

Cloud Computing - Mini Project Report
Deployment of Web App Using AWS Cloud (Project - 3)
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Short Description and Scope of the Project

A project using streamlit for the frontend and python based backend has been developed for CRUD operations. This application uses MySQL (MariaDB) as the database. The project has been connected to MySQL using mysql-connector. The CRUD application has been developed to facilitate day-to-day operations at RTOs. This involves maintaining records about people who have been granted learning licenses, those who have been granted permanent licenses, etc.

There is functionality to create, update, remove and delete the data of any user who chooses to register. One page has been designed to take only basic details for quick registration. Another page takes address details. There is a page to display all the information pertaining to a user. This page, however, displays the details only for users who have provided all their details, not for those who have not, since those users who have not provided all their info are unimportant.

A page has been designed for users to register for a learning license and permanent driving license. These pages can be used only for creation and viewing of records, since the entire registration history should always be maintained and never be deleted or updated. For the same purpose, any attempts to delete a user who has registered for a license are blocked. These users can be updated though as their personal details may change over time.

The Team

| Name | SRN |
|-----------------|---------------|
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Methodology

In order to deploy the project onto the cloud, a set of AWS services have been utilized. Specifically, the Relational Database Service (RDS) has been employed to host the MariaDB database to handle the data storage and retrieval part of the project. In addition, an Elastic Compute Cloud (EC2) instance running AWS Linux has been used to host the Python code and Streamlit application components. To facilitate secure communication, reverse proxy, and load balancing between the EC2 instance and the RDS instance, Nginx has been utilized as a layer of abstraction.

Moreover, GitHub Actions have been integrated into the project to enable automated testing, integration, and deployment. This functionality allows for the continuous integration and delivery of the codebase from the GitHub repository to the cloud infrastructure. Overall, the use of these AWS services and GitHub Actions provide a robust and scalable infrastructure for the deployment of the project onto the cloud.

Testing

Creation of a record

Rto system
Created for CC_Project

Citizen details

Menu
Add

Enter details

First Name: Debanjan
Last Name: Das
Enter valid aadhar: 1903
Add gender: M
Enter dob: 2001/12/16
enter phone no: 1234567890

Add citizen

Successfully added citizen

Reading Records

Rto system
Created for CC_Project

Citizen details

Menu
View

View citizen

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------------|
| 0 | Ath | Gad | 12 | M | 2003-04-15 | 91 |
| 1 | Debanjan | Das | 1903 | M | 2001-12-16 | 1234567890 |

Made with Streamlit

Updating Records

Not Secure — 50.19.77.30

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GitHub

CC_Project_Report - Google Docs

EC2 Management Console

Cloud computing 2023_9 sec - Google D...

app - Streamlit

Menu

Citizen

Rto system

Created for CC_Project

Citizen details

Menu

Update

Update mode on

View citizen

First Name

Atharva

Enter valid aadhar

12

Last Name

Gadad

Add gender

M

Enter dob

2001/11/30

enter phone no

7892

Update citizen

Successfully updated citizen

Updated data

Viewing the updated records,

Successfully updated citizen

Updated data

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------------|
| 0 | Atharva | Gadad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1903 | M | 2001-12-16 | 1234567890 |

Made with Streamlit

Deleting Records

The screenshot shows the 'Rto system' interface. On the left, a sidebar menu has 'Citizen' selected. The main content area is titled 'Rto system' and 'Created for CC_Project'. Under 'Citizen details', there is a 'Delete' dropdown menu. Below it, a 'View citizen' table shows two records. The first record, with ID 0, is selected for deletion. A form below the table prompts to 'enter aadhar no to be deleted' with the value '1903'. A 'Delete citizen' button is present, followed by a green success message 'Deleted successfully'. The 'Updated data' table below shows only the first record remaining.

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------------|
| 0 | Atharva | Gadad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1903 | M | 2001-12-16 | 1234567890 |

enter aadhar no to be deleted

1903

Delete citizen

Deleted successfully

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------|
| 0 | Atharva | Gadad | 12 | M | 2001-11-30 | 7892 |

Adding addresses

The screenshot shows the 'Rto system' interface. On the left, a sidebar menu has 'address' selected. The main content area is titled 'Rto system' and 'Created for CC_Project'. Under 'address details', there is an 'Add' dropdown menu. Below it, the 'enter details' section has two columns of input fields. The left column is for 'Enter aadhar details' with the value '1234'. The right column is for 'Enter street details' with the value '10 Downing Street'. Below these are fields for 'Enter city' (London) and 'Enter PIN code' (8192). An 'add address' button is at the bottom, followed by a green success message 'address successfully added'.

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 |

address details

Menu

Add

enter details

Enter aadhar details

1234

Enter street details

10 Downing Street

Enter city

London

Enter PIN code

8192

add address

address successfully added

Viewing details about users

The screenshot shows a web application titled "Rto system" created for "CC_Project". The interface includes a sidebar menu with a "Details" option selected. The main content area displays a "Display information" button and a table titled "Citizen details". The table lists two citizens with their personal information.

| | firstname | lastname | aadhar | gender | dob | phone_no | street | city |
|---|-----------|----------|--------|--------|------------|----------|--------------------|-----------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 | 14 Lok Kalyan Marg | New Delhi |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 | 10 Downing Street | London |

Custom Queries

The screenshot shows the same "Rto system" web application, but the sidebar menu now has a "Query Line" option selected. The main content area features an "enter sql" input field containing the query "select * from citizen". Below the input field, a table displays the results of the query, showing the same two citizens as in the previous screenshot.

| | 0 | 1 | 2 | 3 | 4 | 5 |
|---|----------|-----|------|---|------------|------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 |

Apply for LL

Not Secure — 50.19.77.30

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CC-Project/app.py at main · AugeGottes/CC-Project

CC_Project_Report - Google Docs

EC2 Management Console

app - Streamlit

Menu

apply for ll

Rto system

Created for CC_Project

Menu

Apply for ll

View citizen

Enter aadhar number

1234

Enter LL_date

2023/04/17

Apply for ll

successfully applied for ll

View Learner license

| | L_ID | ll_status | lldate | aadhar |
|---|------|-----------|------------|--------|
| 0 | 1 | 0 | 2023-04-17 | 12 |
| 1 | 2 | 0 | 2023-04-17 | 12 |
| 2 | 4 | 0 | 2023-04-17 | 1234 |

Updating status for LL

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CC-Project/app.py at main · AugeGottes/CC-Project

CC_Project_Report - Google Docs

EC2 Management Console

app - Streamlit

Menu

apply for ll

Rto system

Created for CC_Project

Menu

Set ll status

View citizen

View Learner license

Enter aadhar to be update

12

Set ll Status

Updated successfully

View Learner license

| | L_ID | ll_status | lldate | aadhar |
|---|------|-----------|------------|--------|
| 0 | 1 | 1 | 2023-04-17 | 12 |
| 1 | 2 | 1 | 2023-04-17 | 12 |
| 2 | 4 | 0 | 2023-04-17 | 1234 |

View all LL

Rto system

Created for CC_Project

Menu

View ll

View citizen

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 |

View Learner license

| | L_ID | ll_status | lldate | aadhar |
|---|------|-----------|------------|--------|
| 0 | 1 | 1 | 2023-04-17 | 12 |
| 1 | 2 | 1 | 2023-04-17 | 12 |
| 2 | 4 | 0 | 2023-04-17 | 1234 |

Made with Streamlit

Application for DL

Rto system

Created for CC_Project

Menu

Add

View citizen

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 |

View Learner license

| | L_ID | ll_status | lldate | aadhar |
|---|------|-----------|------------|--------|
| 0 | 1 | 1 | 2023-04-17 | 12 |
| 1 | 2 | 1 | 2023-04-17 | 12 |
| 2 | 4 | 0 | 2023-04-17 | 1234 |

Enter aadhar no

Enter DL_date

2023/04/17

Create DL

View all DL

Not Secure — 60.19.77.30

You are signed in as PES1UG26C5088

CC-Project/app.py at main · AuguGottes/CC-Project

CC_Project_Report - Google Docs

EC2 Management Console

app - Streamlit

Menu

Apply for DL

Rto system

Created for CC_Project

Menu

View

View citizen

| | First Name | Last Name | aadhar | gob | dob | pno |
|---|------------|-----------|--------|-----|------------|------|
| 0 | Ath | Gad | 12 | M | 2001-11-30 | 7892 |
| 1 | Debanjan | Das | 1234 | M | 2023-04-17 | 7896 |

View Learner license

| | L_ID | IL_status | lldate | aadhar |
|---|------|-----------|------------|--------|
| 0 | 1 | 1 | 2023-04-17 | 12 |
| 1 | 2 | 1 | 2023-04-17 | 12 |
| 2 | 4 | 0 | 2023-04-17 | 1234 |

View DL

| | dl_id | DL_STATUS | DL_DATE | AADHAR |
|---|-------|-----------|------------|--------|
| 0 | 1 | 1 | 2023-04-17 | 12 |
| 1 | 2 | 1 | 2023-04-17 | 12 |

Results and Conclusions

- RDS works as expected integrating flawlessly with the front end
- EC2 works as expected, hosting the streamlit-python app
- Nginx helps form a layer between RDS and EC2 and forwards the requests appropriately
- Github actions work as expected, providing for continuous integration and delivery