environment and run the App

- ➔ I use the JDK and MAVEN framework in conjunction with the VS Code IDE to generate code. Therefore, I have already installed these tools on my local machine to facilitate code compilation.
- ➔ Now, following are the steps to set the AWS EC2 instances in the cloud environment.
    - Login AWS academy student login by following this https://www.awsacademy.com/vforcesite/LMS_Login
    - Click on Courses -> Modules -> Leaner Lab and start Lab. After few seconds, there will be a green color circle pops up which is attached with AWS. So, click on it to connect with AWS Management Console.
    - === EC2 Setup [Follow the below steps for both EC2_A & EC2_B instance]
    - Click on Services -> EC2
    - Click on Instances under the Instances section and select Launch instances.
        - Instance properties: Name/ tags : EC2_A/ EC2_B
        - Amazon Machine Image: Amazon Linux 2023 AMI (Free tier eligible)
        - Architecture : 64-bit (x86)
        - Instance type: t2.micro (Free tier eligible)
        - Key pair (login): I create a key named “cs643_assign1” a type of “RSA” along with a Private Key file format “.pem”. Click on create Key, It’ll start to download. Put this file in appropriate location in local machine folder. Make sure for both instances, same created key-pair will be used.
        - Network settings: click on “create security group” under the “firewall (security group)” and check the box of “allow SSH Traffic from” by selecting “My Ip”(xx.xxx.xx/xx).
        - The instance configuration is set, so review it under the “summary” and click on “Launch Instance”.
        - In the Instance status, first it shows the pending. After a few seconds, It will show status as “Running” and passes with ‘Status check’. (Note: If you don’t see the current status in a few seconds, do refresh the web page).
        - Thus, both instances are set and running in the AWS.
- Now to make the easier process to run the App trough local command prompt, I open two local terminals (Command prompts) one by one in my local machine. (I can call them terminal-1 and terminal-2 for understanding)

    - First, I connect that two EC2 instances though my local terminal. To do that run the command in the terminal-1: ssh -i “path to file ~/ cs643_assign1.pem” ec2-user@<PUBLIC_IPV4_ADDRESS_of _EC2_A INSTANCE >.
    - In the terminal-2: ssh -i “path to file ~/ cs643_assign1.pem” ec2-user@<PUBLIC_IPV4_ADDRESS_of _EC2_B INSTANCE >.
    - Configure “yes”. At this point, both EC2 instances are connected with my local machine.
        - Now, Do the following steps in the terminal-1 and as well as in terminal-2,

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- First, I install java JDK on instances, so let's see which JDK's are available with the "Amazon Linux 2023 AMI". To do that run the command,
  $ yum list java*
- From the list, I choose the "java-11-amazon-corretto-devel.x86_64" to install. Because my code is generated in JDK 11. To do that run the code,
- $ sudo yum install java-11-amazon-corretto-devel.x86_64
- Upon successful install, Java can be checked in the instances by following,
- $ java –version
- To config java, run $ sudo /usr/sbin/alternatives --config java
- Upon running above command, it asks "Enter to keep the current selection [+], or type selection number" So, just hit ENTER.
- Next step is to insert AWS credentials in the both EC2 instances, So run the following commands,
- $ mkdir .aws
- $ touch .aws/credentials
- $ vi .aws/credentials
- At this step, the credential file pops up. Now, credentials will be copied from the vocareum page of the module, click on "AWS Details". This gives the current session's AWS key id, secret key, and session token. So I will copy the AWS CLI:

  ```
  [default]
  aws_access_key_id=ASIAXP7MFV7G66GH2HO5
  aws_secret_access_key=3skrrFhe53PpiRctsB6IQwmXleMqvgCulkcRlV6H
  aws_session_token=FwoGZXIvYXdzEIb//////////wEaDIzVzvCKBZ3/bdCvKiK/Ae6/yh8
  gl6Yo/sFmHqlb60R1w5jUp6jvUPDuOS8/NJUQ2b6tUzQJf4TQB5p7ouUI8WycgWHQIp
  ro4KkTa03Wg9L1PdWhX0OlOjT4vNVOqQYZ504rLp0h4aDsJ065dh0YRXvu0UgATlFpg
  8GeQyC305R6qNbTe3lD1m1qcNwkyRCpXNCnqKv1hlN8eb7NTaGWB2WJtcQ904Egw
  8rpZu8ELgC+LZi9QLQu9jKhMyfQyFyBRzEv61PDfLpmEe1KcAVzKJSZz6QGMi3bt4nO4
  86ngRieTbrJRM1E2fLXi6OOFw1/XI5JOGEnZnXObE0wv9N9JmOL4FM=
  ```

  - To work on that opened credential file, hit key "I" from the keyboard, once it shows "-INSERT-" mode is on, then after paste these credentials and hit key "ESC", (just double check at this point that the correct credentials are successfully pasted in the file). Now, type command "**:wq**" to save and exit from the credential file.
- I have already my app code pushed in my GitHub Account, so I install git by following.
- $ sudo /usr/bin/dnf install git
- To retrieve my app's GitHub repository, run the following command,
- $ git clone https://github.com/parth-panara/cloudComputing_project1.git
- Now, It's time to run the app, following are the steps.

- In the termainal-2 where I run EC2_B INSTANCE: I run this code,
- $ java -jar cloudComputing_project1/AutomobileText_EC2B/AutomobileText_EC2B.jar

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- Note that upon entering above command, it will simply wait for the EC2_A instance to run, so in the terminal-1, where I run the code for EC2_A INSTANCE,
- $ java -jar cloudComputing_project1/AutomobileDetect_EC2A/AutomobileDetect_EC2A.jar
- Finally, it can be seen that both apps are running parallel. The EC2_APP is loading the images in AWS S3 bucket. Through AWS sqs service, EC2_A sends the indexes of image to the EC2_B instance where we can see that it collects the images including detecting the text of car.
- The final output saves in the text file which I named “myAppoutput.txt”.
- Run the following command to see the .txt file under the EC2_B directory.
- $ cat myAppoutput.txt

Thank you!