Internship Experience

Mitra Innovation (Pvt.) Ltd.

U.D.P.D UDUWELA -18/ENG/112
Department of Computer Engineering
University of Sri Jayewardenepura

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❖ Training Establishment details

- Mitra Innovation is a Technology Innovation based company in Sri Lanka, Australia, the U.S. , and the U.K.
- It has two central business Units. They are-

  1. **Mitra Digital** - Focuses on software service delivery
  2. **Mitra Ventures** – Focuses on product innovation and partnerships with other joint ventures

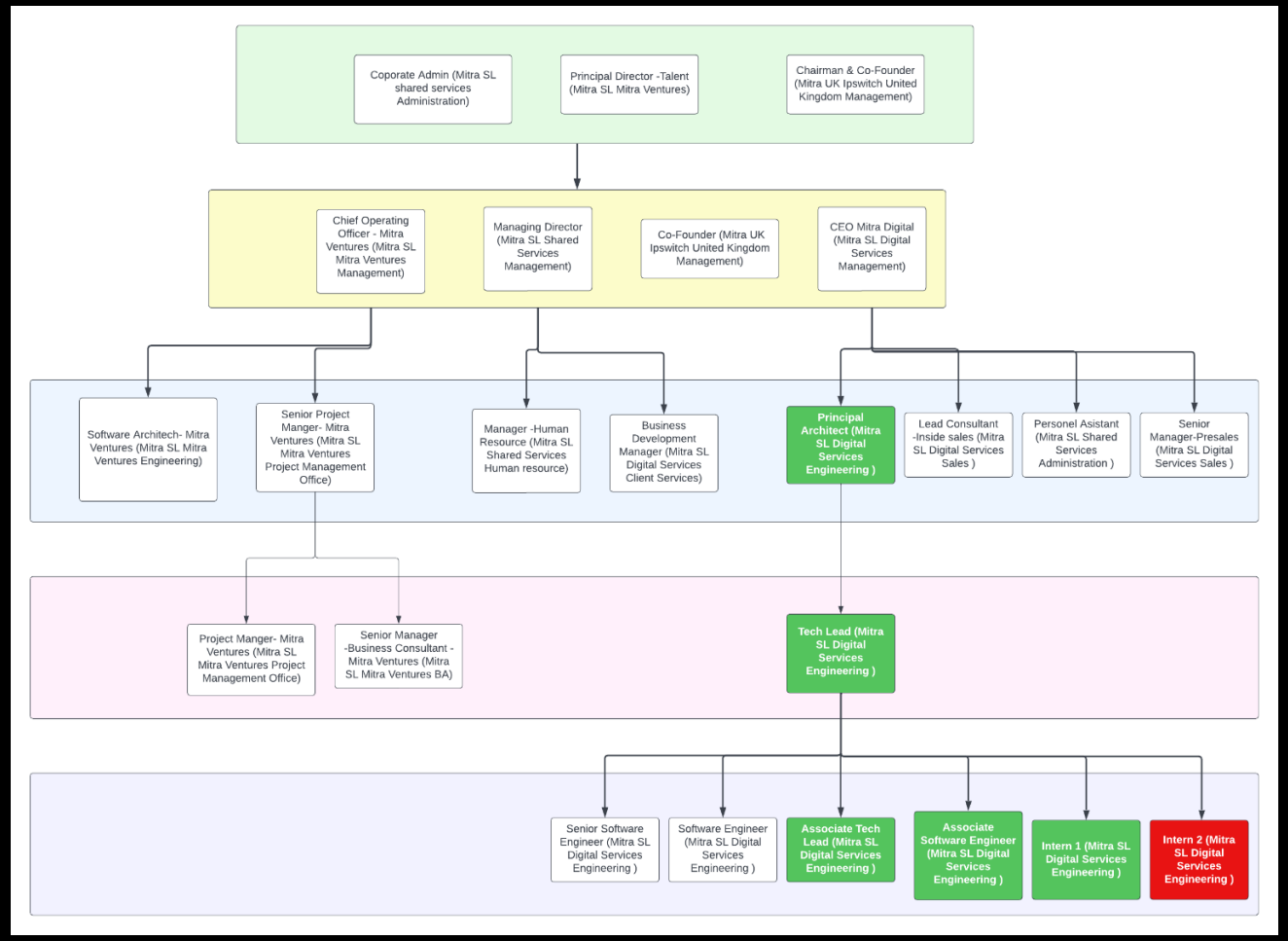
Vision

Which is to help entrepreneurs and enterprises build and launch disruptive technology solutions.

Mission

Which is to help as many successful products and ventures as possible.

❖ Placement Details and Scrum Team at Mitra



Assigned Projects

1. TRITON-(Client Project)

   Triton is a Cloud Security Posture Management (C.S.P.M.) tool that will be developed with the intention of helping customers to secure their cloud environment by automating security, to reduce that attack surfaces, fix misconfigurations, resolve configuration drift, block unwanted behavior, and keep threats at bay.

2. ATS –(Internal Project)

   ATS is an Applicant Tracking System(A.T.S) web dashboard proposed to developed for the Mitra Human Resource Department .

Triton

✓ Triton Stake holders

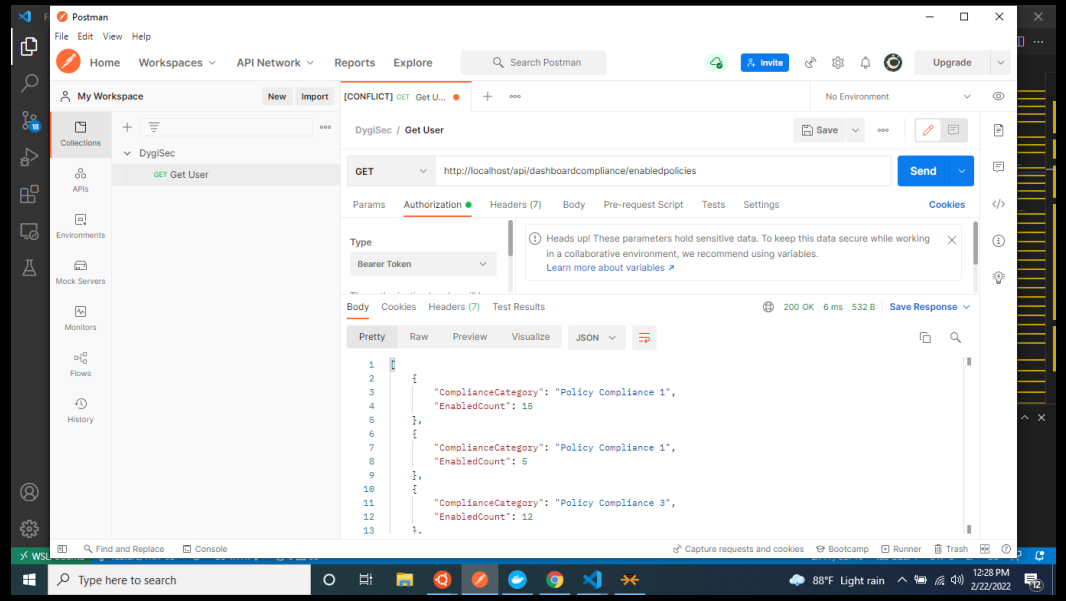
Mitra stakeholders	Shimantha Perera(Project Manager) ,Thilina Herath(Principal Architect), Deleema Fernando(Tech lead), Reshan Perera (Consultant Engineer),Tharindu Madushanka(S.S.E. (Angular)),Dinura Marsinghe(Q.A.), Kithsiri Ekanayake(UX/UI Designer),Purni Gunawardana(Business Analyst),Tharun Krishnamurthy (Associate S.E.), Saduni Maduhansani(Associate S.E.), Pasindu uduwela(Intern S.E.) , Kavish Rajakaruna(Intern S.E.)
Dygisec Stakeholder	Stefano Harding(Product Owner), Lakshitha Herath(co-owner), Chanditha Samaranayake(Project Sponsor), Rajesh Rasiah(Risk & compliance)

✓ Prior Knowledge and Works

- I was assigned as a Golang back-end developer by evaluating my all past projects.
- I was given two week period to familiarized with Golang , docker and Kubernetes.
- Before Going to the Task-01 I have to fully setup the WSL (Windows Subsystem For Linux) working Environment on my given office laptop. I have Installed Followings on it.
  - Golang 1.17.7
  - Vscode extensions- Docker ,WSL , Kubernetes , Angular
  - Docker hub and Minikube etc.
- Cloned the Triton back-end repository from GitHub and I have to resolve all errors.
- Practiced more with git commands.

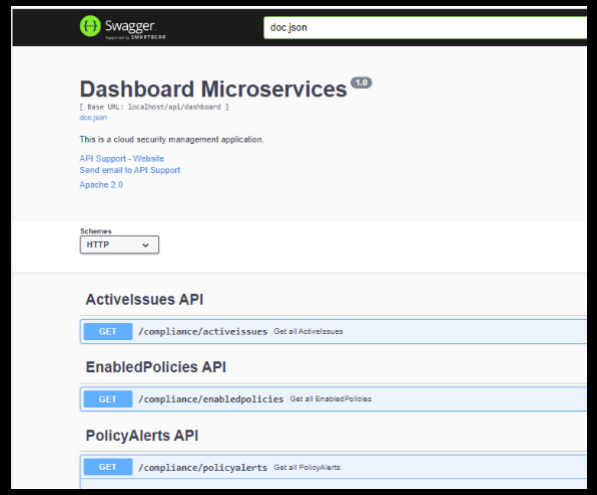
TASK-01

- In this task , I have to create API endpoints for the compliance dashboard service to retrieve some hard quoted data from the back-end.



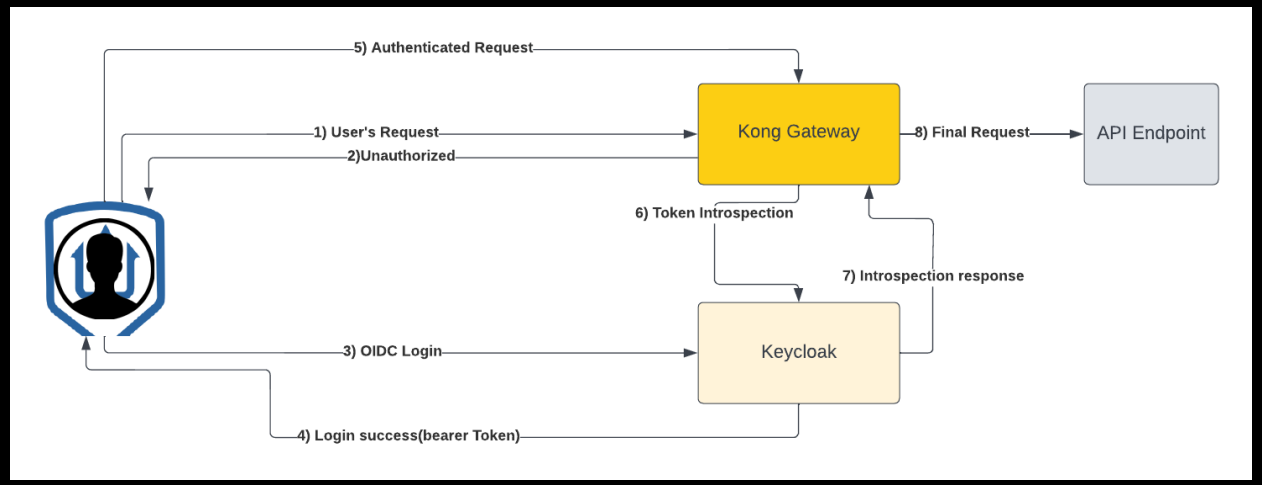
TASK-02

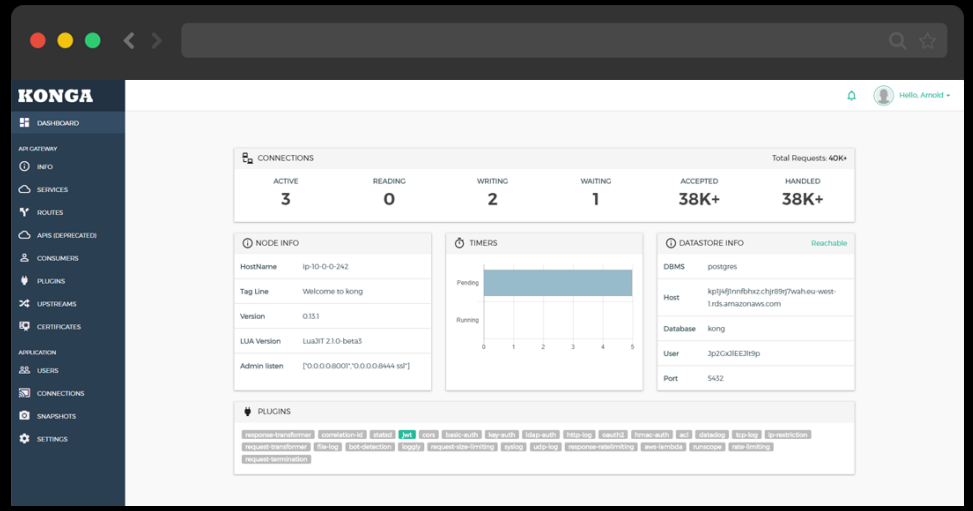
- All REST API endpoints in the project should be documented using Swagger UI.
  1. First, Import the necessary packages to the handler. go file
  2. Added the General API annotations in main.go file reserved for each service
  3. Added the API annotation in the handler.go file
  4. Execute the correct swag init command in correct directory path with the correct command options and arguments.
  5. Follow the same steps for all other build completed services parallelly with other assigned tasks.



TASK-03

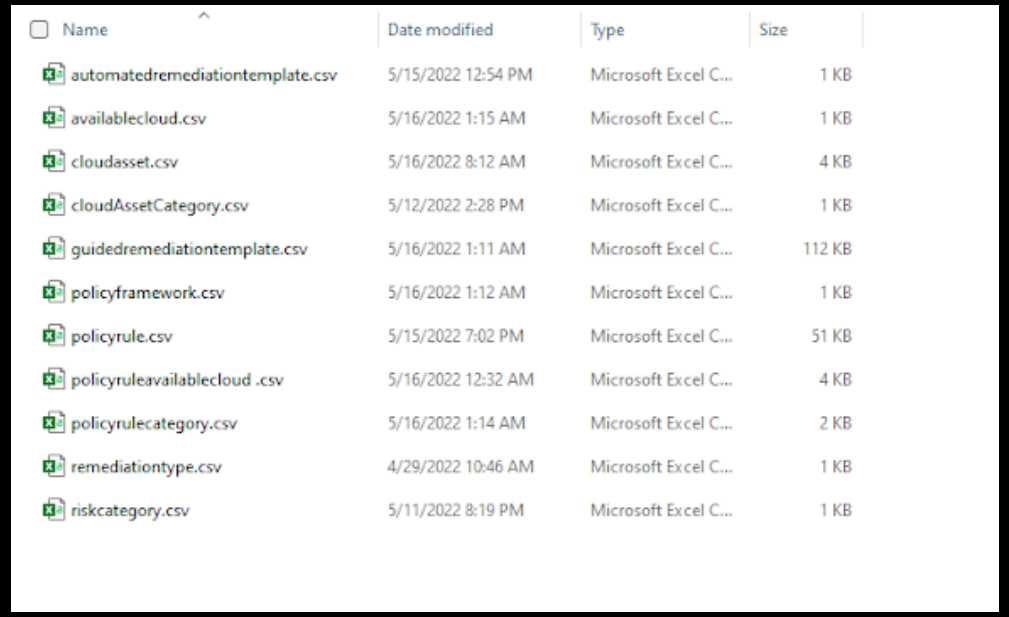
- I was assigned to a research to build an OpenID connect & OAuth2.0 plugin for the Kong gateway.





TASK-04

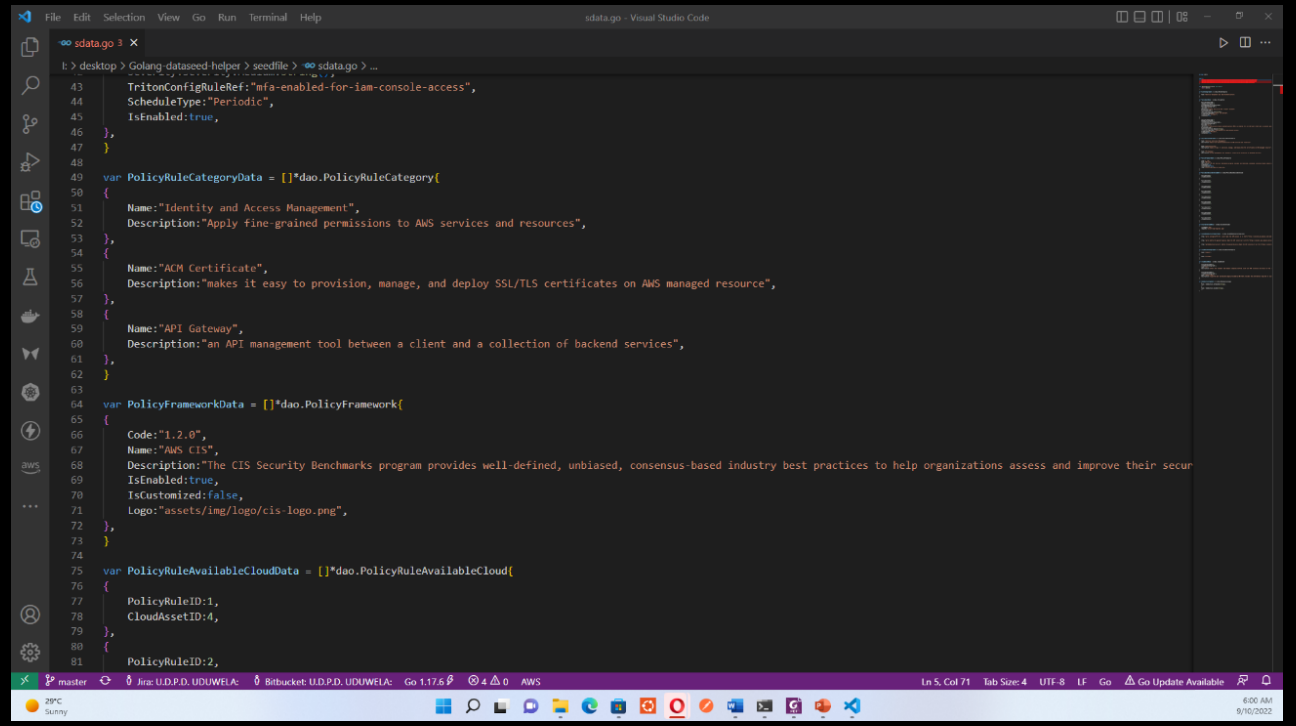
- This was a collaborative task done with one of the interns. In this task, we have to fill data into google sheets, which contain 11 tables. We have to investigate the Triton confluence pages where all the policies and all the data are stated. We have to consider three compliance and rule repositories. they are-
    1. **AWS CIS v1.2.0**
    2. **AWS Best Practice FW**
    3. **PCI DSS 3.2.1**



Name	Date modified	Type	Size
automatedremediationtemplate.csv	5/15/2022 12:54 PM	Microsoft Excel C...	1 KB
availablecloud.csv	5/16/2022 1:15 AM	Microsoft Excel C...	1 KB
cloudasset.csv	5/16/2022 8:12 AM	Microsoft Excel C...	4 KB
cloudAssetCategory.csv	5/12/2022 2:28 PM	Microsoft Excel C...	1 KB
guidedremediationtemplate.csv	5/16/2022 1:11 AM	Microsoft Excel C...	112 KB
policyframework.csv	5/16/2022 1:12 AM	Microsoft Excel C...	1 KB
policyrule.csv	5/15/2022 7:02 PM	Microsoft Excel C...	51 KB
policyruleavailablecloud .csv	5/16/2022 12:32 AM	Microsoft Excel C...	4 KB
policyrulecategory.csv	5/16/2022 1:14 AM	Microsoft Excel C...	2 KB
remediationtype.csv	4/29/2022 10:46 AM	Microsoft Excel C...	1 KB
riskcategory.csv	5/11/2022 8:19 PM	Microsoft Excel C...	1 KB

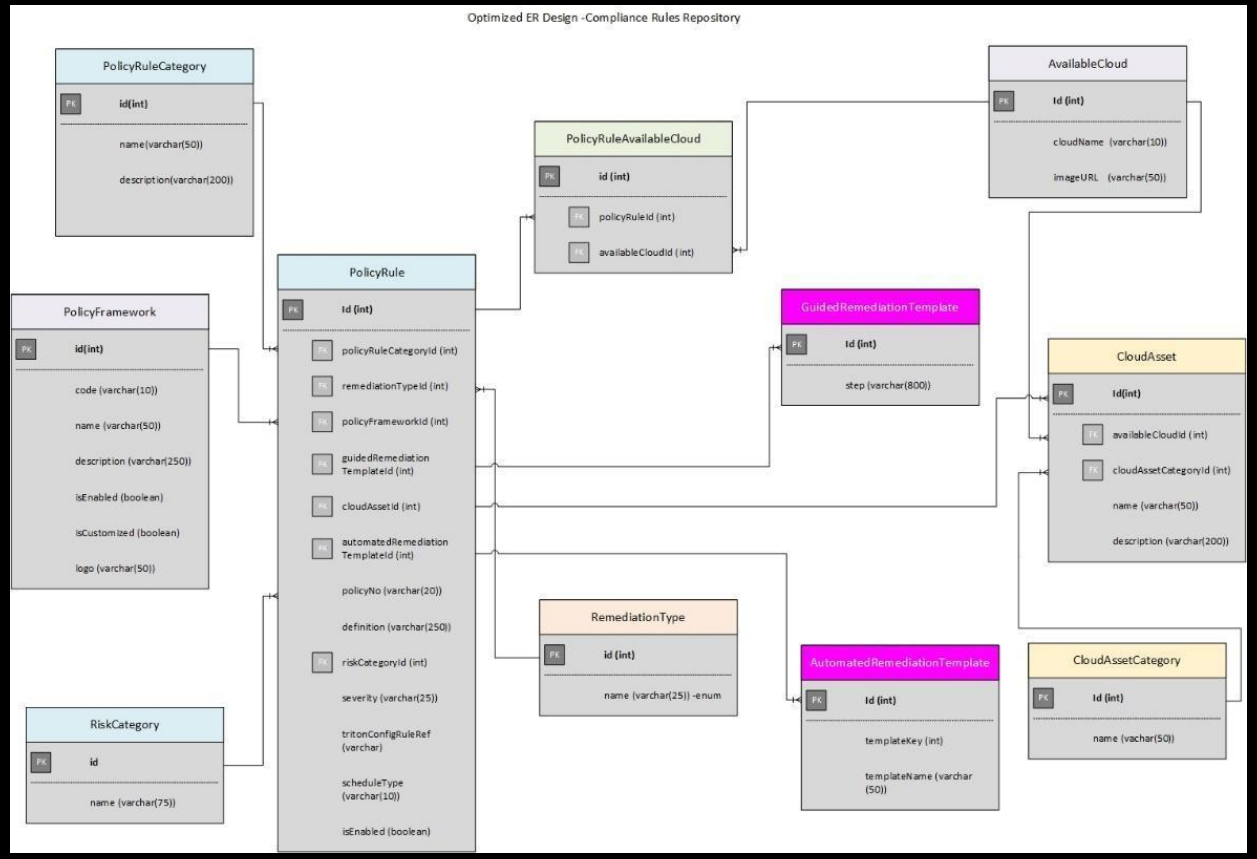
Task-05

- This task was initiated to me because, at that time, I was manually creating this sdata.go file using the data we put into the policy compliances-sample data feed v1.0.0.xlsx sheet. It was a tough task to create structures manually. Therefore a separate Golang csv file reader program was built to automate this manual process.



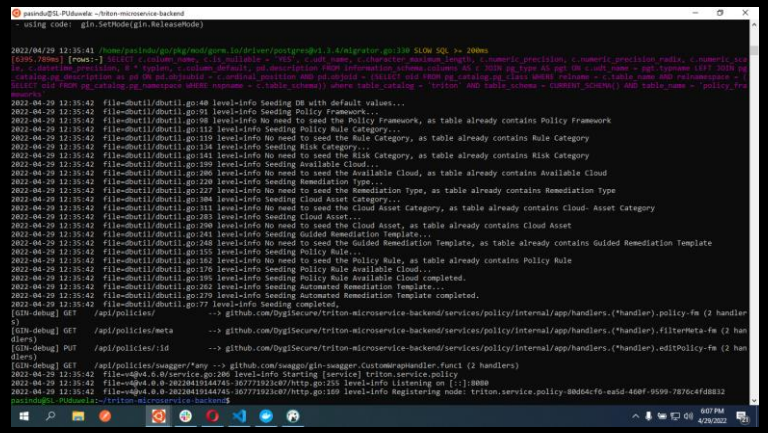
TASK-06

- In the beginning, there was an Entity Relationship diagram(ERD) for the Compliance and rules repository. But it was not optimized. We had to only modify the ERD according to the comment given by the principal architect.

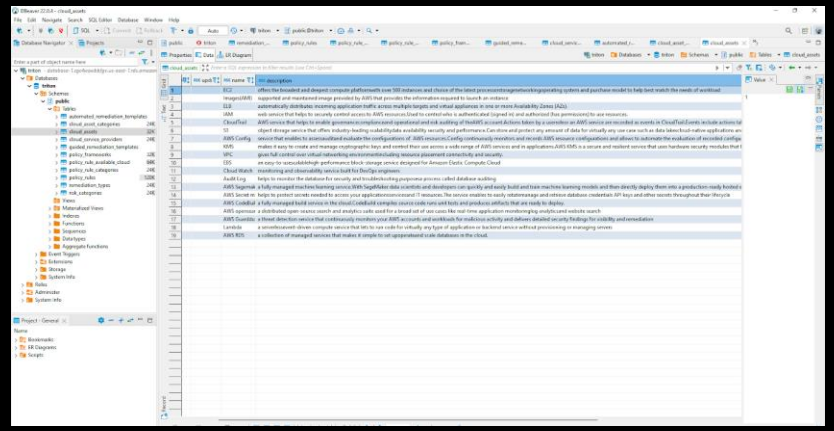


TASK-07

- Another developer was initially build a data seeder using Golang. My task was to modify the seeder after the database structure changed.



- Finally I have to check the data is seeded to the local PostgreSQL database container by checking the K9s error logs and check whether the data write into the database correctly by connecting the database to dbeaver software.



Kubectl port-forward service/triton/triton-db-postgresql 5432:5432

TASK-08

- **I have created a google sheet by Filling out all the A.W.S. managed config rules. Finally I have covered more than 250 rules. Bellow shows one rule as an example. The relevant sheet was shared with the respective developers and the architect.**
- **Example 1 –**

  S3-bucket-public-read-prohibited - **Check for buckets that allow public read access through bucket policy or ACL**

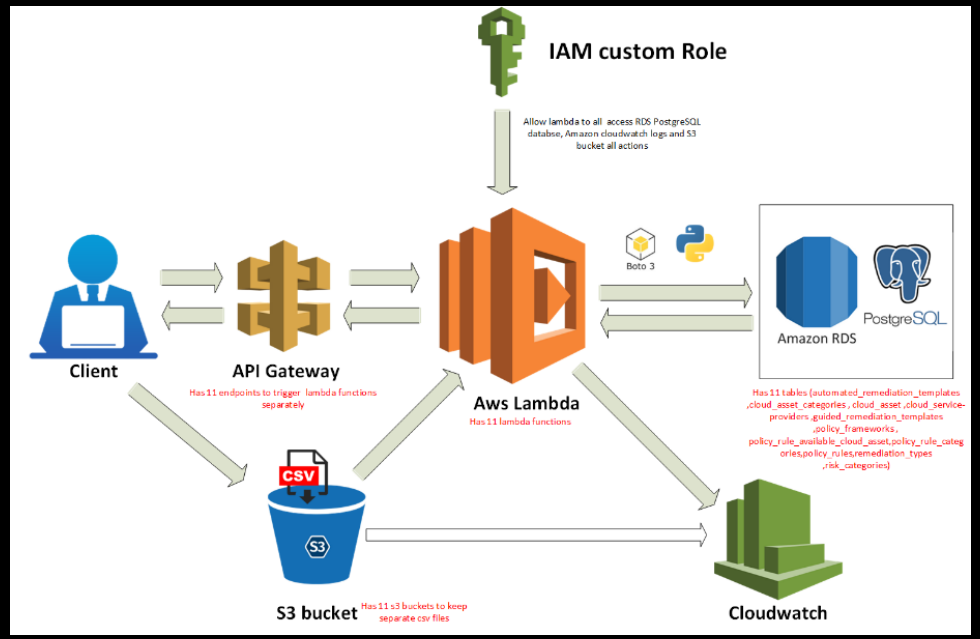
s3-bucket-public-read-prohibited

	Rule	Command 1	Command 2
1	The Block Public Access setting **restricts public policies** or the bucket policy **does not allow public read access**	`aws s3api get-public-access-block --bucket my-bucket`	`aws s3api get-bucket-acl --bucket config-bucket-423703969986`
		`"BlockPublicPolicy": true`	`"Permission": "WRITE"`
2	The Block Public Access setting **restricts public ACLs** or the bucket ACL **does not allow public read access.**	`aws s3api get-public-access-block --bucket my-bucket`	`aws s3api get-bucket-acl --bucket config-bucket-423703969986`
		`"BlockPublicAcls": true`	`"Permission": "WRITE"`
3	**If** the Block Public Access setting **does not restrict public policies,** AWS Config evaluates whether the **policy allows public read access. If** the policy allows public read access, the rule is noncompliant.	`aws s3api get-public-access-block --bucket my-bucket`	`aws s3api get-bucket-acl --bucket config-bucket-423703969986`
		`"BlockPublicPolicy":false`	`"Permission": "READ/FULL_CONTROL"`
4	**If** the Block Public Access setting **does not restrict public bucket ACLs,** AWS Config evaluates whether the **bucket ACL allows public read access. If** the bucket ACL **allows public read access,** the rule is noncompliant.	`aws s3api get-public-access-block --bucket my-bucket`	`aws s3api get-bucket-acl --bucket config-bucket-423703969986`
		`"BlockPublicAcls": false`	`"Permission": "READ/FULL_CONTROL"`

	Rule	Command 1	Command 2	Status1	Status2 { If (Rule == 1 && status1== "true") ||(Rule == 2 && status1== "true") || (Rule == 3 && status1== "true") ||(Rule == 4 && status1== "true") }	Status3 { If [(Rule == 1 && status2== "true") && (Rule == 2 && status2== "true")] || [(Rule == 3 && status2== "true") && (Rule == 4 && status2== "true")] }	Output
OR	1	true	true	true	true	true	Compliant
		false	true	true			
		true	false	true			
		false	false	false	false		
	2	true	true	true	true		
		false	true	true			
		true	false	true			
		false	false	false	false		
AND	3	true	true	true	true	true	noncompliant
		false	true	false	false		
		true	false	false	false		
		false	false	false	false		
	4	true	true	true	true		
		false	true	false	false		
		true	false	false	false		
		false	false	false	false		

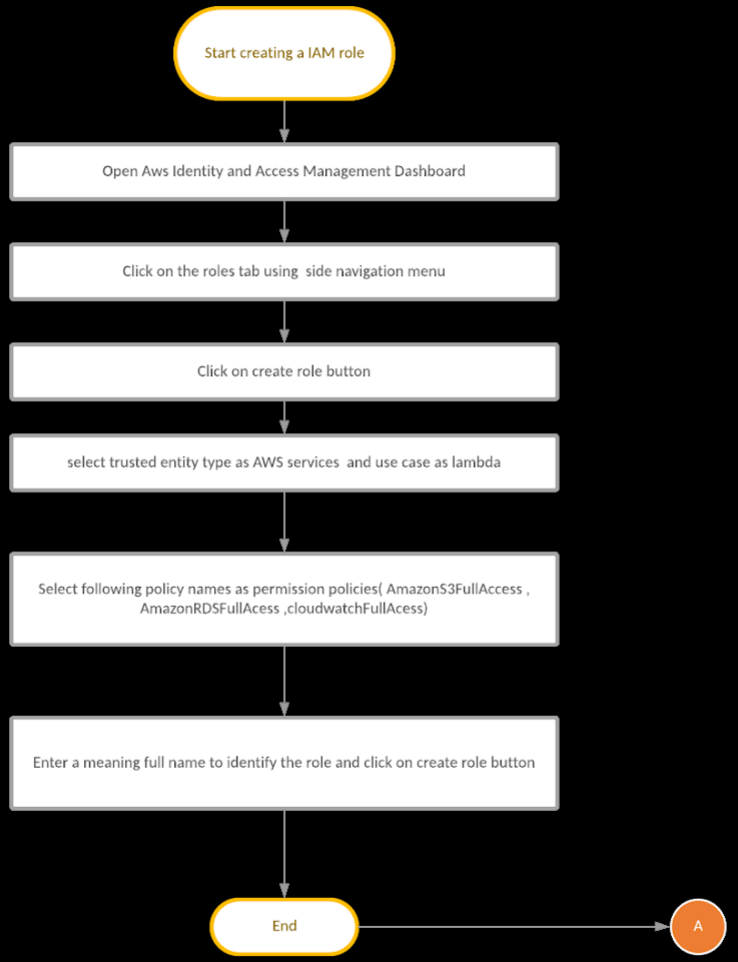
TASK-09

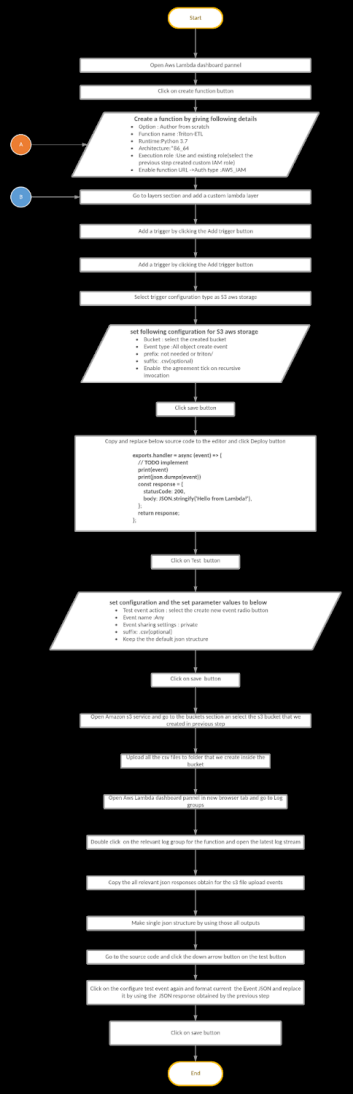
- In the project, after deploying the application on AWS Elastic Kubernetes service(EKS), if the client needed to update the data-related policies from the database side, there were no possible methods to do it while the system was up and running. Therefore I have assigned a task to create an Extract Transform Load(ETL) to read files from the S3 bucket and load them into the AWS RDS PostgreSQL database.



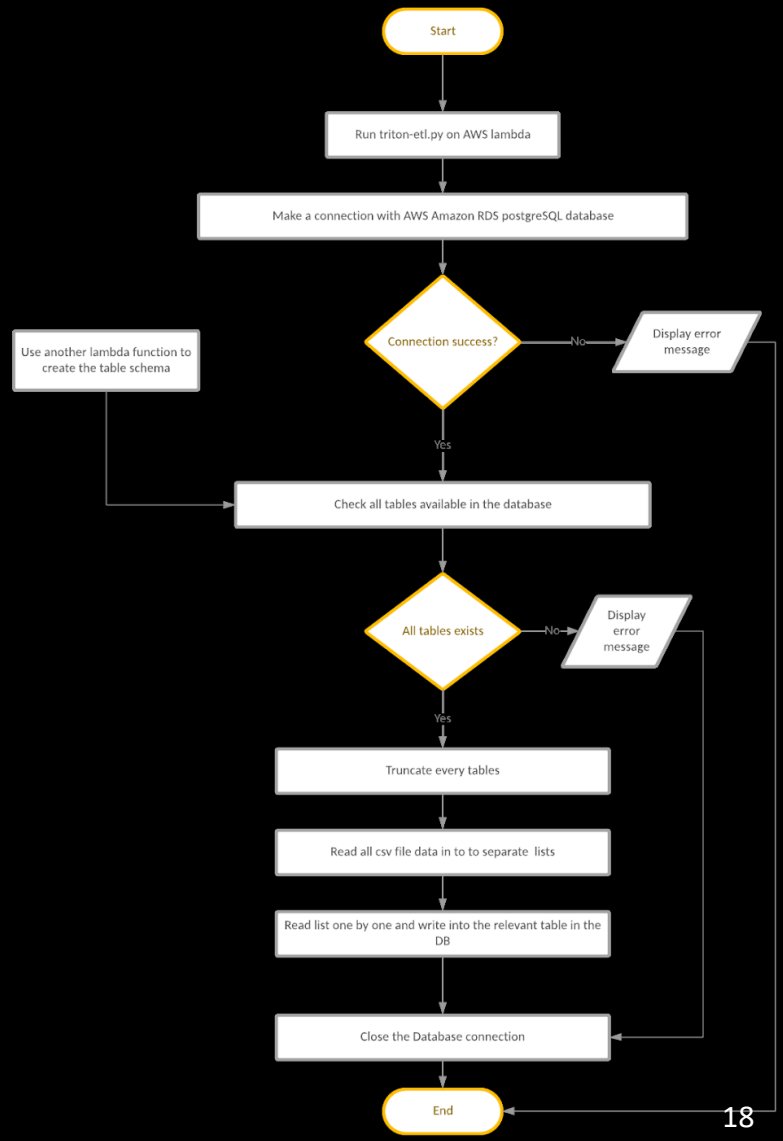
Proposed workflow diagrams for the designed ETL

Flow Diagram on Creating IAM Custom Role



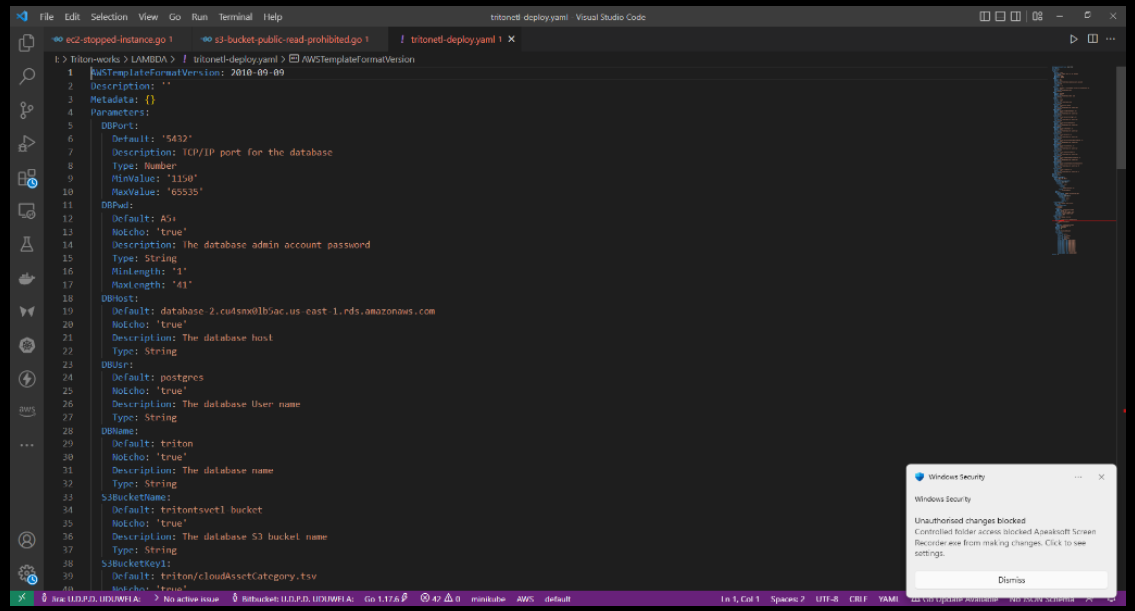


Triton-ETL work flow diagram



TASK-10

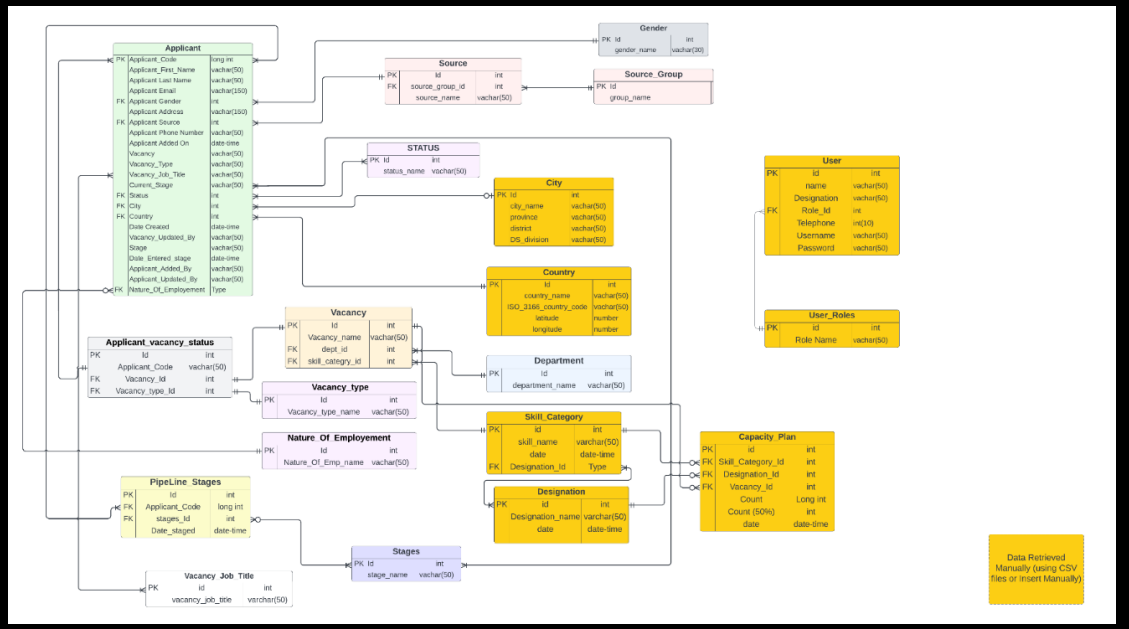
Here the task was to automate the Extract Transform Load(ETL) deployment process; for that, I had to use the AWS cloud formation service. In this project, I created the YAML. However, we can use either YAML or JSON to automate the process.

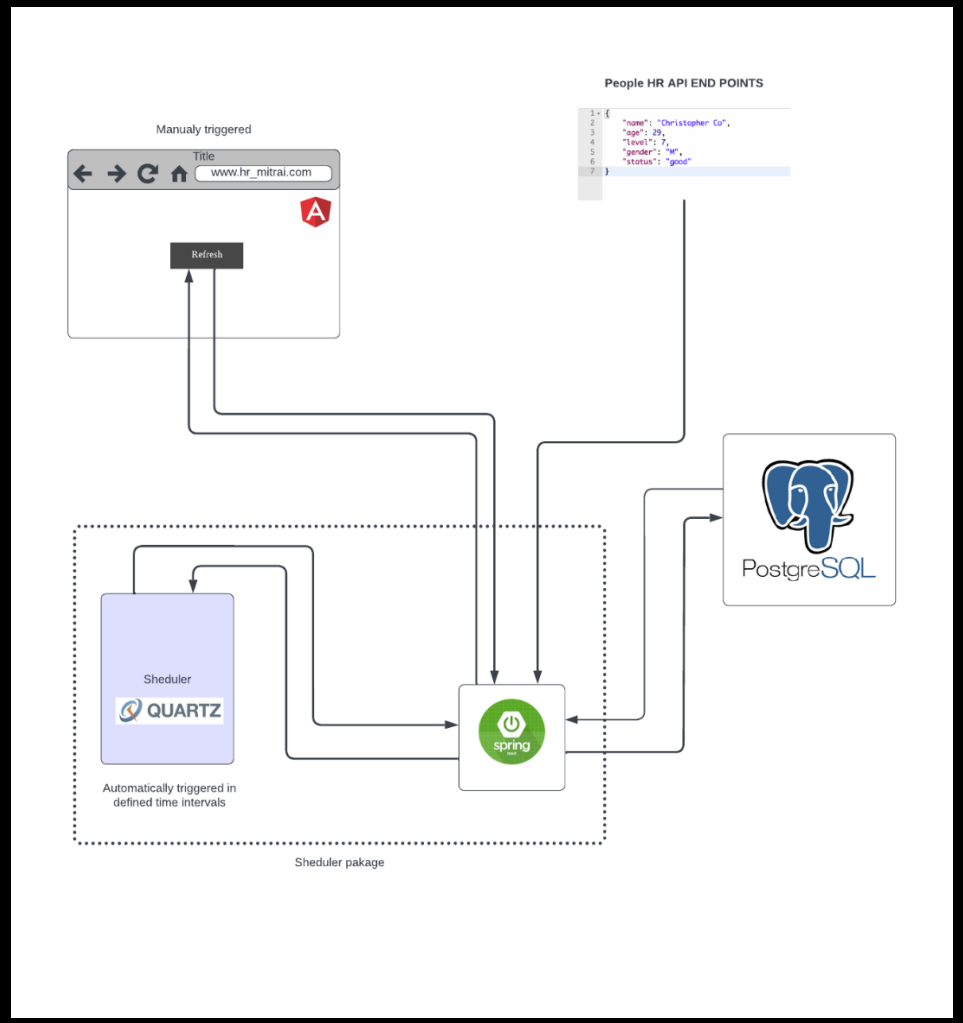


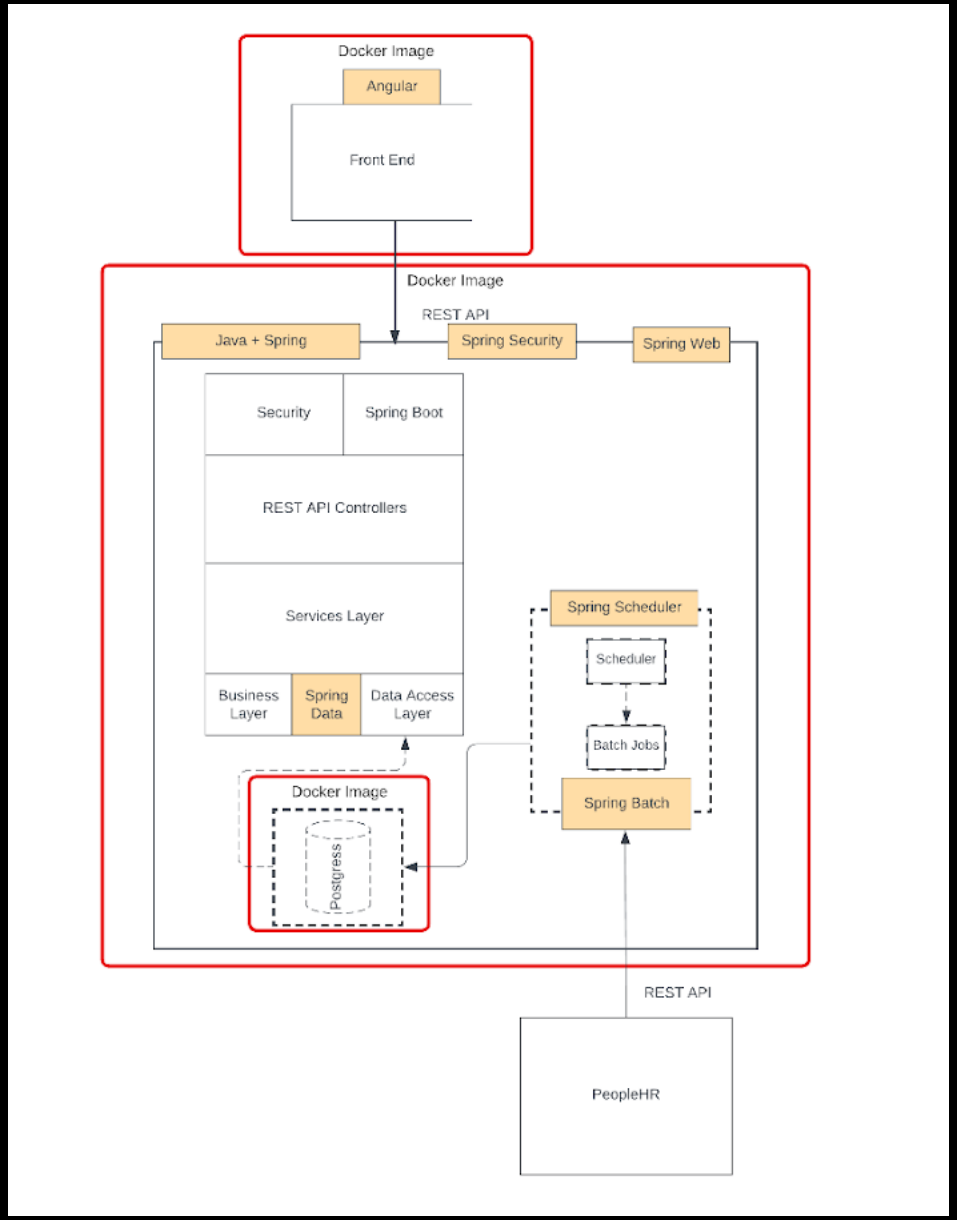
Applicant Tracking System

TASK-1

- Create a relational database and design the ER diagram for ATS by observing the entities through the peopleHR sandbox environment.
- Create a scheduler to sync both peopleHR data with currently propose ATS application.

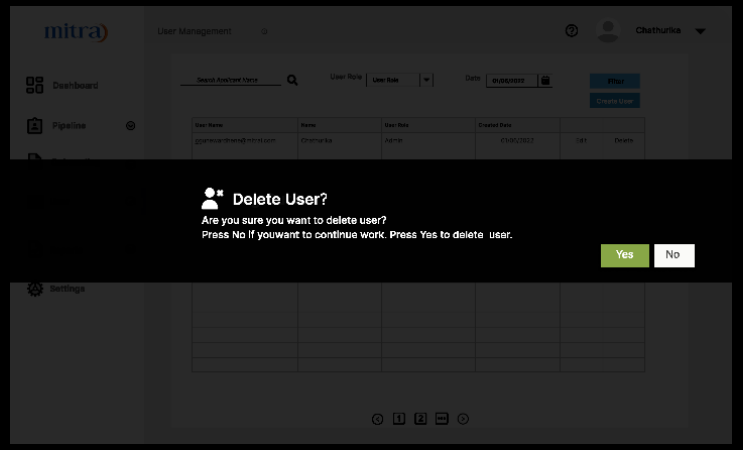


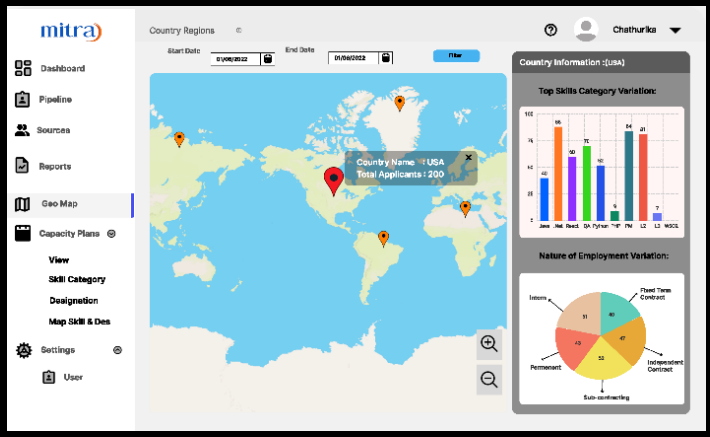

People HR API END POINTS
{
"name": "Christopher Co",
"age": 29,
"level": 7,
"gender": "M",
"status": "good"
}
Manualy triggered
Title
www.hr_mitrai.com
Refresh
PostgreSQL
Sheduler
QUARTZ
Automatically triggered in defined time intervals
spring
Sheduler pakage

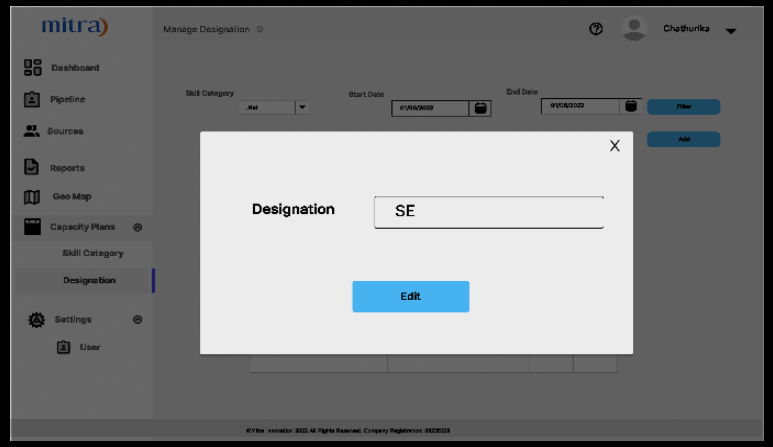

Docker Image
Angular
Front End
Docker Image
REST API
Java + Spring
Spring Security
Spring Web
Security
Spring Boot
REST API Controllers
Services Layer
Business Layer
Spring Data
Data Access Layer
Spring Scheduler
Scheduler
Batch Jobs
Spring Batch
Docker Image
Postgress
REST API
PeopleHR

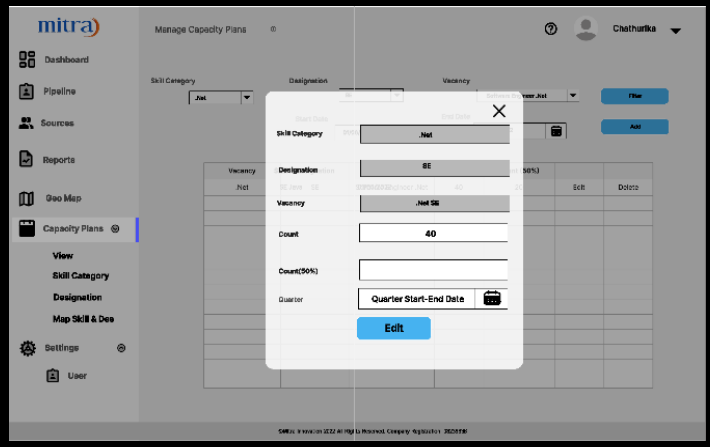
TASK-02

- Designed some wireframes for the ATS using FIGMA UX/UI design tool.



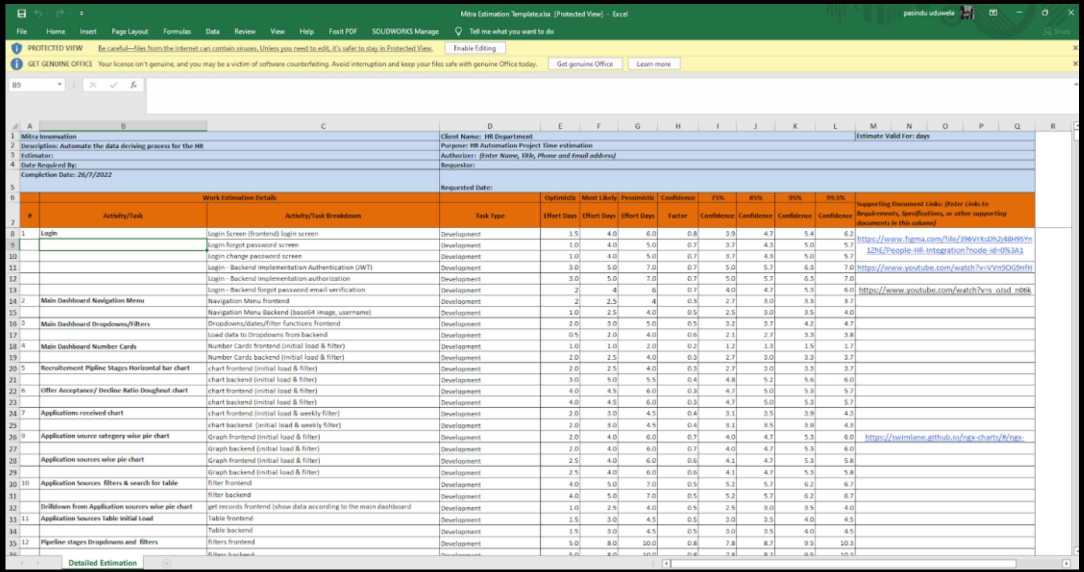






Task-03

- This is a collaborative task assigned to all developers in which we have to fill the Mitra 3-point estimation sheet. The primary purpose is to get a rough idea about the project duration. This helps to draw the timeline using Atlassian project management tools.



TASK-04

- This was a collaborative task assigned to all the developers in the applicant tracking system project.
- Project time line and the grant chart was designed using the Jira project management tools.

❖ Things I have learned during my Internship

Technical

- Golang gin web framework
- Kong
- OpenID Connect
- OAuth2.0
- Swagger
- ETL
- AWS services
- PostgreSQL
- Neo4j
- Data seeder
- GORM
- WSL
- Load balancing
- Docker
- Kubernetes
- Spring scheduler
- Keycloak
- Git/GitHub

Non-Technical

- Jira project management
- Agile development
- Team Burnout
- Project Escalation
- Adaptability
- Documentation
- Communication Skills
- Presentation Skills
- Pressure handling
- Team Collaboration
- Industry Best Practices

THANK YOU !