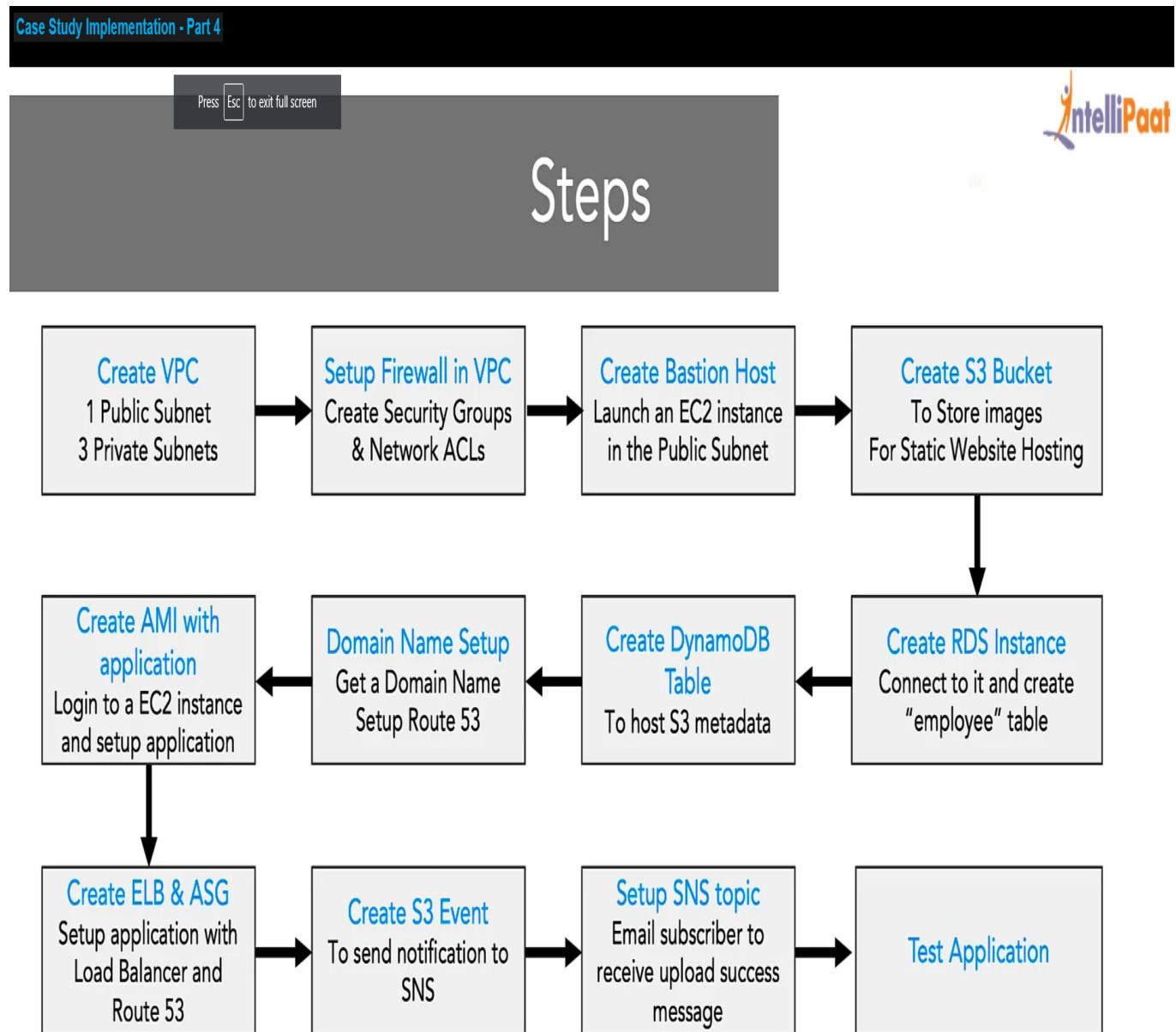
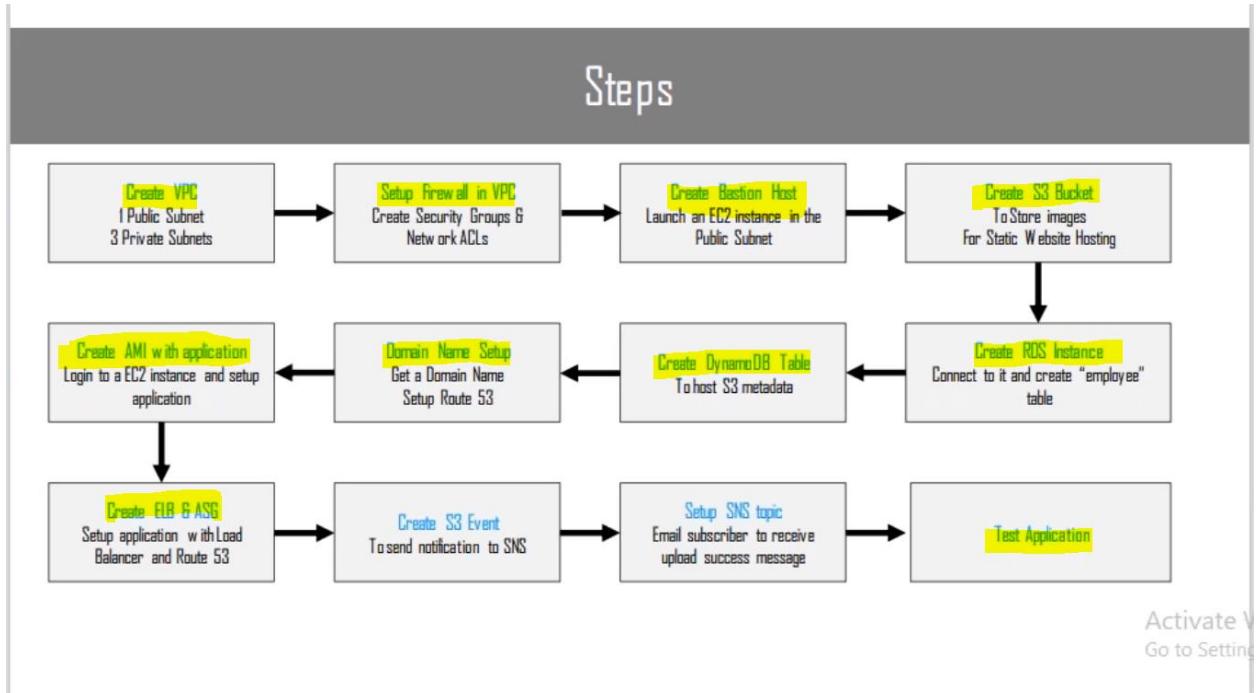


RDS

Project Plan





Employee Database

GET EMPLOYEE INFORMATION

Employee ID:

First Name:

Last Name:

Primary Skills:

Location:

Image: No file chosen

UPDATE DATABASE

[About Us](#)

Activate Windows
Go to Settings to activate Windows.

Using Oregon us-west-2

****We will create 2 public subnet and 1 private subnet

2 public subnet needed due to using Application LoadBalancer for better availability

Private-01 subnet considered as **db** subnet

Public-01 and public-02 is considered as **web** subnet

VPC create Name : project-vpc IPV4 CIDR block 10.10.0.0/16

Subnet Create Name: public-01 ipv4 CIDR block 10.10.1.0/24 AZ-2a
public-02 ipv4 CIDR block 10.10.2.0/24 AZ-2b
private-01 ipv4 CIDR block 10.10.3.0/24 AZ-2a

IGW –Attached to project-vpc

NAT Gateway Name: project-NAT select Subnet public-01
ElasticIP

Route Table : **public-RT** select project-vpc

>Edit route : 0.0.0.0/0 **igw**

>Edit subnet association –Associates 2 public subnet

: **private-RT** select project-vpc

>Edit subnet association-Associate 1 private subnet

>Edit route :0.0.0.0/0 **project-NAT**

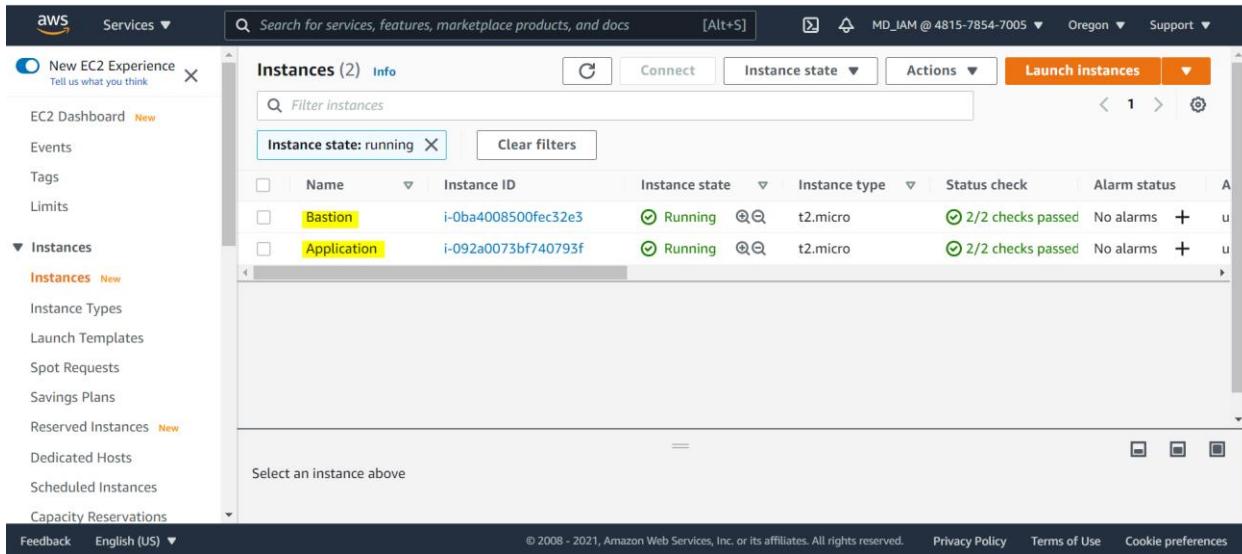
Create Security Group:

Name : project-sg-2703 All traffic anywhere 0.0.0.0/0

Create 2 Instances : 1)BastionHost 2)Application

Create BastionHost select public-01 key = project01.pem

Create Application-Instance Select VPC-project-01 Select Subnet –
private-01



The screenshot shows the AWS EC2 Instances page with the following details:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
Bastion	i-0ba4008500fec32e3	Running	t2.micro	2/2 checks passed	No alarms
Application	i-092a0073bf740793f	Running	t2.micro	2/2 checks passed	No alarms

S3

Create S3 Bucket Bucket Name : employees3

RDS

Create RDS Select MySQL DB instance identifier : project-01 user:admin pass: admin123 Select project-vpc Public access : No

Select project01-SG Select subnet group :private or create new

AZ-2a Additional Config :Database port:3306

****Additional Config:**

*Database Options> Initial database name:**project01***

*****This steps is very important if you skip it , database name will not appear in the server.**

RDS Endpoint: copy RDS endpoint

Putty/GitBash

Open GitBash: copy BastionHost SSH connection

BashionHost is connected>\$ sudo apt-get update

Ls

Now need to connect Application-Instance

FileZilla

Open FileZilla and paste BastionHost public IP and

Edit SFTP add key **project01key.pem** here and save

**if any fatal error shown they remove all key uploaded and redo again

Go back 1st page

Enter public IP User: Ubuntu Password : Port: 22 then Click

Quick connect after connect Drag key file from left side to the Ubuntu folder at the rightside. ** *project01keyubuntu.pem key file will be copied in the BastionHost server.*

BashionHost is connected>\$ls

project01keyubuntu.pem (out put)

BashionHost is connected>\$chmod 400 project01key.pem

Now copy RDS endpoints and paste below

**BashionHost is connected>\$ ssh -I project01keyubuntu.pem
ubuntu@appinstances private IP**

h

BastionHost\$
ssh -i project01keyubuntu.pem ubuntu@10.10.3.138

Application-instances Connected successfully

ubuntu@10.10.3.138\$ sudo apt-get update

ubuntu@10.10.3.138\$ sudo apt-get install git

ubuntu@10.10.3.138\$

git clone <http://github.com/Azharbhaigit/aws-code.git>

ubuntu@10.10.3.138\$ ls

aws-code

ubuntu@10.10.3.138\$ cd aws-code

ubuntu@10.10.3.138:~/aws-code \$ ls

EmpApp.py README.md _pycache_ config.py templates

ubuntu@10.10.3.138:~/aws-code \$ sudo nano EmpApp.py

*eDIT Region with correct region you are working

Edit Region east to west-2

```
ubuntu@ip-10-10-3-148: ~/aws-code
GNU nano 2.9.3                                         EmpApp.py

    else:
        s3_location = '-' + s3_location

    object_url = "https://s3{0}.amazonaws.com/{1}/{2}".format(
        s3_location,
        custombucket,
        emp_image_file_name_in_s3)

    # Save image file metadata in DynamoDB #
    print('Uploading to S3 success... saving metadata in dynamodb...')

try:
    dynamodb_client = boto3.client('dynamodb', region_name='us-west-2')
    dynamodb_client.put_item(
        TableName='employee_image_table',
        Item={
            'empid': {
                'N': emp_id
            },
            'image_url': {
                'S': object_url
            }
        }
    )
except Exception as e:
    print(e)

AG Get Help      A0 Write Out     AW Where Is      AK Cut Text      AJ Justify      AC Cur Pos      M-U Undo
AX Exit         AR Read File    AW Replace     AU Uncut Text    AT To Linter    A_ Go To Line   M-E Redo
```

UPPDATE
ctrl+X
Y

Ctrl X yes <>

[ubuntu@10.10.3.138:~/aws-code \\$sudo nano config.py](#)

Edit

```
ubuntu@ip-10-10-3-148: ~/aws-code
GNU nano 2.9.3                                         config.py
customhost = "project.ca2mczxktg91.us-west-2.rds.amazonaws.com" RDS ENDPOINT
customuser = "admin"
custompass = "admin123"
customdb = "Project"
custombucket = "emp-bucket1"
customregion = "us-west-2"

AG Get Help      A0 Write Out     AW Where Is      AK Cut Text      AJ Justify      AC Cur Pos      M-U Undo
AX Exit         AR Read File    AW Replace     AU Uncut Text    AT To Linter    A_ Go To Line   M-E Redo
```

CtrlX Y <>

```
ubuntu@10.10.3.138:~/aws-code $ sudo apt-get install mysql-client
```

```
ubuntu@10.10.3.138:~/aws-code $ mysql -h project.ca2mczxk1g91.us-west-2.rds.amazonaws.com -u admin -p
```

password : admin123

.

mysql database will be connected Successfully

```
Mysql>show databases;
```

The screenshot shows a terminal window with the following content:

```
ubuntu@ip-10-10-3-148: ~$ Setting up mysql-client (5.7.33-0ubuntu0.18.04.1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for libc-bin (2.27-3ubuntu1.4) ...
ubuntu@ip-10-10-3-148: ~$ mysql -h project.ca2mczxk1g91.us-west-2.rds.amazonaws.com -u admin -p
Enter password: admin123
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.20 Source distribution

Copyright (c) 2000, 2021, Oracle and/or its affiliates.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show database
      -> ;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL
server version for the right syntax to use near 'database' at line 1
mysql> show database;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL
server version for the right syntax to use near 'database' at line 1
mysql> show databases;
+-----+
| Database |
+-----+
| Project  |
| information_schema |
| mysql    |
| performance_schema |
+-----+
```

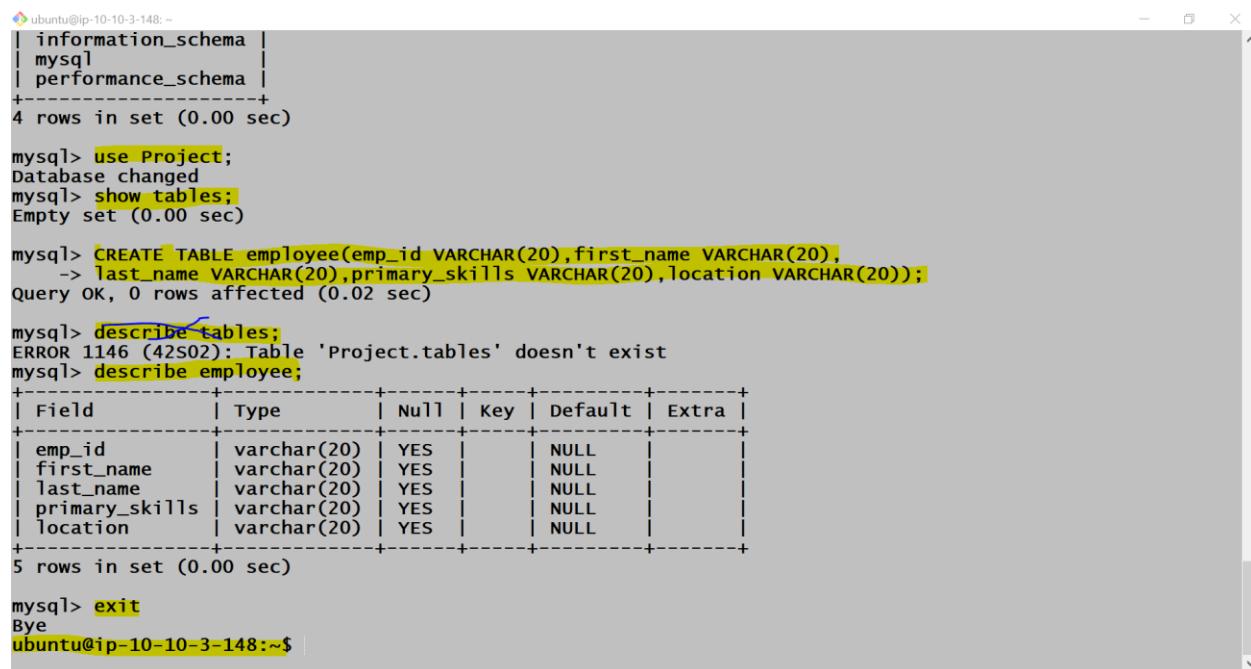
A yellow box highlights the command `mysql -h project.ca2mczxk1g91.us-west-2.rds.amazonaws.com -u admin -p`. A blue annotation `RDS endpoint` points to the highlighted command. Another yellow box highlights the database name `Project` in the output of the `show databases` command.

```
Mysql>use project;
```

```
Mysql>show tables;
```

```
Mysql>CREATE TABLE employee (emp_id  
VARCHAR(20), FIRST_NAME VARCHAR(20), LAST_NAME  
VARCHAR(20), PRIMARY_SKILLS VARCHAR(20), LOCATION  
VARCHAR(20));
```

```
Mysql>describe employee;
```



```
ubuntu@ip-10-10-3-148: ~  
| information_schema |  
| mysql |  
| performance_schema |  
+-----+  
4 rows in set (0.00 sec)  
  
mysql> use Project;  
Database changed  
mysql> show tables;  
Empty set (0.00 sec)  
  
mysql> CREATE TABLE employee(emp_id VARCHAR(20),first_name VARCHAR(20),  
-> last_name VARCHAR(20),primary_skills VARCHAR(20),location VARCHAR(20));  
Query OK, 0 rows affected (0.02 sec)  
  
mysql> describe tables;  
ERROR 1146 (42S02): Table 'Project.tables' doesn't exist  
mysql> describe employee;  
+-----+-----+-----+-----+-----+-----+  
| Field | Type | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| emp_id | varchar(20) | YES | | NULL | |  
| first_name | varchar(20) | YES | | NULL | |  
| last_name | varchar(20) | YES | | NULL | |  
| primary_skills | varchar(20) | YES | | NULL | |  
| location | varchar(20) | YES | | NULL | |  
+-----+-----+-----+-----+-----+-----+  
5 rows in set (0.00 sec)  
  
mysql> exit  
Bye  
ubuntu@ip-10-10-3-148:~$
```

Create DynamoDB table (*it will store only meta data)

TableName= employee_image_table

Column name = empid number

Creating a Application Load Balancer

Name: project01-alb

Select VPC : project-vpc

Select subnet:

2a -public-01

2b -public-02

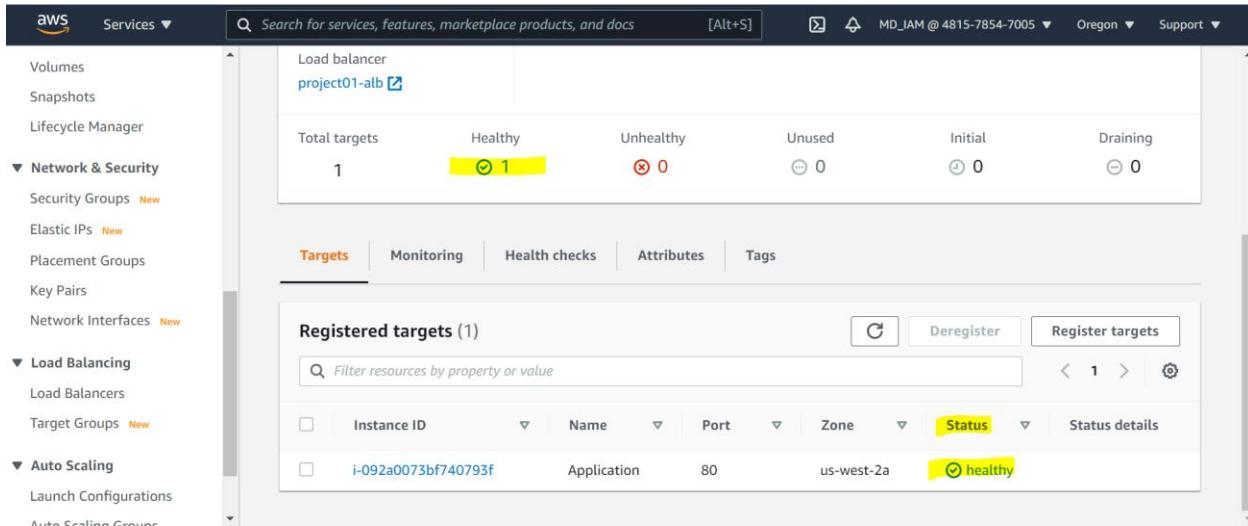
Select Security Group : project01

Target Group Name: project01-ntg

Add to Register : Select Application Instance click next review

Create a Application load balancer

The screenshot shows the AWS CloudFormation console interface. On the left, there's a navigation sidebar with links like 'Services', 'Search for services, features, marketplace products, and docs', 'MD_IAM @ 4815-7854-7005', 'Oregon', and 'Support'. The main area has a search bar at the top. Below it, a table lists a single stack named 'project01-alb'. The table columns include 'Name', 'DNS name', 'State', 'VPC ID', and 'Availability Zones'. The stack details show: Scheme: internet-facing, IP address type: ipv4, VPC: vpc-089156d5c4ead0782, Availability Zones: subnet-0804086a907409c75 - us-west-2a, subnet-0a08c2ae89aab8ac4 - us-west-2b. At the bottom, there are buttons for 'Edit IP address type', 'Edit subnets', and 'Edit VPC'.



**Come out from aws-code folder then
Install below file**

ubuntu@ip appInstance \$ *sudo apt-get install python3*

\$ *sudo apt-get install python3-flask*

\$ *sudo apt-get install python3-pymysql*

\$ *sudo apt-get install python3-boto3*

```
ubuntu@ip-10-10-3-63:~$ sudo python3 EmpApp.py
python3: can't open file 'EmpApp.py': [Errno 2] No such file or directory
ubuntu@ip-10-10-3-63:~$ sudo apt-get install python3
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3 is already the newest version (3.6.7-1~18.04).
0 upgraded, 0 newly installed, 0 to remove and 28 not upgraded.
ubuntu@ip-10-10-3-63:~$ sudo apt-get install python3-flask
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3-flask is already the newest version (0.12.2-3ubuntu0.1).
0 upgraded, 0 newly installed, 0 to remove and 28 not upgraded.
ubuntu@ip-10-10-3-63:~$ sudo apt-get install python3-pymysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  python-pymysql-doc
The following NEW packages will be installed:
  python3-pymysql
0 upgraded, 1 newly installed, 0 to remove and 28 not upgraded.
Need to get 60.1 kB of additional disk space.
After this operation, 323 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/universe amd64 python3-pymysql all 0.8.0-1 [60.1 kB]
Fetched 60.1 kB in 0s (2337 kB/s)
Selecting previously unselected package python3-pymysql.
(Reading database ... 59505 files and directories currently installed.)
Preparing to unpack .../python3-pymysql_0.8.0-1_all.deb ...
Unpacking python3-pymysql (0.8.0-1) ...
```



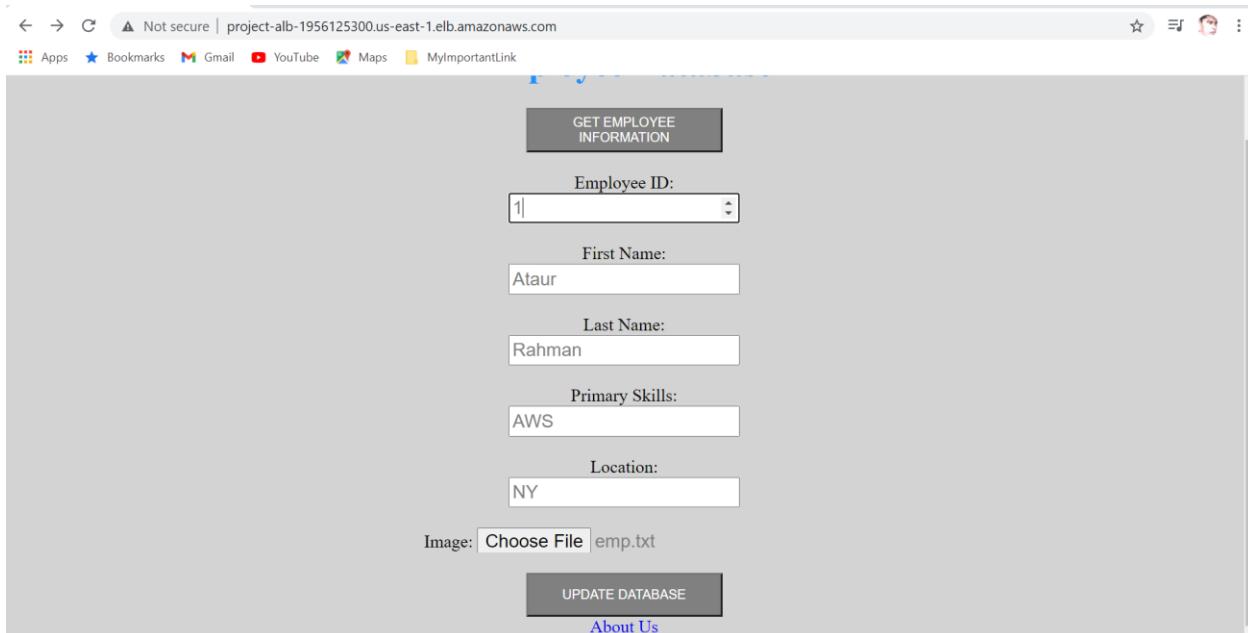
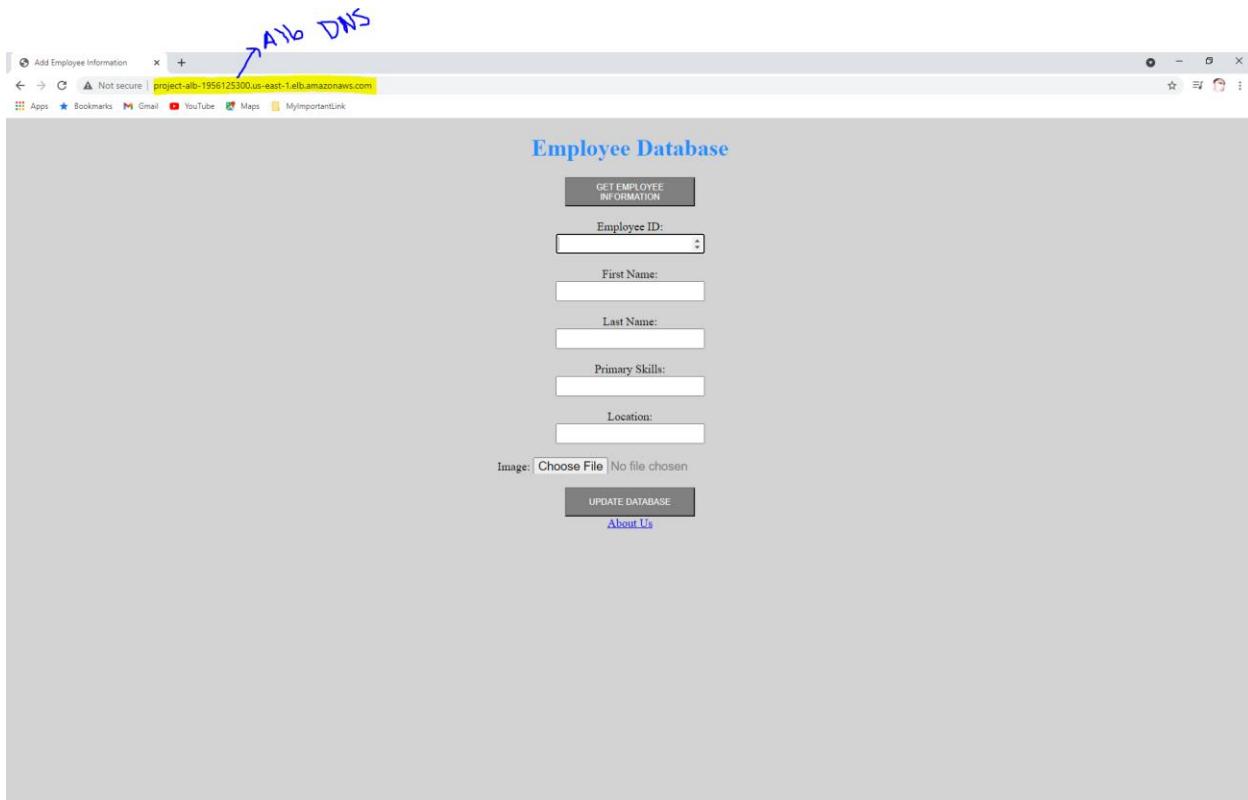
When you see above error code 502 means your **EmpApp.py** is not Running.

TO RUN EmpApp.py

ubuntu@ip appInstance :/aws-code\$ ***sudo python3 EmpApp.py***

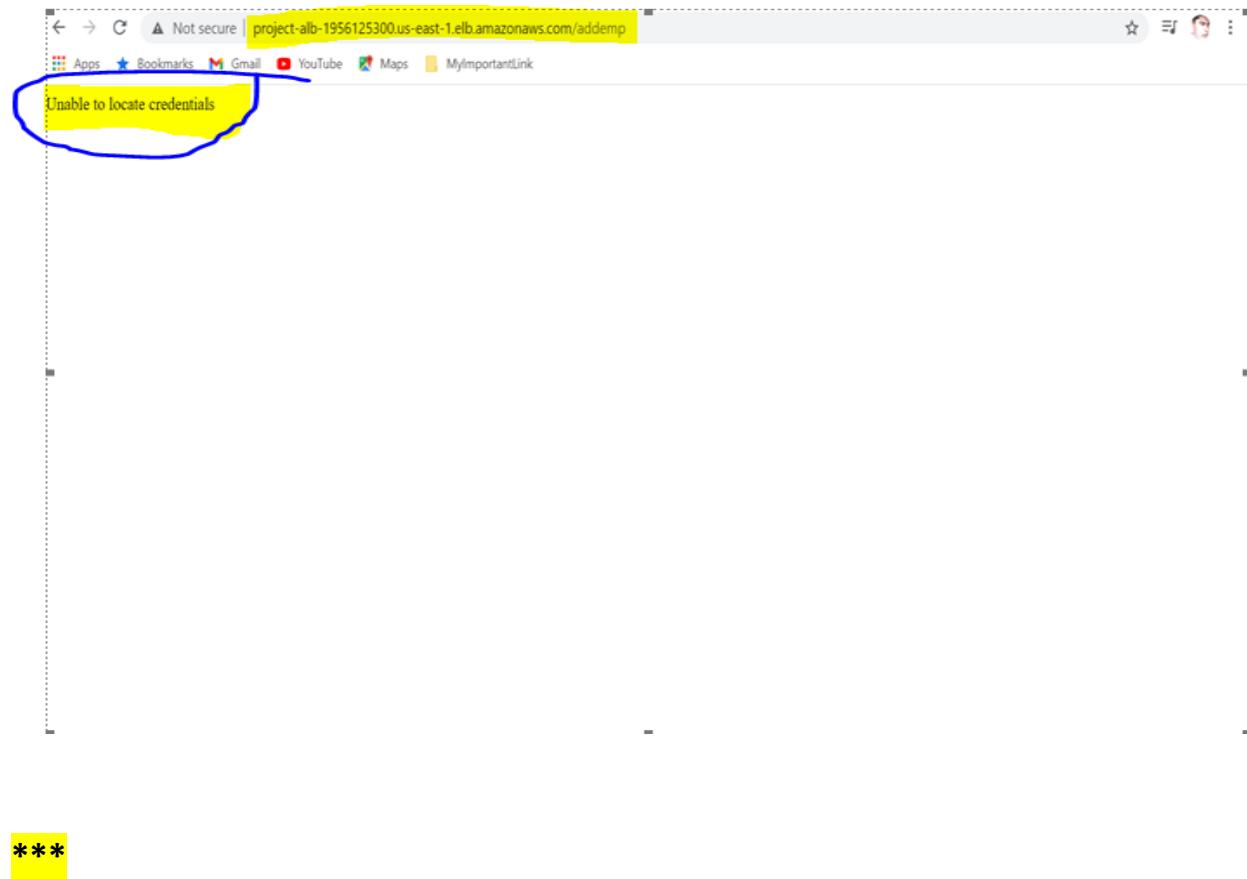
```
ubuntu@ip-10-10-3-63:~$ sudo apt-get install python3-boto3
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3-boto3 is already the newest version (1.4.2-1).
0 upgraded, 0 newly installed, 0 to remove and 28 not upgraded.
ubuntu@ip-10-10-3-63:~$ sudo python3 EmpApp.py
python3: can't open file 'EmpApp.py': [Errno 2] No such file or directory
ubuntu@ip-10-10-3-63:~$ cd aws-code
ubuntu@ip-10-10-3-63:~/aws-code$ sudo python3 EmpApp.py
* Running on http://0.0.0.0:80/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 869-209-216
10.10.1.10 - - [01/Apr/2021 23:46:03] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:46:18] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:46:33] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:46:41] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:46:42] "GET /favicon.ico HTTP/1.1" 404 -
10.10.2.172 - - [01/Apr/2021 23:46:48] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:47:03] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:47:18] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:47:33] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:47:48] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:48:03] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:48:18] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:48:33] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:48:48] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:49:03] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:49:18] "GET / HTTP/1.1" 200 -
10.10.1.10 - - [01/Apr/2021 23:49:33] "GET / HTTP/1.1" 200 -
10.10.2.172 - - [01/Apr/2021 23:49:48] "GET / HTTP/1.1" 200 -
```

Insert Alb endpoint in the url



After click **Update Database** if it dose not show **Save Successful message**

Then need to create **IAM** role with Administrative Access.



Create IAM role – give Administrative Access Name it project01-role

A screenshot of the AWS Identity and Access Management (IAM) service. The left sidebar shows 'Identity and Access Management (IAM)' with 'Access management' expanded, showing 'Groups', 'Users', 'Roles' (which is selected), 'Policies', 'Identity providers', and 'Account settings'. The main pane shows a table of roles. A new role, 'project01-role', is being created, indicated by a 'Create role' button. The table lists other roles like 'mytrailrole', 'project-role', and 'rds-monitoring-role'. The 'project01-role' row is highlighted with a yellow background. The table has columns for 'Role name', 'Trusted entities', and 'Last activity'. The 'Last activity' column shows 'Today' for 'project01-role' and 'Yesterday' for others.

Associate IAM role with Application instance

AWS Services ▾ Search for services, features, marketplace products, and docs [Alt+S] MD_IAM @ 4815-7854-7005 ▾ Oregon ▾ Support ▾

New EC2 Experience Tell us what you think X Instances (1/2) Info C Connect Instance state ▾ Actions ▾ Launch instances ▾

EC2 Dashboard New Events Tags Limits Instances Instances New Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances New Dedicated Hosts Scheduled Instances Capacity Reservations Feedback English (US) ▾

Filter instances Instance state: running X Clear filters

Name	Instance ID	Instance state	Instance type
Bastion	i-0ba4008500fec32e3	Running	t2.micro
Application	i-092a0073bf740793f	Running	t2.micro

Actions ▾ Connect 1 > View details Manage instance state Instance settings Networking Security Image and templates Monitor and troubleshoot

Change security groups Get Windows password Modify IAM role

Instance: i-092a0073bf740793f (Application)

Details Security Networking Storage Status checks Monitoring Tags

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Add Employee Information + Not secure | project01-alb-772016156.us-west-2.elb.amazonaws.com Paused Reading list

Apps Bookmarks Gmail YouTube Maps MyImportantLink

Employee ID: 101

First Name: Md

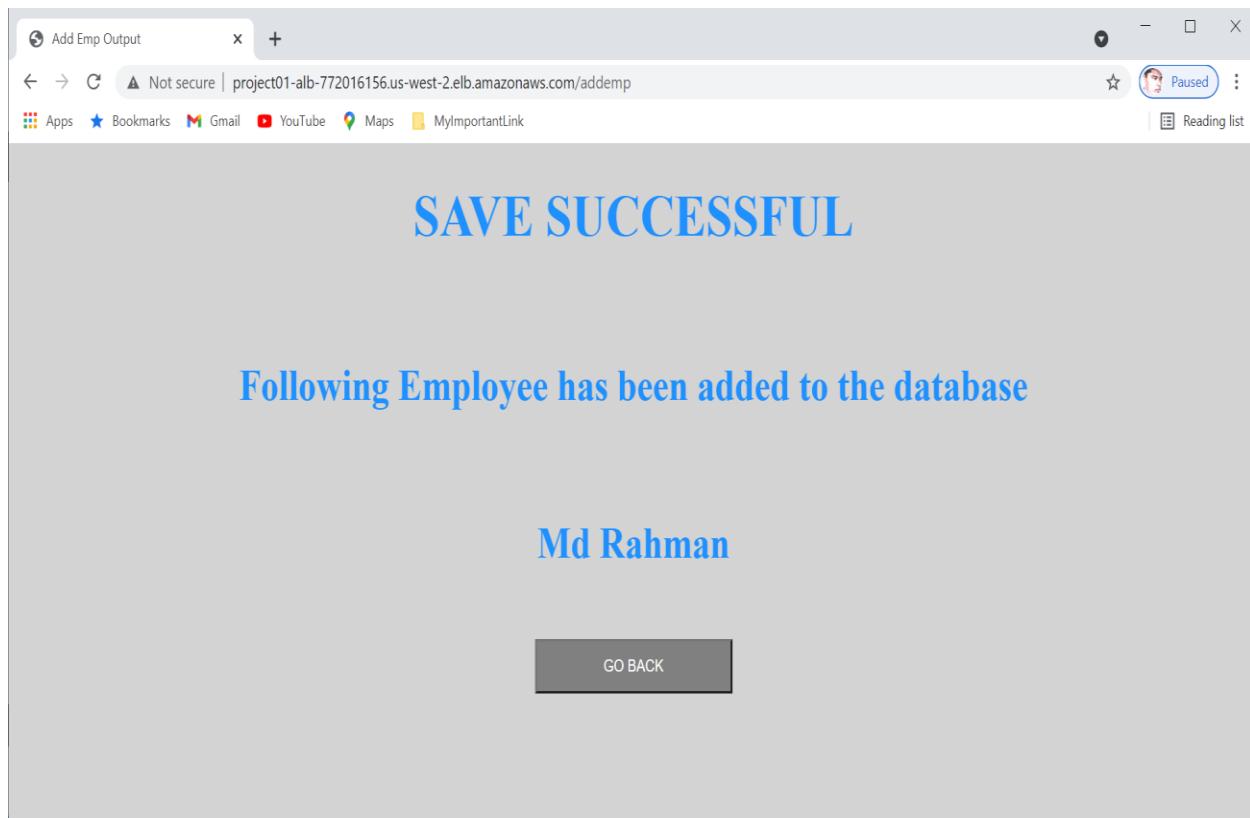
Last Name: Rahman

Primary Skills: AWS

Location: NY

Image: Choose File GetLetter.pdf

UPDATE DATABASE About Us



A screenshot of a web browser window showing an employee database input form. The title bar reads "Employee Database". The address bar shows the URL "project-alb-1956125300.us-east-1.elb.amazonaws.com". The form contains fields for "Employee ID" (100), "First Name" (Md), "Last Name" (Islam), "Primary Skills" (DEVOPS), and "Location" (VA). There is also a file upload field labeled "Image" with the placeholder "Choose File | emp.txt". At the bottom of the form are two buttons: "UPDATE DATABASE" and a link "About Us".

Employee ID:	<input type="text" value="100"/>
First Name:	<input type="text" value="Md"/>
Last Name:	<input type="text" value="Islam"/>
Primary Skills:	<input type="text" value="DEVOPS"/>
Location:	<input type="text" value="VA"/>

Image:

[UPDATE DATABASE](#) [About Us](#)

Meta Data saved in the Dynamodb table

The screenshot shows the AWS DynamoDB console. On the left, the navigation pane includes 'DynamoDB', 'Dashboard', 'Tables' (selected), 'Backups', 'Reserved capacity', 'Exports to S3', 'PartiQL editor', and 'Preferences'. Under 'Tables', there is a search bar 'Filter by table name' and a dropdown 'Choose a table ...'. A blue box highlights 'employee_image_table'. The main area shows the 'employee_image_table' details with tabs for 'Overview', 'Items' (selected), 'Metrics', 'Alarms', 'Capacity', 'Indexes', 'Global Tables', 'Backups', and 'More'. The 'Items' tab displays three items:

empid	image_url
101	https://s3-us-west-2.amazonaws.com/employees3/emp-id-101_image_file
102	https://s3-us-west-2.amazonaws.com/employees3/emp-id-102_image_file
105	https://s3-us-west-2.amazonaws.com/employees3/emp-id-105_image_file

Checking S3 bucket image file stored

The screenshot shows the AWS S3 console. The left sidebar includes 'Amazon S3' (selected), 'Buckets' (highlighted in orange), 'Access Points', 'Object Lambda Access Points', 'Batch Operations', 'Access analyzer for S3', 'Block Public Access settings for this account', 'Storage Lens' (expanded), 'Dashboards', and 'AWS Organizations settings'. The main area shows the 'Objects (3)' section with a table:

Name	Type	Last modified	Size	Storage class
emp-id-101_image_file	-	May 30, 2021, 20:13:05 (UTC-04:00)	131.3 KB	Standard
emp-id-102_image_file	-	May 30, 2021, 20:23:05 (UTC-04:00)	27.6 KB	Standard
emp-id-105_image_file	-	May 30, 2021, 21:15:28 (UTC-04:00)	24.5 KB	Standard

Data stored in the mysql employee table

```
ubuntu@ip-10-10-3-178: ~
+-----+
4 rows in set (0.01 sec)

mysql> use project01;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from table employee;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near 'table
employee' at line 1
mysql> select * from employee;
+-----+-----+-----+-----+-----+
| emp_id | FIRST_NAME | LAST_NAME | PRIMARY_SKILLS | LOCATION |
+-----+-----+-----+-----+-----+
| 101    | Md          | Rahman    | AWS           | NY        |
| 101    | Md          | Rahman    | AWS           | NY        |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> select * from employee;
+-----+-----+-----+-----+-----+
| emp_id | FIRST_NAME | LAST_NAME | PRIMARY_SKILLS | LOCATION |
+-----+-----+-----+-----+-----+
| 101    | Md          | Rahman    | AWS           | NY        |
| 101    | Md          | Rahman    | AWS           | NY        |
| 102    | Ataur       | Rahman    | cloud         | Bd        |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> ■
mysql> select * from employee;
+-----+-----+-----+-----+-----+
| emp_id | FIRST_NAME | LAST_NAME | PRIMARY_SKILLS | LOCATION |
+-----+-----+-----+-----+-----+
| 101    | Md          | Rahman    | AWS           | NY        |
| 101    | Md          | Rahman    | AWS           | NY        |
| 102    | Ataur       | Rahman    | cloud         | Bd        |
| 105    | MD          | ISLAM     | AWS           | NEW YORK |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

Configure Route53

The screenshot shows the 'Quick create record' dialog in the AWS Route 53 console. The 'Record name' field contains 'blog' and the 'Record type' field is set to 'A – Routes traffic to an IPv4 address and so...'. The 'Route traffic to' section is configured with 'Alias' selected, pointing to 'Alias to Application and Classic Load Balancer' with 'US East (N. Virginia) [us-east-1]' chosen. The 'Routing policy' is set to 'Simple routing' and 'Evaluate target health' is enabled. At the bottom right are 'Cancel' and 'Create records' buttons.

The screenshot shows the 'pabna.click' hosted zone details page. A green success message at the top states 'Record for pabna.click was successfully created.' Below it, the 'Create record' button is highlighted. The table lists three records: a successful A record for 'pabna.click' pointing to 'dualstack.project01-alb-772016156.us-west-2.elb.amazonaws.com.', and two NS records for 'pabna.click' with their respective NS values.

<input type="checkbox"/>	Record name	Type	Routin...	Differ...	Value/Route traffic to
<input type="checkbox"/>	pabna.click	A	Simple	-	dualstack.project01-alb-772016156.us-west-2.elb.amazonaws.com.
<input type="checkbox"/>	pabna.click	NS	Simple	-	ns-831.awsdns-39.net. ns-1369.awsdns-43.org. ns-1970.awsdns-54.co.uk. ns-323.awsdns-40.com.
<input type="checkbox"/>	pabna.click	SOA	Simple	-	ns-831.awsdns-39.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400

After create Record set with route traffic to alb endpoint
Then enter Domain Name in to the Browser

The screenshot shows a web browser window with the URL `pabna.click`. The page title is "GET EMPLOYEE INFORMATION". The form fields are as follows:

- Employee ID: 102
- First Name: Ataur
- Last Name: Rahman
- Primary Skills: cloud
- Location: Bd
- Image: Choose File QuranClass ...April30th.pdf

Below the form are two buttons: "UPDATE DATABASE" and a link "About Us".

The screenshot shows a web browser window with the URL `pabna.click/addemp`. The main content of the page is a large blue text "SAVE SUCCESSFUL". Below it, in blue text, is the message "Following Employee has been added to the database". Underneath that, the employee's name "Ataur Rahman" is displayed in bold blue text. At the bottom is a "GO BACK" button.