CS 643 - Cloud Computing
Programming Assignment 1

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System Configurations:-
MACbook- Pro
JAVA version :- java version "1.8.0_141"

Cloud Environment Setup Steps:-

1. Create an AWS Educate Starter Account.

        Goto AWS educate page and create an AWS educate Starter account with njit email account.

2. Create an EC2 instance.
   ● Click on Launch Instance
   ● Select from free tier versions of available VM - "Amazon Linux 2 AMI (HVM), SSD Volume Type - 64-bit (x86)"
   ● Select instance type as t2.micro (free tier) EBS Only
   ● Click on "Review and Launch"
   ● Click on "Edit Security Group" and by clicking on "Add rule" open 3 ports, one for each of SSH, HTTP and HTTPS.
   ● In Source column for each type, select "MYIP"
   ● Click on "Launch"

3. Create the IAM Role.
   ● Provide EC2 with full access to the S3, SQS services and AWSRekognition .

4. Create SQS FIFO queue
   ● Open "Amazon SQS" page from Services
   ● Select FIFO queue and give proper name as <queuname>.fifo
   ● Set visibility time as 30 sec and Enable Content BAsed Duplication
   ● Set polling duration as 50 sec and Maximum Message Count as 100 in "Send and Receive Messages tab"
   ● *** Important - Make sure to create a new queue before running the application every time to ensure there are no stary messages in the queue , otherwise it might block new messages and the receiver might just hang.

5. Generate Key Pair. Create ".pem" type file, Enter your file-name. Click on Create Key Pair.

6. SSH into EC2 instance using terminal

   - Select and start both EC2 instance from console
   - Select one by one both ec2 instance inclonsole, click on "Connect" to get ssh command
   - Copy paste and run the ssh command in terminal to connect to particular EC2 instance where .pem file is located
   - Need to download java 1.8 on both instance
   - Create files ~/.aws/config and ~/.aws/credentials and copy paste AWS credentials into file and save it

7. Create S3 bucket and upload jar files
   - Open "Amazon S3" page from Services
   - Click on "Create bucket"
   - Specify proper bucket name and with default settings , click on "Create Bucket" again
   - Click on "Add files" to add jar files from your local computer and then click on "Upload"
   - Go to terminal and run "aws sr cp <S3 URI for jar file> . in both terminal's ec2 instances

8. In both terminal windows, where EC2 instances are running, run below commands to start sender and receiver:-

   "java -jar Car_recog_ard.jar "

   "java -jar Tar_recog_ard.jar "

9. Output:-

   It should give below output:-

```
^X^C[ec2-user@ip-172-31-53-196 car_testing]$ java -jar CarRecoga13.jar
Starting Car Recognition at EC2 instance
Sqs FIFO queue :: https://sqs.us-east-1.amazonaws.com/333206416330/que3.f
ifo
Reading images from s3 bucket:- njit-cs-643

Car detected in the image:-  1.jpg with confidence value of:- 99.32135
Pushing it to the queue

Car detected in the image:-  2.jpg with confidence value of:- 99.96136
Pushing it to the queue

Car detected in the image:-  3.jpg with confidence value of:- 84.75858
Pushing it to the queue

Car detected in the image:-  4.jpg with confidence value of:- 99.96932
Pushing it to the queue

Car detected in the image:-  5.jpg with confidence value of:- 99.9363
Pushing it to the queue

Car detected in the image:-  6.jpg with confidence value of:- 99.00655
Pushing it to the queue

Car detected in the image:-  7.jpg with confidence value of:- 99.892525
Pushing it to the queue

---Done processing all 10 images from S3 bucket.
---Pushing -1 to the queue.
*** Car Recoginiton Process Terminated ***
[ec2-user@ip-172-31-53-196 car_testing]$
```

```
[ec2-user@ip-172-31-48-197 text_testing]$ java -jar TextReco_final2.jar
Starting TextRecognition at EC2 instance
Sqs FIFO queue :: https://sqs.us-east-1.amazonaws.com/333206416330/que3.fifo
Reading images from s3 bucket:- njit-cs-643

Detected Text in image:- 1.jpg

Detected Text in image:- 3.jpg

Detected Text in image:- 4.jpg

Detected Text in image:- 7.jpg

-1 recieved from Sender

*** Text Detection Process Terminated ***
[ec2-user@ip-172-31-48-197 text_testing]$
```