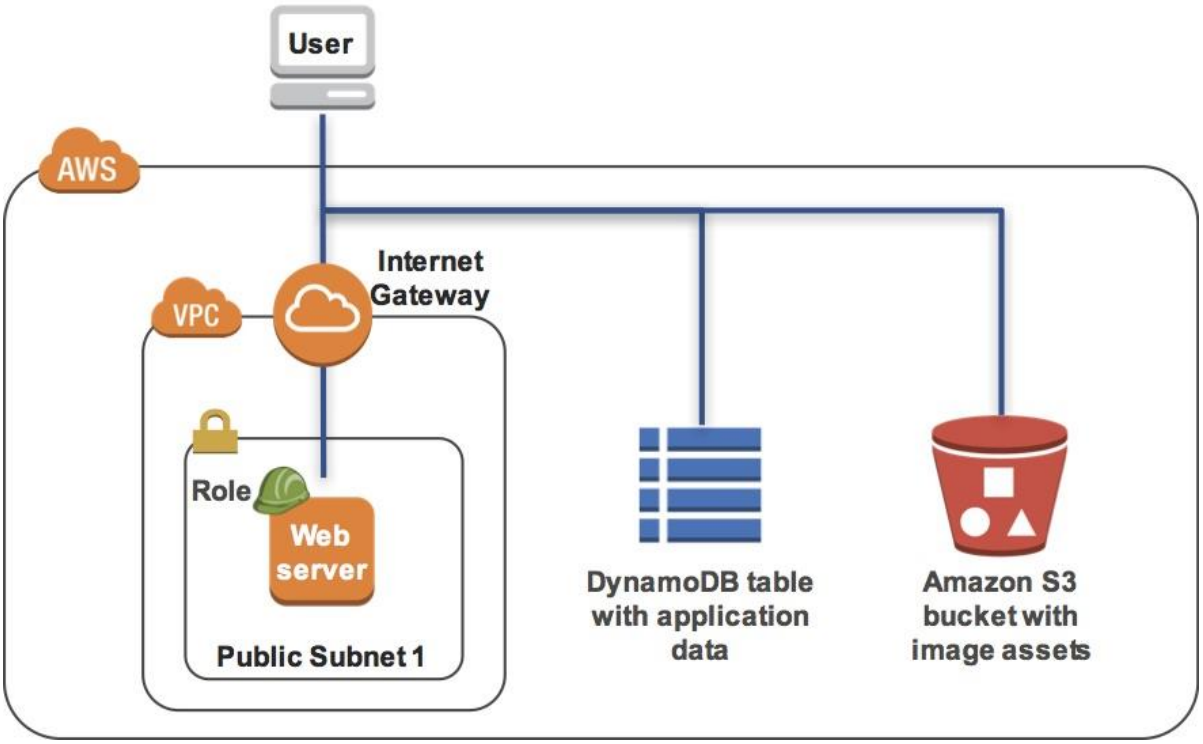
Please use your free tier AWS account to complete this lab

In this lab we will be deploying a stateless web application in single EC2 instance using 'User data'

Scenario

- We will use multiple AWS services to deploy a web application in this lab:
- We will have a PHP web application hosted on an **Amazon EC2** instance.
- We will store the data in an **Amazon DynamoDB** table
- An **Amazon S3 bucket** will be used to serve the static content.

The deployment would look like this –



Activity 1: Create an IAM Role

Let us create an **IAM Role** for EC2 instance with the name "MyWebServerRole" and give it "AmazonS3FullAccess" and "AmazonDynamoDBFullAccess" permission to access Amazon S3 and Amazon DynamoDB.

Activity 2: Create an Amazon S3 Bucket

Let us create an S3 bucket with a name that has a prefix as "static-". This bucket will contain the static data for your application.

Activity 3: Create an Amazon DynamoDB table

Let us now create a DynamoDB table with the name as "AWS-Services". Mention "Category" in the Partition Key field and Add sort key as "Name".

Activity 4: Launch an Amazon EC2 Instance

Please launch an EC2 instance with following settings –

AMI	Amazon Linux AMI (Do not select Amazon Linux 2)
Instance Type	t2.micro
Network	Default VPC
Subnet	No Preference
Auto-assign Public IP	Enable
IAM role	MyWebServerRole

Confirm that all the above settings have correctly selected otherwise the web application will not work correctly.

Click Advanced Details and paste the following script

We will use a script that automatically loads and configures the web application. This type of script would normally be maintained in a Source Code Repository such as git/Amazon CodeCommit so that it can be correctly stored and version-tracked.

It is recommended that you copy paste the script in a notepad/text editor to ensure the right formatting before putting it in User data. Or open this lab document in Adobe reader rather than the browser.

```
#!/bin/bash
# Install Apache Web Server and PHP
yum remove -y httpd php
yum install -y httpd24 php56
# Download Lab files
wget https://us-west-2-aws-training.s3.amazonaws.com/awsu-ilt/AWS-100-ARC/v5.2/lab-1-
webapp/scripts/lab1src.zip
unzip lab1src.zip -d /tmp/
mv /tmp/lab1src/*.php /var/www/html/
# Download and install the AWS SDK for PHP
wget https://github.com/aws/aws-sdk-php/releases/download/3.15.9/aws.zip
unzip aws -d /var/www/html
# Determine Region
AZ=`curl --silent http://169.254.169.254/latest/meta-data/placement/availability-zone/`
REGION=${AZ::-1}
# Copy files to Amazon S3 bucket with name static-*
BUCKET=`aws s3api list-buckets --query "Buckets[?starts_with(Name, 'static-')].Name | [0]" --
output text`
aws s3 cp /tmp/lab1src/jquery/ s3://$BUCKET/jquery/ --recursive --acl public-read --region
$REGION
aws s3 cp /tmp/lab1src/images/ s3://$BUCKET/images/ --recursive --acl public-read --region
$REGION
aws s3 ls s3://$BUCKET/ --region $REGION --recursive
# Configure Region and Bucket to use
sed -i "2s/%region%/$REGION/g" /var/www/html/*.php
sed -i "3s/%bucket%/$BUCKET/g" /var/www/html/*.php
# Copy data into DynamoDB table
aws dynamodb batch-write-item --request-items file:///tmp/lab1src/scripts/services1.json --
region $REGION
aws dynamodb batch-write-item --request-items file:///tmp/lab1src/scripts/services2.json --
region $REGION
aws dynamodb batch-write-item --request-items file:///tmp/lab1src/scripts/services3.json --
region $REGION
# Turn on web server
chkconfig httpd on
service httpd start
```

What will this script do?

- Install Apache web server (httpd) and the PHP language
- Download and unzip a file containing scripts for the web application
- Download and install the AWS SDK for PHP
- Copy files to the Amazon S3 bucket that has a name starting with “static-”
- Copy data into the DynamoDB table
- Turn on the web server

Storage – add no additional volumes.

Tags – define as per your wish or leave blank

Security Group – Name it as “MyWebSG”, allow traffic for ssh and http from anywhere.

Review and Launch with a key pair created for yourself.

Your instance should now be ready for you to access in some time!

Activity 6: Verify what is achieved

Enter the public IP of the EC2 instance in a browser tab, the web application should appear.

Please check the content populated inside the s3 bucket you created and items in your DynamoDB table.

The list of services is being served from the **DynamoDB table** and service icons are being served from the **Amazon S3 bucket** that you have created.

Right-click an icon and choose "Copy image address", notice the url?

The items in the DynamoDB table were loaded by the User Data script that ran when your instance started.

Take two snapshots of your browser -

1- Of your EC2 dashboard showing the IP address of your EC2 instance.
2- Of your application running similar to the last picture above.

You can upload these in git attach them while submitting this lab completion on TopGear.

Common troubleshooting steps if the webpage does not show as intended.

- Check that the AMI attached is not Amazon Linux 2.
- Check that the role has both permission assigned as instructed.
- Check that the bucket name is starting with “static-“
- Check that the name of DynamoDB table is “AWS-Services”
- Check that the subnet in which you have launched the server is public and the security group associated has port 80 accessible from anywhere.

Lab Complete.