Sri Lanka Institute of Information Technology

Power Grid Maintenance System – ElectroGrid

Project Report

Programming Applications and Frameworks – IT3030

Group ID – 146

Group Members

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Submitted To: Mr. Nalaka Dissanayake

2022.04.24

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Members details

Member Name	IT Number	Contribution
Jayasooriya C. A	IT20250942	Breakdown Information Service • Add breakdown. • Read all breakdowns. • Read a sector's breakdowns. • Update breakdown. • Delete breakdown. Payment Management Service • Insert payment.
Gavindya N.A.C	IT20409982	User Management Service • Add a user. • Read all users. • Update user. • Delete user. Payment Management Service • Delete payment.
Bandara T.M.Y.M	IT20492052	Bill Management Service • Add a bill. • Read all bills. • Update bill. • Delete bill. Payment Management Service • Update payment.
Rathnaweera R.P.W.G	IT20237554	Inquiry Support Service • Add an inquiry. • Read all inquiries. • Update inquiry. • Delete inquiry. Payment Management Service • Read all payments.
Amanullath M. U	IT20155520	Power Consumption Service • Add a reading. • Read all reading history. • Update reading. • Delete reading. Payment Management Service • Calculate due amount.

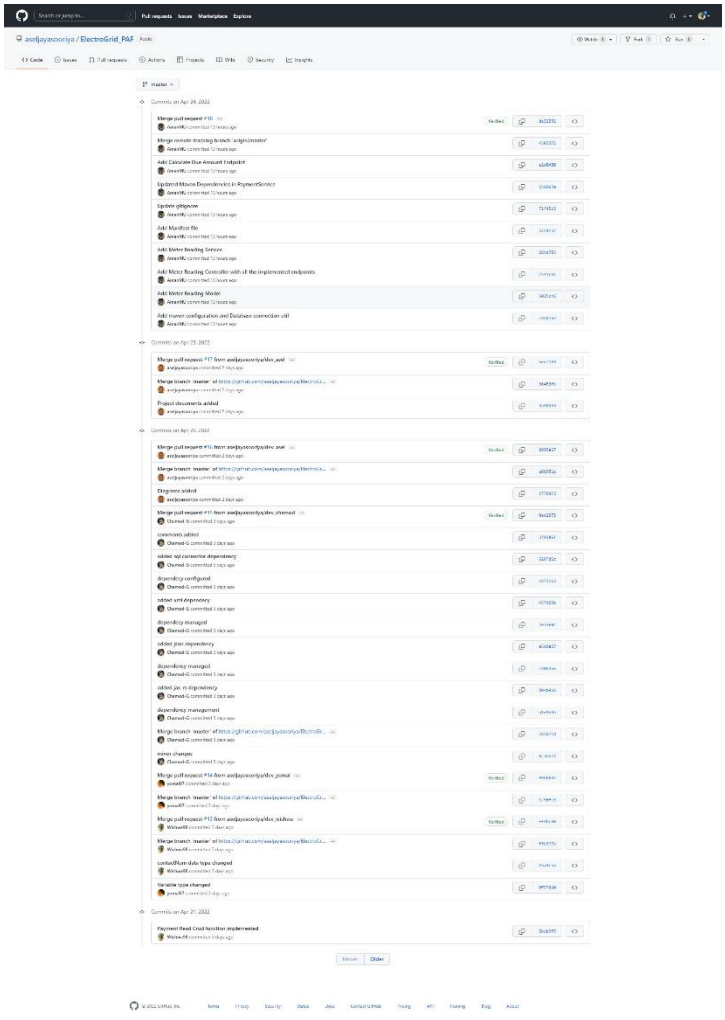
Git Repository Details

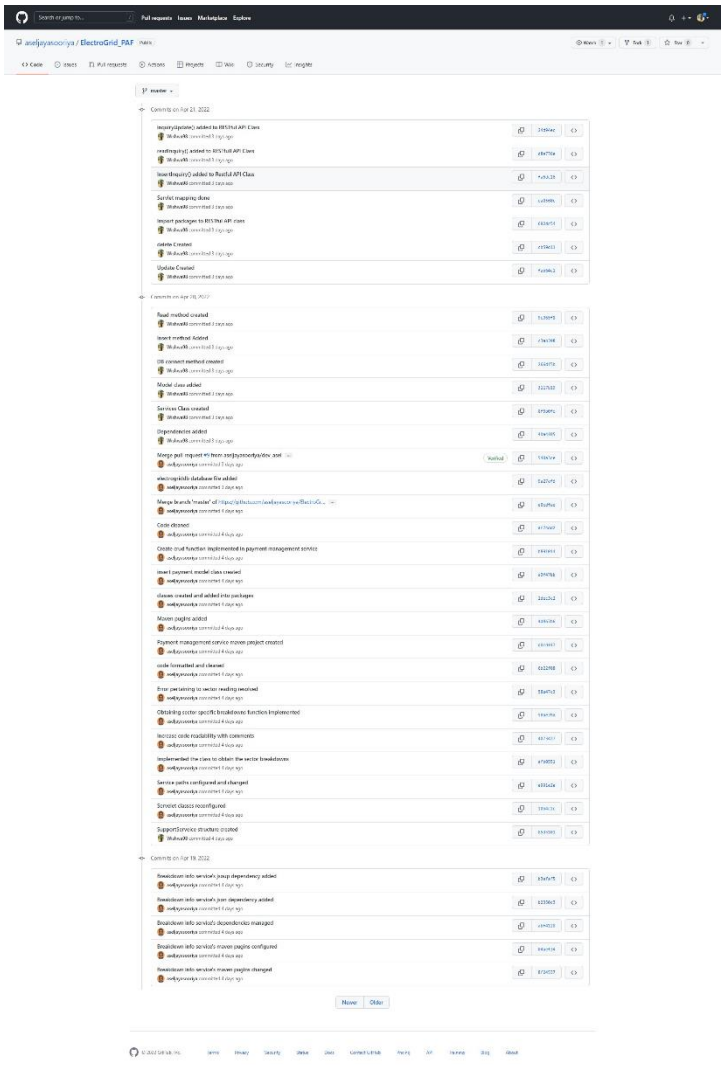
Clickable Link to the Remote Repository

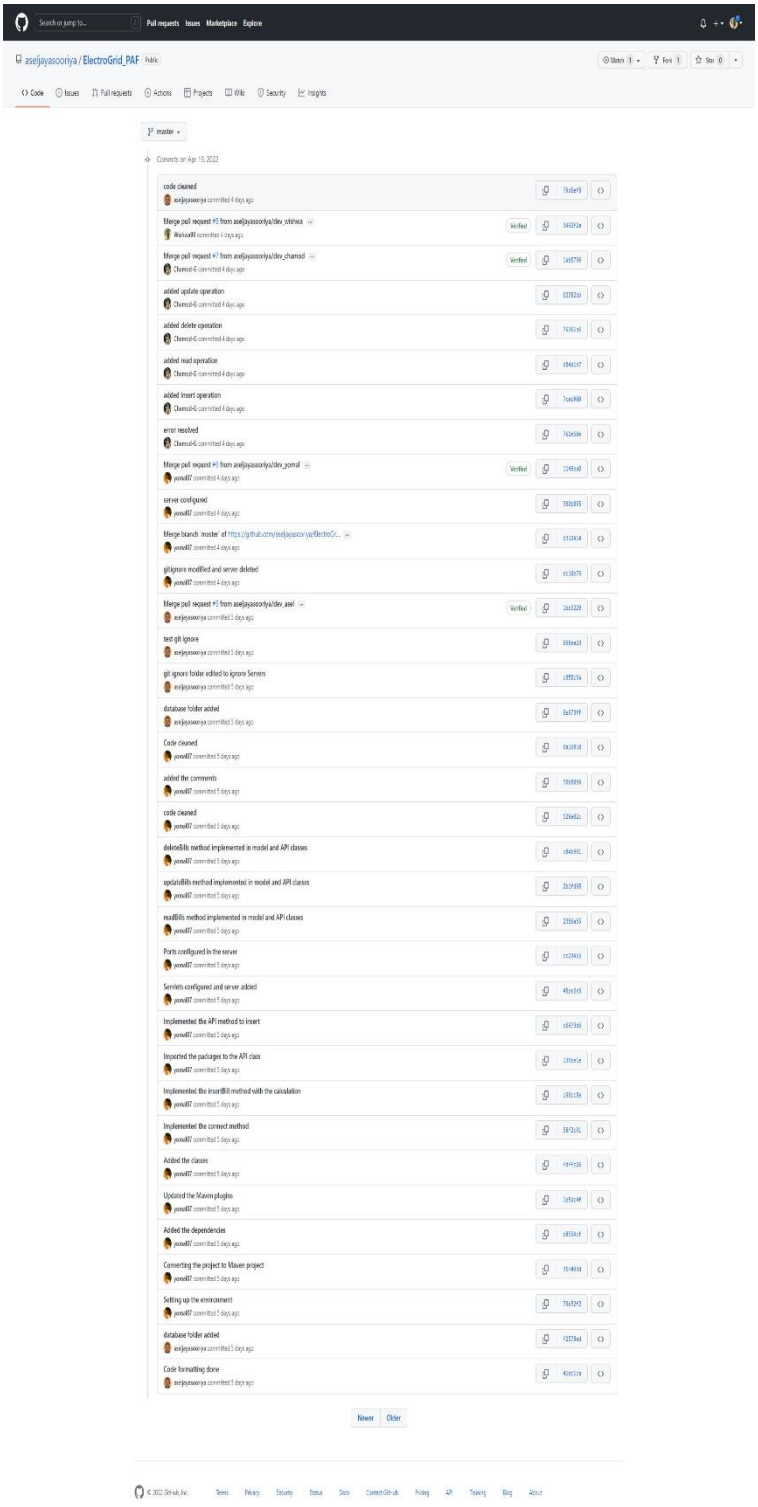
The following is the clickable link which prompts the remote GitHub repository that was created to maintain the collaborative work environment throughout the project's duration.

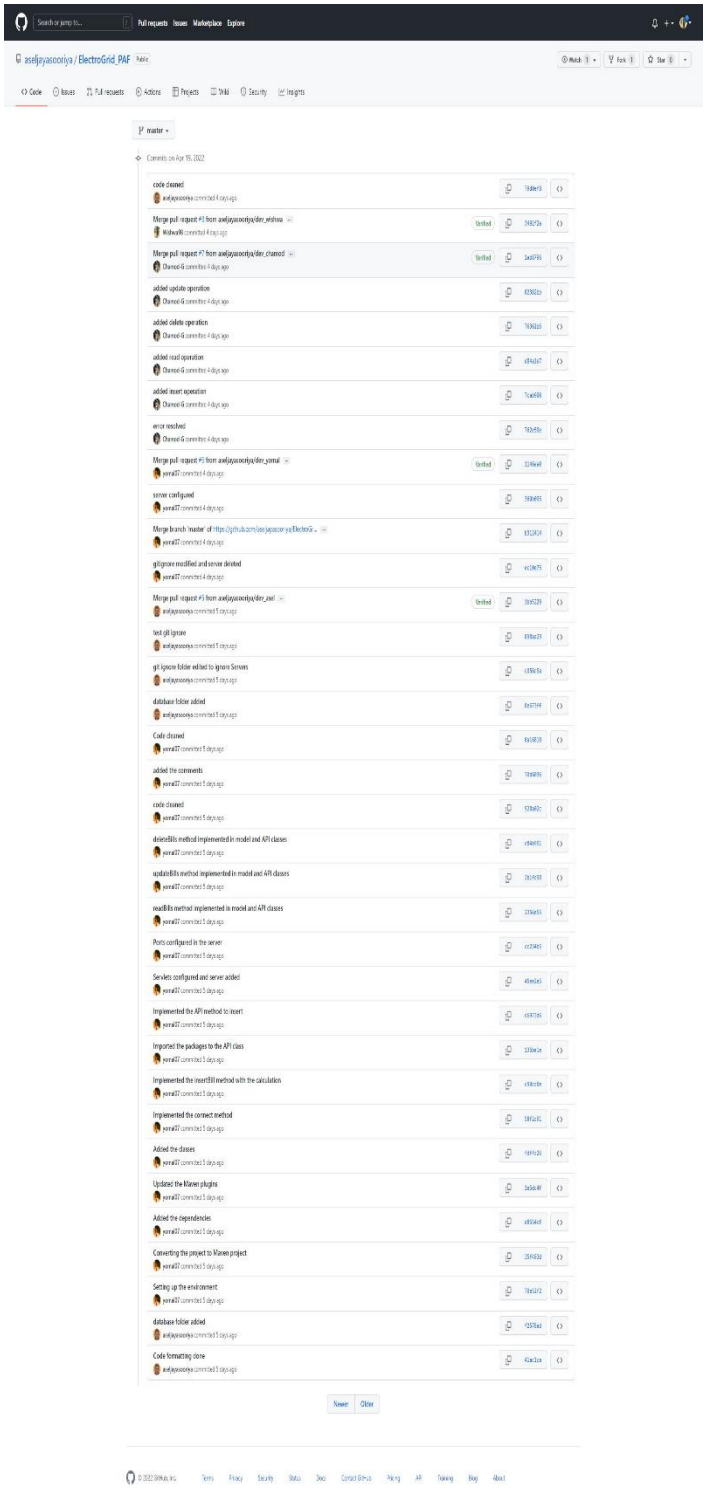
https://github.com/aseljayasooriya/ElectroGrid_PAF.git

Commit Log









Software Engineering Methodology

To accomplish efficient software development, this project employs the AGILE technique [1]. The AGILE technique is a process that encourages continuous development and testing throughout the project's software development lifecycle.
Unlike the Waterfall methodology, development and testing are done simultaneously.
First, requirements are gathered and analyzed. The users are always defined and a vision statement on the scope of challenges, opportunities, and values to be addressed is always documented in an agile software development process.

Four major principles [2] for agile project are:

1. Individuals and interactions over processes and tools.
2. Working software over comprehensive documentation.
3. Customer collaboration over contract negotiation.
4. Responding to change over following a plan.

The AGILE methodology's typical iteration process flow may be illustrated as follows:

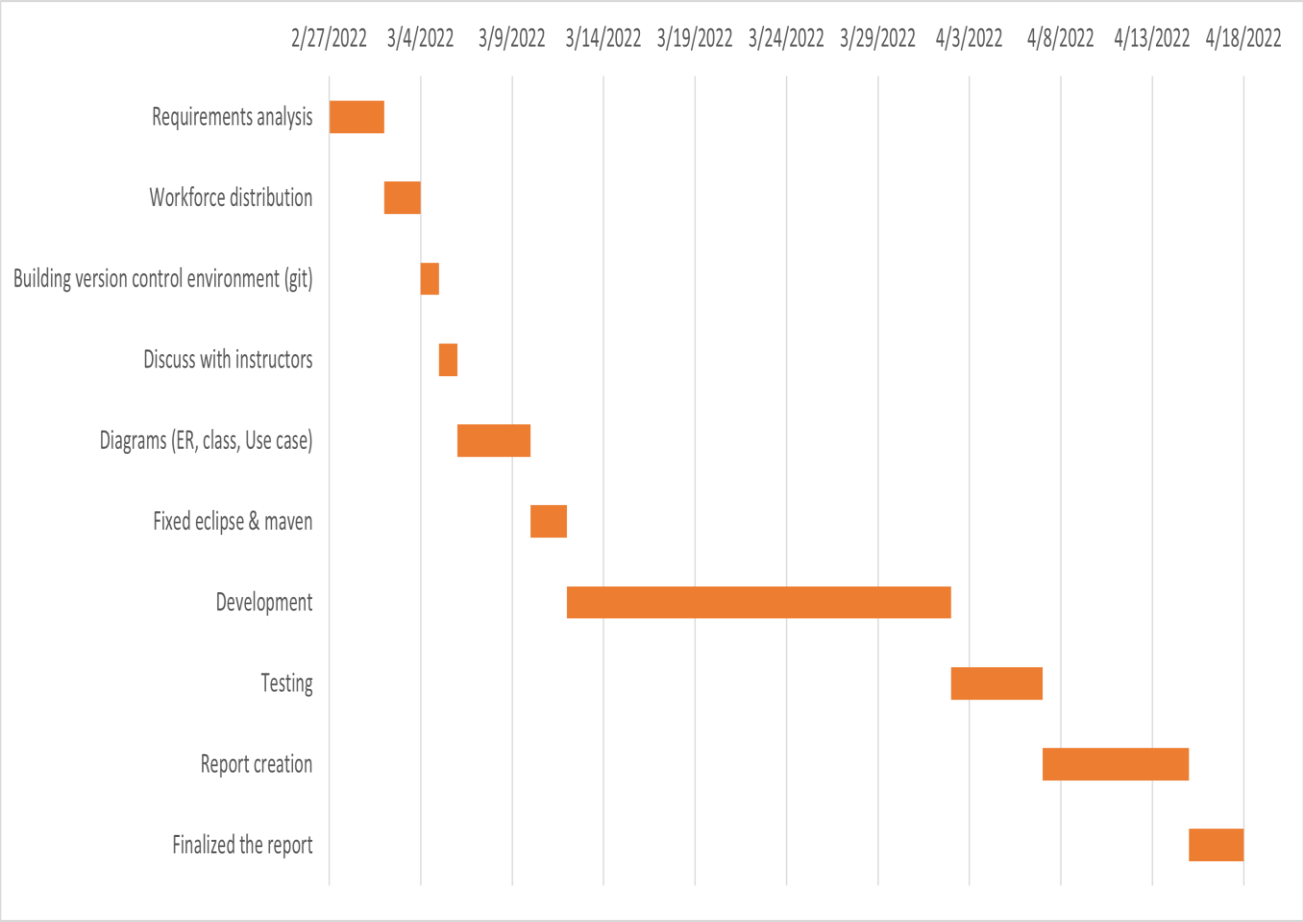
- Requirements – Define the iteration's needs based on the product backlog, sprint backlog, and feedback from customers and stakeholders.
- Development – Create software based on a set of specifications.
- Testing – Internal and external training, as well as documentation development, are all part of the QA (Quality Assurance) process.
- Delivery – Integrate the working iteration into production and deliver it.
- Feedback – Accept consumer and stakeholder input and incorporate it into the next iteration's needs.

The AGILE methodology supported the development of the system in the following ways:

1. Set up a well-organized project management process.
2. Iterative development and testing are at the heart of the development lifecycle.
3. As a result of cross-team collaboration, requirements and solutions arise.
4. Allows for the rapid development of high-quality software.
5. Can quickly detect flaws, lowering risk.
6. It is more versatile than traditional methods since it can respond to changes faster.
7. It requires less planning and allows for more minor changes.

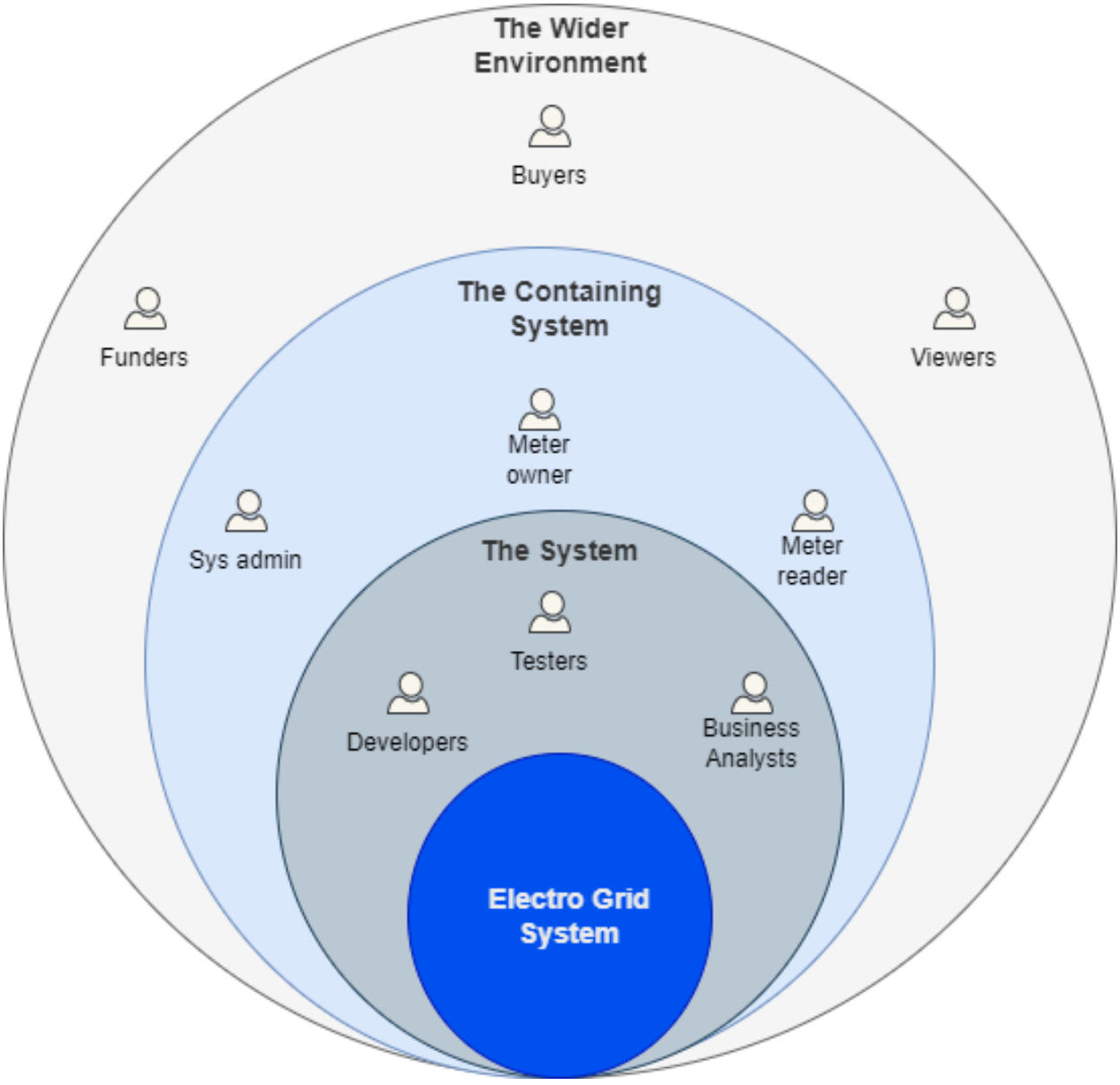
Restful architecture is used to construct the overall architecture while keeping the system's development in mind. REST web services are used to interact amongst micro services, and each micro service is built using the MVC framework.

Time schedule (Gantt chart)



Requirements Analysis

Stakeholder Analysis



Functional Requirements

This establishes the specifications, or what a system should be able to accomplish. When specific conditions are met, it is the system's behavior [3]. The functional requirements of the Electro Grid system are the tasks that it must complete. The functional requirements that emerged from significant inter-team discussions and research are mentioned below.

Registering a new user

- System admin can register a new user to the system. A user can be meter owner and meter reader

Breakdown management

- When a user experiences a technical failure, electricity breakdowns, he/she can inform the breakdown manager via a form.

Bill management

- Usage of a consumers electricity consumptions are detected by the meter reader and the bill of the customer is prepared accordingly.

Payment management

- A meter owner can pay the bill related to their consumptions as the bill manager has finalized.

Support and Inquiry management

- When there are complaints and feedbacks for the consumers, they can use the form and address the admin for clarifications.

Power Consumption management

- The system should have the ability to read the power consumption of the users.

Non-functional Requirements

These are requirements that aren't tied to a specific feature. Another word for this is quality attributes [4]. These criteria are more crucial to a system than the functional requirements since without them, the system would be unusable.

Performance:

- in the web application performance must be considered heavily since both customers and the system administrators are using this web application to make their task easier so the application must be loaded to the users within a minimum time.
- Web application should support the main available web browsers that commonly used by the users
- There are more than 1000s of record since that when accessing data in the database it should be done with a minimum time.

Security:

- Security is one of the utmost importance in the application as a lot of data and personal information are handle via the application. All the necessary security measures are taken within the application, as it contains payments information, personal contact information.
- To ensure the security adding new users and updating or deleting existing users can be done only using the administrators end.

Availability:

- As this a web application runs via the online platform the application will be used by the users at any time throughout the day. Therefore, the application should be available to accessible at any time. (24*7)

Safety:

- If a system failure occurs on any time the database of this web application should be backup immediately. Since many useful data are used in this application.

  Maintainability:

- The application has been designed and implemented in a very functional and practical manner, where the maintenance of the application needs minimum effort. Proper coding standards and practices have enabled this feature.

Reliability:

- Reliability is very important aspect in a web application since web application must have the ability to perform the provided functions and tasks from the customers' side and the system administrators' side with a minimum failure rate.

Technical Requirements [1]

Browser capability:

- This system should use a web browser like google chrome, Mozilla Firefox, opera, brave to access world wide web. but some older version web browsers like Microsoft edge might not support well for this web application.

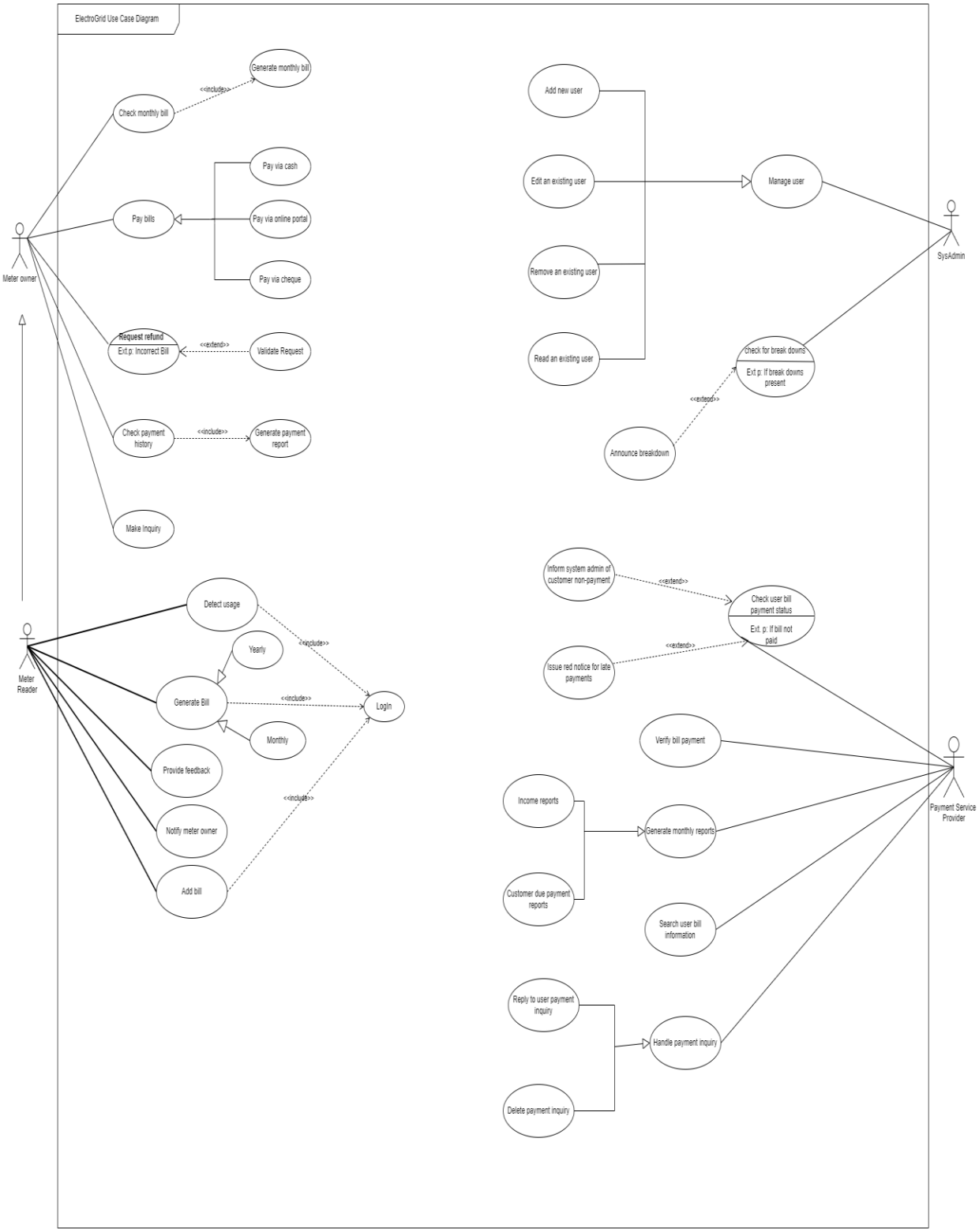
Mobile responsive design:

- a website will be responsive if the layout of the web application adjusts to the screen of the viewers who visit this web application. We had developed this to display well across all the devices like mobile, tablet, laptop, and PC.

Operating Systems:

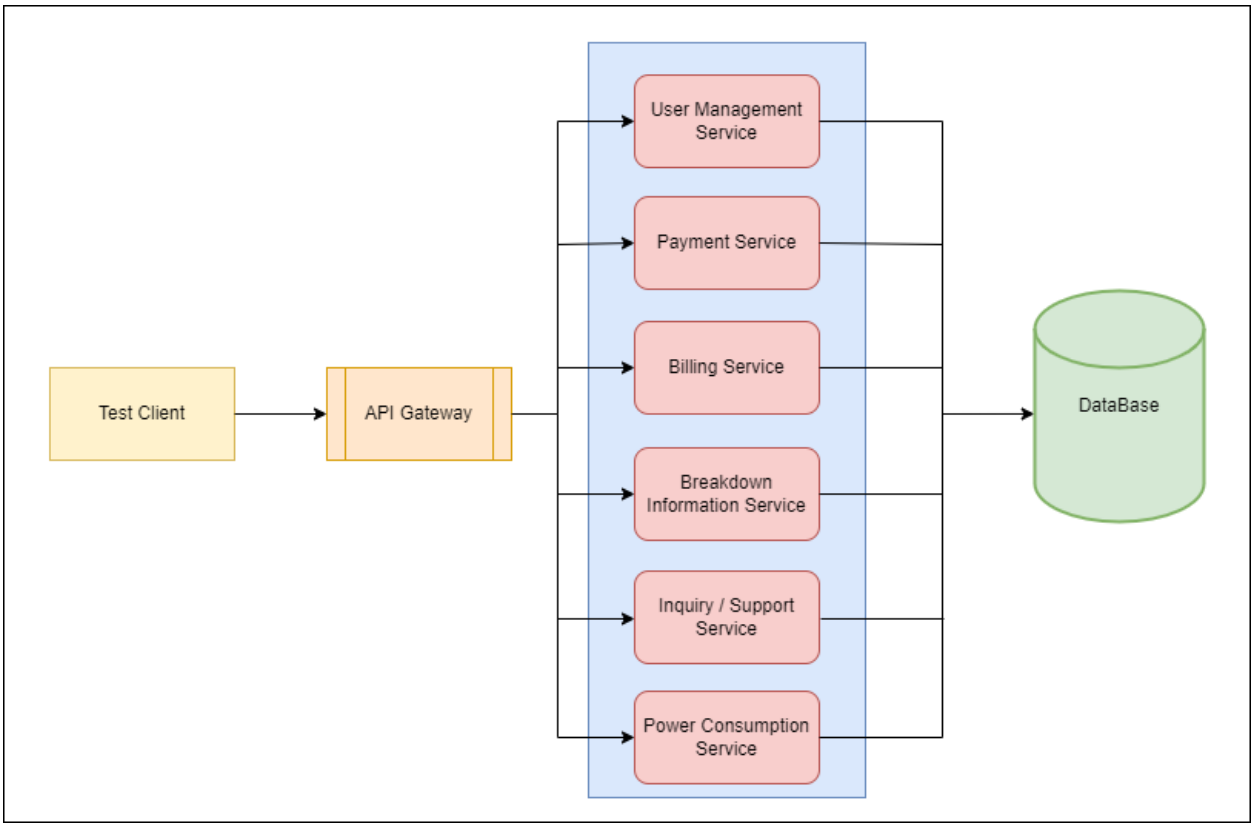
- Since many users are using this web application, we had developed this to support main operating system like Windows, Linux and MACOS. which most of the users use these days.

Use Case Diagram (Requirements Modelling)



System's overall design

System's Overall Architecture

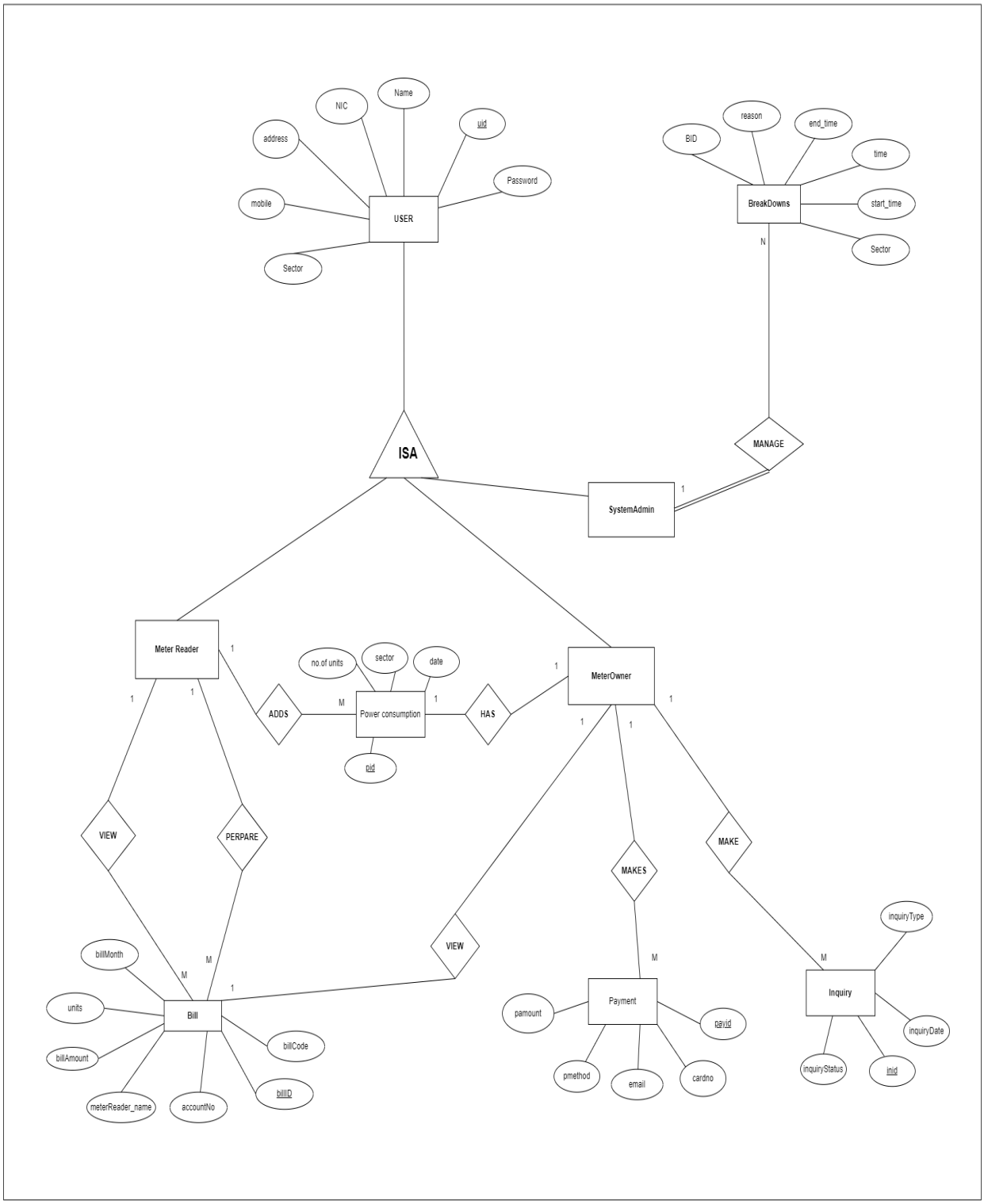


The RESTful architecture was used in the development of this project. The cornerstone of a RESTful API, also known as a RESTful web service [5] or REST API, is Representational State Transfer (REST).

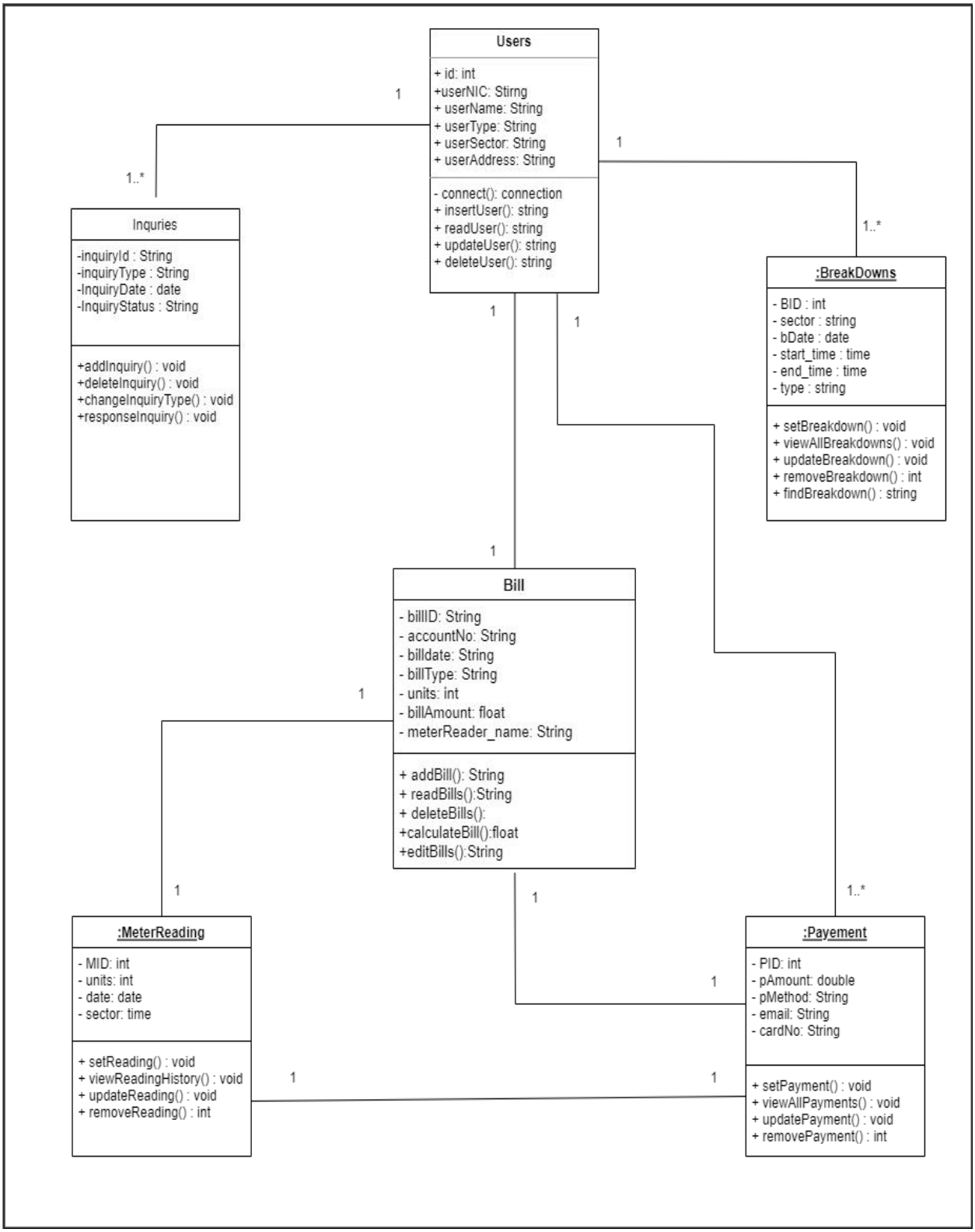
This architectural style and technique are often used in web services development for communications; this style allows systems to request access to and modify online resources using a standard and predetermined set of rules, hence it was chosen for this project with unanimous agreement within the team [6].

This system is made up of a client who makes requests for resources and a server that provides those resources and replies to those requests. Gateways can be used to call various back-end services and aggregate the results, in addition to accepting direct queries. An API, like practically all software, must cater to the demands of the people who use it. Because it interacts with the end user, an API differs from a GUI or other user interface [7]. This API only exposes database functionalities such as Create, Read, Update, and Delete (CRUD) activities via those services.

Overall Database Design – Entity Relationship Diagram



Class Diagram



Individual sections

Jayasooriya C.A - IT20250942

API description of the Breakdown Information Service.

POST -
• Resource: Breakdowns

• Request: POST BreakdownInformationService/BreakdownService/Breakdowns

Media Type: Form Data- Application_FORM_URLENCODED

Data: breakdownSector, breakdownDate, startTime, endTime, breakdownType.

• Response: String Status message “Inserted Successfully”

GET -
• Resource: Breakdowns

• Request: GET BreakdownInformationService/BreakdownService/Breakdowns

• Response: HTML table with breakdownSector, breakdownDate, startTime, endTime, breakdownType columns.

GET -
Resource: Breakdowns

• Request: GET BreakdownInformationService/BreakdownService/Breakdowns/{breakdownSector}

Media Type: Form Data- Application_FORM_URLENCODED

Data: breakdownSector.

• Response: HTML table with breakdownSector, breakdownDate, startTime, endTime, breakdownType columns.

PUT -
• Resource: Breakdowns

• Request: PUT BreakdownInformationService/BreakdownService/Breakdowns

Media Type: Form Data- Application_FORM_URLENCODED

Data: breakdownID, breakdownSector, breakdownDate, startTime, endTime, breakdownType.

• Response: String Status message “Updated successfully.”

DELETE
• Resource: Breakdowns

• Request: DELETE BreakdownInformationService/BreakdownService/Breakdowns

Media Type: Form Data- Application_FORM_URLENCODED

Data: breakdownID.

• Response: String Status message “Deleted Successfully”

API description of the Breakdown Payment Service.

POST -
• Resource: Payments

• Request: POST PaymentManagementService/PaymentService/Payments

Media Type: Form Data- Application_FORM_URLENCODED

Data: accountNo, paymentAmount, paymentMethod, cardNo, email.

• Response: String Status message “Inserted Successfully”

- Please refer the Individual Work Appendix section for:
    1. Individual Class diagrams.
    2. Individual Activity diagrams.
    3. Use case Scenario.
    4. Tools used, including justifications for their selection.

- Please refer the Testing methodology Appendix section for:
    1. Testing methodology and results

Gavindya N.A.C - IT20409982

API description of the User Management Service.

Post-

- Resource: Users
- Request: POST UserManagementService/UserManagementService/Users
    - Media Type: Form Data- Application_FORM_URLENCODED
    - Data: userID, userNIC, userName, userAddress, userType, userSector
- Response: String Status message “Inserted Successfully”

Get –

- Resource: Users
- Request: Get UserManagementService/UserManagementService/Users
    - Data: userID, userNIC, userName, userAddress, userType, userSector
- Response: HTML table with userNIC, userName, userAddress, userType, userSector columns

PUT-

- Resource: Users
- Request: PUT UserManagementService/UserManagementService/Users
    - Media Type: Application_JSON
    - Data: userID, userNIC, userName, userAddress, userType, userSector
- Response: String Status message “Updated Successfully”

DELETE-

- Resource: Users
- Request: DELETE UserManagementService/UserManagementService/Users
    - Media Type: Application_XML
    - Data: userID
- Response: String Status message “Deleted Successfully”

API description of the Payment Service.

POST -

- Resource: Payments
- Request: DELETE PaymentManagementService/PaymentService/Payments
    - Media Type: Form Data- Application_FORM_URLENCODED
    - Data: paymentID
- Response: String Status message “Deleted Successfully”

- Please refer the Individual Work Appendix section for:
    1. Individual Class diagrams.
    2. Individual Activity diagrams.
    3. Use case Scenario.
    4. Tools used, including justifications for their selection.

- Please refer the Testing methodology Appendix section for:
    1. Testing methodology and results

Bandara T.M.Y.M - IT20492052

API description of the Bill management service.

POST -
• Resource: Bills

• Request: POST BillService/BillService/Bills

Media Type: Form Data- Application_FORM_URLENCODED

Data: billCode, accountNo, billmonth, units, meterReader_name

• Response: String Status message “Inserted Successfully”

GET -
• Resource: Bills

• Request: BillService/BillService/Bills

• Response: HTML table with billCode, accountNo, billmonth, units, billAmount, meterReader_name columns.

PUT -
• Resource: Bills

• Request: PUT BillService/BillService/Bills

Media Type: Form Data- Application_FORM_URLENCODED

Data: billID, billCode, accountNo, billmonth, units, meterReader_name

• Response: String Status message “Updated successfully.”

DELETE
• Resource: Bills

• Request: DELETE BillService/BillService/Bills

Media Type: Form Data- Application_FORM_URLENCODED

Data: billID.

• Response: String Status message “Deleted Successfully”

API description of the Breakdown Payment Service.

PUT -

• Resource: Payments

• Request: POST PaymentManagementService/PaymentService/Payments

Media Type: Form Data- Application_FORM_URLENCODED

Data: paymentID, accountNo, paymentAmount, paymentMethod, cardNo, email.

• Response: String Status message “Updated Successfully”

- Please refer the Individual Work Appendix section for:
    1. Individual Class diagrams.
    2. Individual Activity diagrams.
    3. Use case Scenario.
    4. Tools used, including justifications for their selection.

- Please refer the Testing methodology Appendix section for:
    1. Testing methodology and results

Rathnaweera R.P.W.G - IT20237554

API description of the Support Inquiry Service

POST-

- Resource: Inquiry
- Request: POST SupportInquiryService/InquiryService/Inquiry

  Media Type: Form Data- Application_FORM_URLENCODED

  Data: inquiryTitle,inquiryDesc,contactNum

- Response: String Status message “inserted successfully”

GET-

- Resource: Inquiry
- Request: GET SupportInquiryService/InquiryService/Inquiry
- Response: HTML table with Inquiry Title, Inquiry Description, Contact Number columns.

PUT-

- Resource: Inquiry
- Request: PUT SupportInquiryService/InquiryService/Inquiry

  Media Type: Form Data- Application_FORM_URLENCODED

  Data: inquiryID,inquiryTitle,inquiryDesc,contactNum

- Response: String Status message “Update Sucessfully”

DELETE-

- Resource: Inquiry
- Request: DELETE SupportInquiryService/InquiryService/Inquiry

  Media Type: Form Data- Application_FORM_URLENCODED

  Data: inquiryID

- Response: String Status message “Deleted Sucessfully”

API description of the Breakdown Payment Service

GET-

- Resource: Payment
- Request: GET PaymentManagementService/PaymentService/Payment
- Response: JSON array with Account Number, Payment Amount, Payment Method, Card Number, email columns.

❖ Please refer the Individual Work Appendix section for:

1. Individual Class diagrams.
2. Individual Activity diagrams.
3. Use case Scenario.
4. Tools used, including justifications for their selection.

❖ Please refer the Testing methodology Appendix section for:

1. Testing methodology and results

Amanullath M.U - IT20155520

API description of the Power Consumption Information Service.

POST -

• Resource: MeterReadings

• Request: POST PowerConsumptionService/readings

Media Type: JSON- Application_Json

Data: meterReaderId, accountNo, year, month, reading.

• Response: JSON object {

"data": {

// inserted data

},

"message": "Meter Reading added successfully",

"status": "success"

}

GET -

• Resource: MeterReadings

• Request: GET PowerConsumptionService/readings

• Response: JSON array of meterRaeading objects.

GET -

Resource: MeterReadings

• Request: GET PowerConsumptionService/readings/account/:accountNo?year={year}&month={month}

Data: account number, year, month.

• Response: Meter Reading object as JSON which matches parameters.

PUT -

• Resource: MeterReadings

• Request: PUT PowerConsumptionService/readings/account/1?year=2022&month=10

Media Type: JSON – Application_Json

Data: reading.

• Response: JSON with Status “success” and message “Meter Reading Updated successfully.”

DELETE
• Resource: MeterReadings

•Request:

DELETE
PowerConsumptionService/readings/account/:accountNo?year={year}&month={month}

Data: accountNo, year, month.

• Response: String Status message “Deleted Successfully”

API description of the Breakdown Payment Service.

POST -
• Resource: Payments

•Request:

POST
PaymentManagementService/PaymentService/Payments/account/:accountNo/due?asOfDate={date}

Data: accountNo, asOfDate (the date which the due amount must be calculated.

• Response: Double calculated due amount as at the given date

- Please refer the Individual Work Appendix section for:
    1. Individual Class diagrams.
    2. Individual Activity diagrams.
    3. Use case Scenario.
    4. Tools used, including justifications for their selection.

- Please refer the Testing methodology Appendix section for:
    2. Testing methodology and results

System’s Integration Details

SI (system integration) [8] is an IT or engineering process or phase involved with bringing together several subsystems or components into a single huge system. It guarantees that each integrated subsystem performs to specification.

SI may also be used to add value to a system by combining features from multiple systems to create new functionality.

Using an API gateway to integrate a group of online services [5] might be deemed a successful method.

An API organizes the requests that are handled by the microservices architecture in order to provide a more user-friendly experience for the client. With request routing, composition, and protocol translation, it accepts all API calls from clients and directs them to the relevant microservice. It's a translator who takes a customer's various requests and condenses them into a single request, reducing the number of rounds between the client and the application. In most cases, it responds to a request by calling numerous microservices and aggregating the data to find the most efficient approach.

It makes sense to create an API gateway [9] for most microservices-based systems since it operates as a single point of entry into the system. The API gateway is in charge of request routing, composition, and protocol translation, and it may help the system run more smoothly. Each of the application's customers receives a bespoke API when using an API gateway. Some requests are simply sent to the relevant backend service, while others are handled by calling numerous backend services and aggregating the results. If the backend services fail, the API gateway can hide the faults by delivering cached or default data.

References

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Appendix

Stakeholder Analysis

The Stakeholder Onion Diagram is a popular tool for visualizing stakeholder links to a project aim. We can determine the following stakeholder categories in order to create a Stakeholder Onion Diagram:

• Layer 1: Stakeholders who have been directly involved in the development of the product, which might be a new system or process. Software developers, testers, and other stakeholders are examples of stakeholders.

• Layer 2: Stakeholders whose job is affected by the solution. End users, for example.

• Layer 3: Investors, buyers, viewers, and subject matter experts who engage with the system on a regular basis.

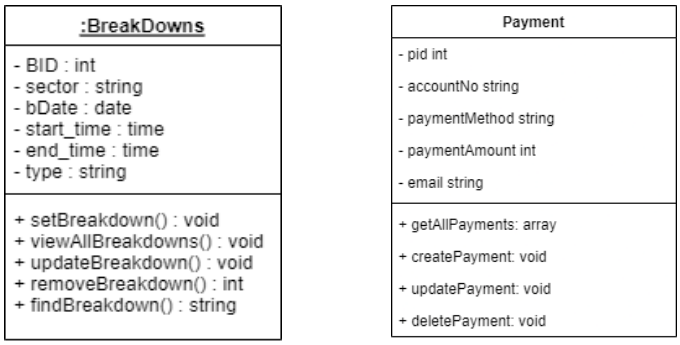
According to this system, the onion diagram layers must be following:

1. Layer 1: Tester, Developer, Business Analyst
2. Layer 2: Sys Admin, Meter owner, Meter reader
3. Layer 3: Funders, Buyers, Viewers

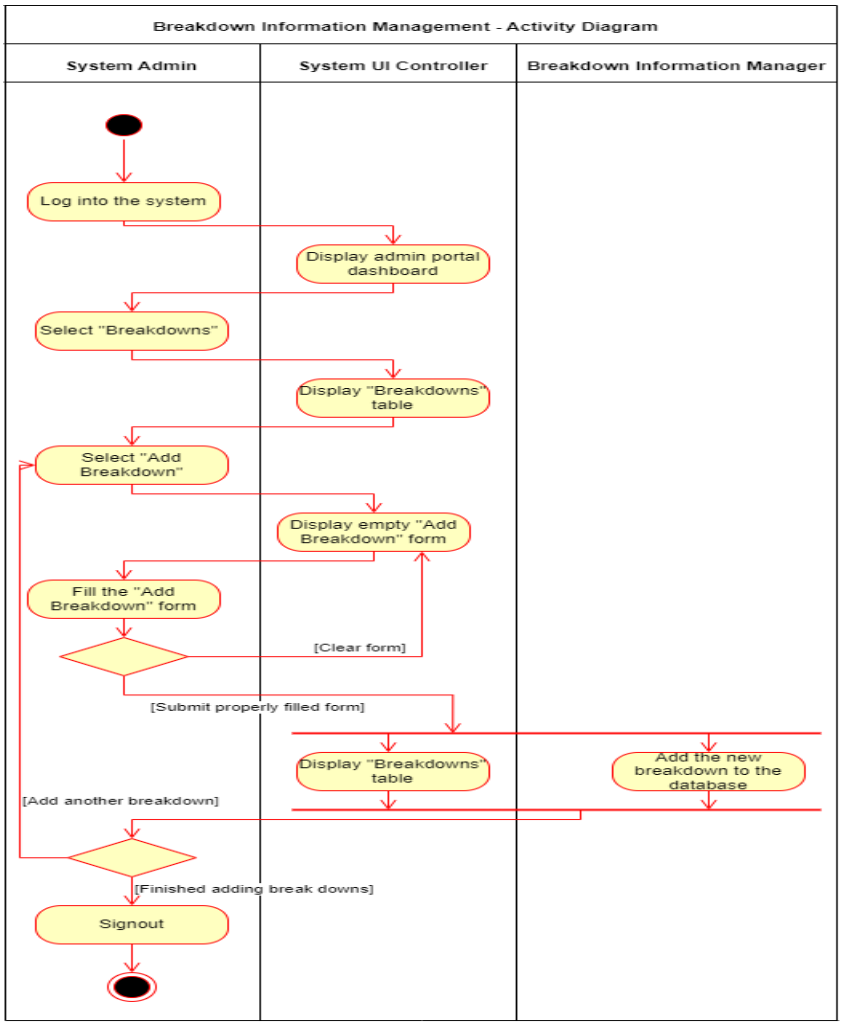
Individual Work

Jayasooriya C.A - IT20250942

Class Diagram.



Activity Diagram.



Use Case Scenario Diagram.

Number	**EG003**	
Name	Add breakdown announcement	
Summary	System Administrator can add a breakdown notice into the system.	
Priority (0-5)	5	
Preconditions	The user must be logged into the system	
Postconditions	The added breakdown should be displayed in the Breakdowns table.	
Primary Actor(s)	System Administrator	
Trigger	System administrator clicks the add breakdown button.	
Main Scenario	**Step**	**Action**
	1	The Sys Admin is directed to the portal home page
	2	The Sys Admin presses the “Add Breakdown” button
	3	The system displays the form related to the adding a new breakdown
	4	The Sys Admin enters the relevant details in the text fields
	5	The Sys Admin presses the “Add button”
	6	The system clears the entered details of the form
	7	The system sends the filled data to the database
	8	The system redirects the Sys Admin to the updated Breakdowns table
Extensions	**Step**	**Action**
	4a	System displays error message if the required fields are not filled.
	5a	System disables the “Add Breakdown” button unless the checkbox is checked.

Tools Used in the Development Process and the Justifications for Using Them

1. Dependency management tools – Maven.

Maven has been selected and used as the dependency management tool in this project as Maven minimizes the need to study and declare the libraries that your own dependencies require by automatically adding transitive dependencies. It makes managing project dependencies a lot easier. It ensures that the same source code is used across several environments. Dependence Management combines all dependence information into a single POM file, making the references in the child POM file easier to understand. The section on dependency management provides a way for centralizing dependence data.

2. JAX-RS (Jersey) –

It makes creating a RESTful service that can be deployed to any Java application server much easier.

3. Testing tools – Postman.

Postman has been used as the testing tool for this project as Postman is the most suitable tool for testing since it supports a wide range of test types, including unit, functional, integration, regression, mock, and end-to-end tests, all of which can be automated. Creating test suites that will run repeatedly until the application is error-free is one way to automate testing. The advantage is that human errors are extremely unlikely, if not impossible, to occur.

4. Code quality checking tools - Eclipse Check style Plugin.

The project's integrated development environment is Eclipse. As a result, it would be better to use an Eclipse-compatible tool. The Eclipse Checkstyle Plugin inspects Java source code on a regular basis and alerts you if any deviations from standard coding practices are detected. These alarm signals are delivered to the developer via the Eclipse Problems View. This enables for speedier development and saves time.

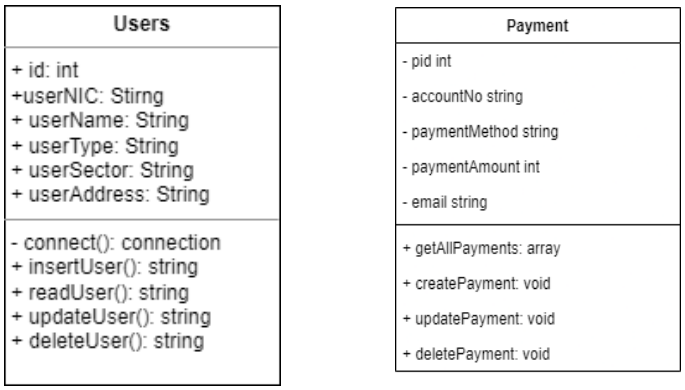
5. Version Controlling System - Git

We require collaboration among our group members because this is a group project, so it's simple to work on the same shared folder and comprehend all that has been done to the project, hence Git was used to facilitate this.

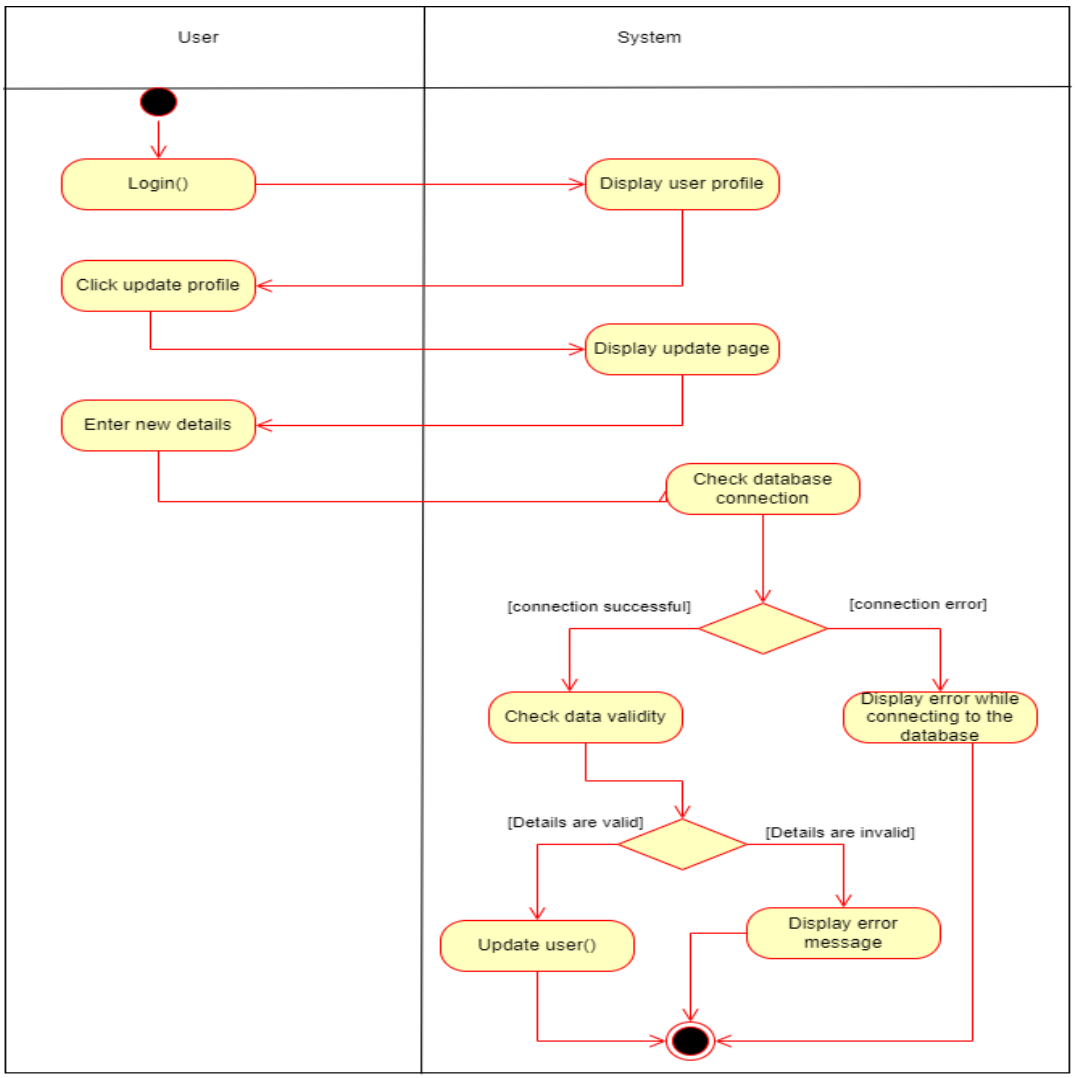
Git is a free, open-source, cross-platform distributed version control system that allows non-linear development and can manage everything from small to huge projects swiftly and effectively. Local branching, convenient staging areas, and various workflows are just a few of Git's capabilities. It also includes a variety of tools to help us navigate through the history, and each instance of the source has the whole history tree, which is quite useful during development even if we don't have Internet connection.

Gavindya N.A.C - IT20409982

Class Diagram.



Activity Diagram.



Use Case Scenario Diagram.

Number	**EG004**	
Name	Update an existing user	
Summary	System Administrator can update an existing user into the system.	
Priority (0-5)	3	
Preconditions	The user must be logged into the system	
Postconditions	The added user should be displayed in the user table.	
Primary Actor(s)	System Administrator	
Trigger	System administrator clicks the update button.	
Main Scenario	**Step**	**Action**
	1	The Sys Admin is directed to the portal home page
	2	The Sys Admin presses the “Update User” button
	3	The system displays the form related to the updating a new user
	4	The Sys Admin enters the relevant details in the text fields
	5	The Sys Admin presses the “Update button”
	6	The system clears the entered details of the form
	7	The system sends the filled data to the database
	8	The system redirects the Sys Admin to the updated User table
Extensions	**Step**	**Action**
	4a	System displays error message if the required fields are not filled.
	5a	System disables the “Update” button unless the checkbox is checked.

Tools Used in the Development Process and the Justifications for Using Them

1. Dependency Management tools– Maven

   Dependency Management consolidates all dependency information into a single POM file, reducing the number of references in child POM files. Maven includes transitive dependencies automatically, so there's no need for it to figure out which libraries are needed. This is accomplished by accessing the dependents' project files from remote repositories.

   The centralization of dependence information is what Dependency Management is all about. For projects that have a common parent and a shared POM, Maven enables for simplified references in the child POM. Furthermore, dependency management establishes a common version of an asset that may be used across various projects.

2. Version Controlling tools– Git

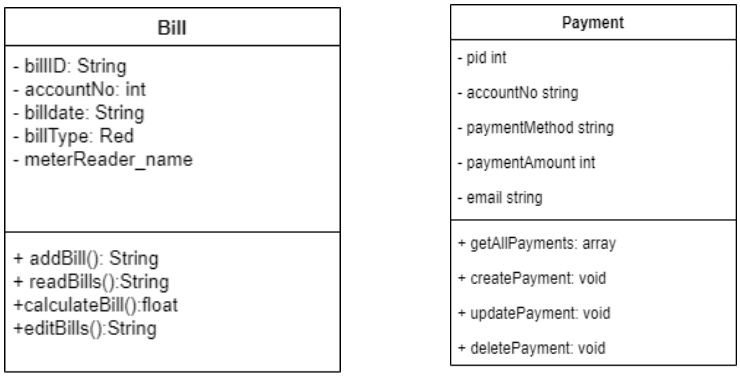
   Git is a free, cross-platform, and open-source distributed version control solution that supports non-linear development and can handle everything from tiny to extremely large projects quickly and efficiently. Git has a number of useful features, like local branching, easy staging spaces, and different workflows. It also provides a number of tools to assist us in navigating around the history, and each instance of the source contains the whole history tree, which is quite useful during development even if we don't have access to the Internet.

3. Testing tools – Postman

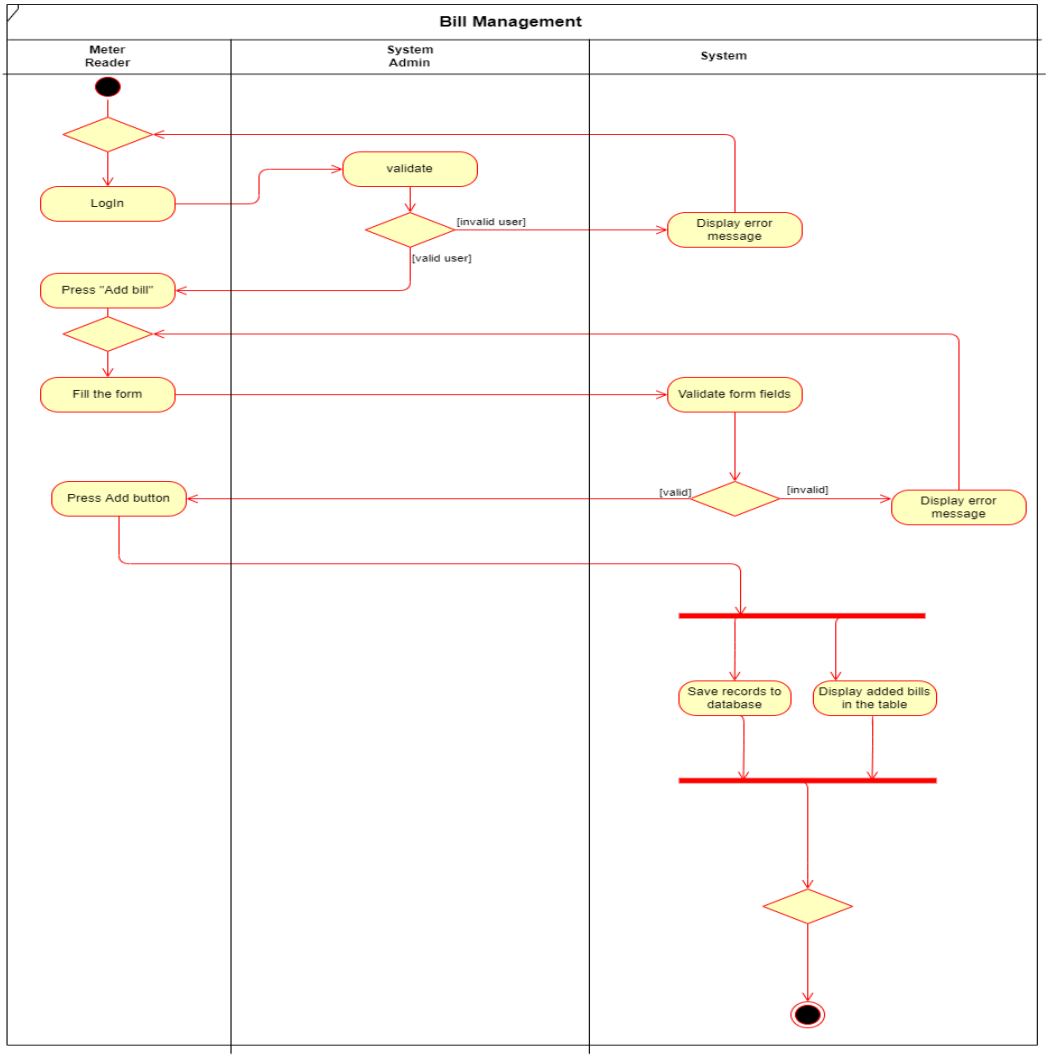
   Postman is the best tool for testing since it allows you to automate a wide range of test types, including unit, functional, integration, regression, mock, and end-to-end tests. One technique to automate testing is to create test suites that will run repeatedly until the application is error-free. Human mistakes are highly rare, if not impossible, to occur, which is a benefit.

Bandara T.M.Y.M - IT20492052

Class Diagram.



Activity Diagram.



Use Case Scenario Diagram.

Number	**EG004**	
Name	Add bill	
Summary	Users can register a new item to the system	
Priority (0-5)	5	
Preconditions	The user must be logged into the system	
Postconditions	The added bill should be in the added bill list	
Primary Actor(s)	Meter reader	
Trigger	Meter reader clicks the add bill option	
Main Scenario	**Step**	**Action**
	1	User logs into the system using staff credentials
	2	The system redirects to the bill management portal
	3	The user presses the “Add bill” button
	4	The system displays the form related to the adding a new bill
	5	The user enters the relevant details in the text fields
	6	The user presses the “Add button”
	7	The system clears the entered details of the form.
	8	The system sends the filled data to the database and shows them in the added bill list
Extensions	**Step**	**Action**
	1a	The system displays an error message
	6a	The system displays alert messages
	6b	The user presses the ok button
	6c	The user enters correct data to the fields

Tools Used in the Development Process and the Justifications for Using Them

1. Dependency management tools – Maven.
   By introducing transitive dependencies automatically, Maven reduces the need to investigate and specify the libraries that your own dependencies require. It makes project dependencies easier to manage. It ensures that the same source code is used in different settings. Dependence Management is used to consolidate all dependency information into a single POM file, simplifying the child POM file's references. The section on dependency management is a way for centralizing dependence data.

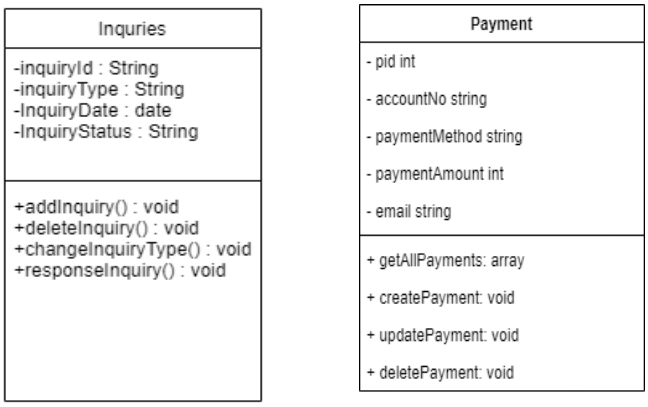
2. Testing tools – Postman.
   Postman is the finest testing tool since it can automate a variety of test kinds, including unit, functional, integration, regression, mock, and end-to-end tests. Creating test suites that run repeatedly until the program is error-free is one method for automating testing. Human errors are extremely rare, if not non-existent, which is a plus.

3. Code quality checking tools - Eclipse Check style Plugin.

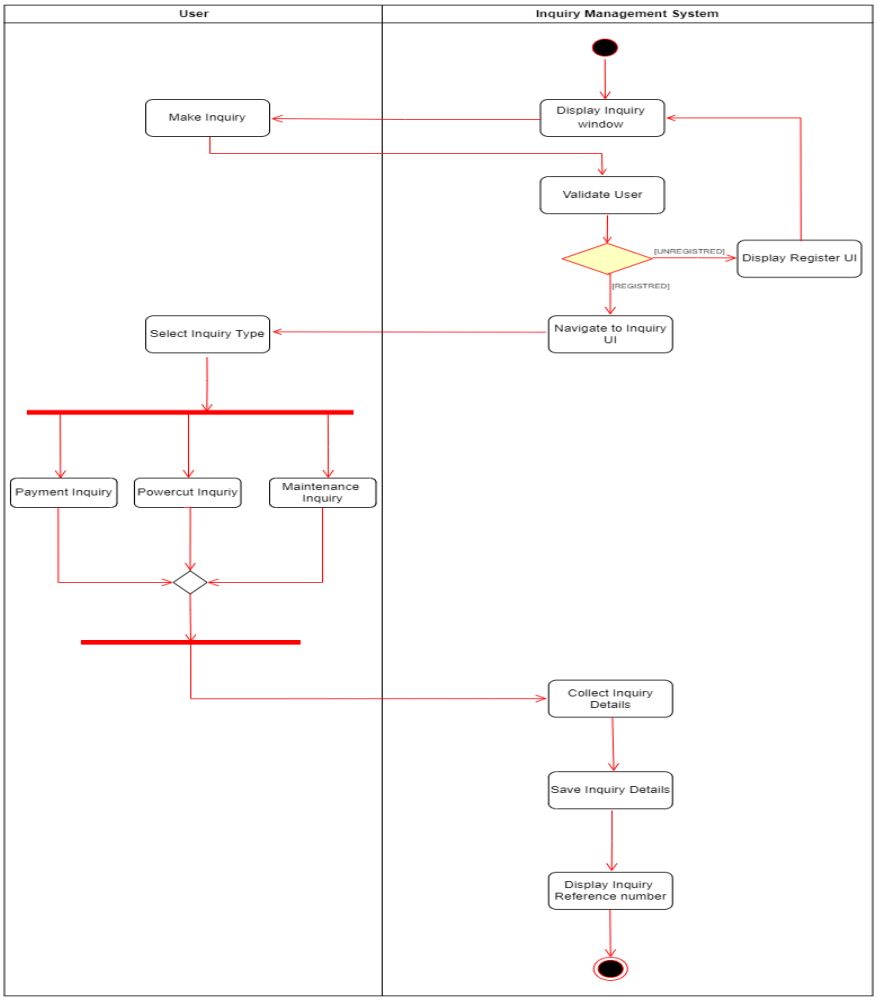
   Eclipse is the project's integrated development environment. As a result, choosing a tool that supports Eclipse would be preferable. The Eclipse Checkstyle Plugin inspects Java source code on a regular basis and notifies you if there are any deviations from the conventional coding norms. The Eclipse Problems View is used to deliver these alert signals to the developer. This saves time and allows for faster development.

Rathnaweera R.P.W.G - IT20237554

Class Diagram.



Activity Diagram.



Use Case Scenario Diagram.

Number	**EG004**	
Name	Make inquiry	
Summary	Meter owner(user) makes inquiry through the system	
Priority (0-5)	5	
Preconditions	The meter owner must be logged into the system	
Postconditions	Submitted inquiry should be posted on the inquiry table	
Primary Actor(s)	Meter owner	
Trigger	Meter owner clicks “Inquiry’ button to add an inquiry	
Main Scenario	**Step**	**Action**
	1	The meter owner will be directed to the portal home page
	2	The Meter owner clicks on the “Add Inquiry” button
	3	The system will display all the related form details to the meter owner to add an inquiry.
	4	The Meter owner add all the details to the relevant fields shown.
	5	The Meter owner press the “Submit Inquiry” button
	6	The system will clear details in the form.
	7	The system sends the data which was filled by the Meter owner to the database
	8	The system redirects the Meter owner back to the home page
Extensions	**Step**	**Action**
	4a	System displays error message if the Meter owner feed wrong details in the form.
	5a	System will disable the “Submit Inquiry” button unless the check box is ticked

Tools Used in the Development Process and the justification for using them

1. Dependency management tools- Maven
   The reason to use dependency management tool like maven is to its easy to manage project dependencies. Maven eliminates the need to explore and specify the libraries that your own dependencies need by adding transitive dependencies automatically. The dependency management section is a mechanism for centralizing dependency information, and it had ensured that the same source code will the used across all the environments and using this dependency management we are getting all the dependencies and collection them into a common POM file and simplifying the references in the child POM.

2. Testing Tools – Postman

   Reason for selecting postman as a testing tool is that the tests can be done automated by developing test suites where the can-do tests repeatedly. such as unit tests, functional tests, integration tests, end-to-end tests, regression tests, mock tests, and other sorts of testing can all be automated with Postman. By using this automated testing method, it will lead us to reduces the risk of the human mistake and streamlines the testing process.

3. JAX-RS (Jersey) Framework
   By using this jersey framework, it makes easy to create a RESTful service that can be deployed to any Java application server

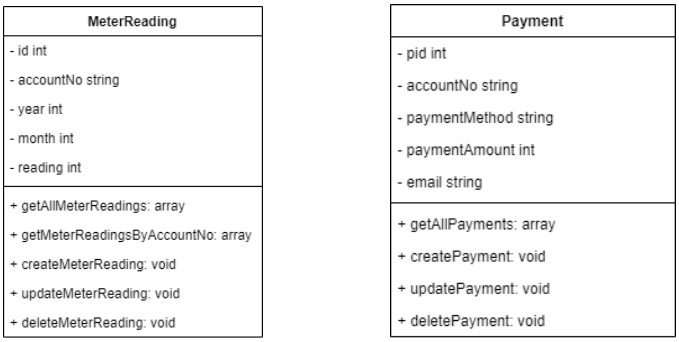
4. Checking code quality- Checkstyle plug-in
   To implement this project, we had used JAVA as the programming language and Eclipse as the IDE, so when using a plugin which can be used in the same coding environment is effective since that I had chosen the checkstyle plugin. The Checkstyle Plugin (eclipse-cs) integrates the well-known source code analyzer Checkstyle into the Eclipse IDE. Checkstyle is a development tool to help our ensure that your Java code adheres to a set of coding standards.

5. Version Control System – Git

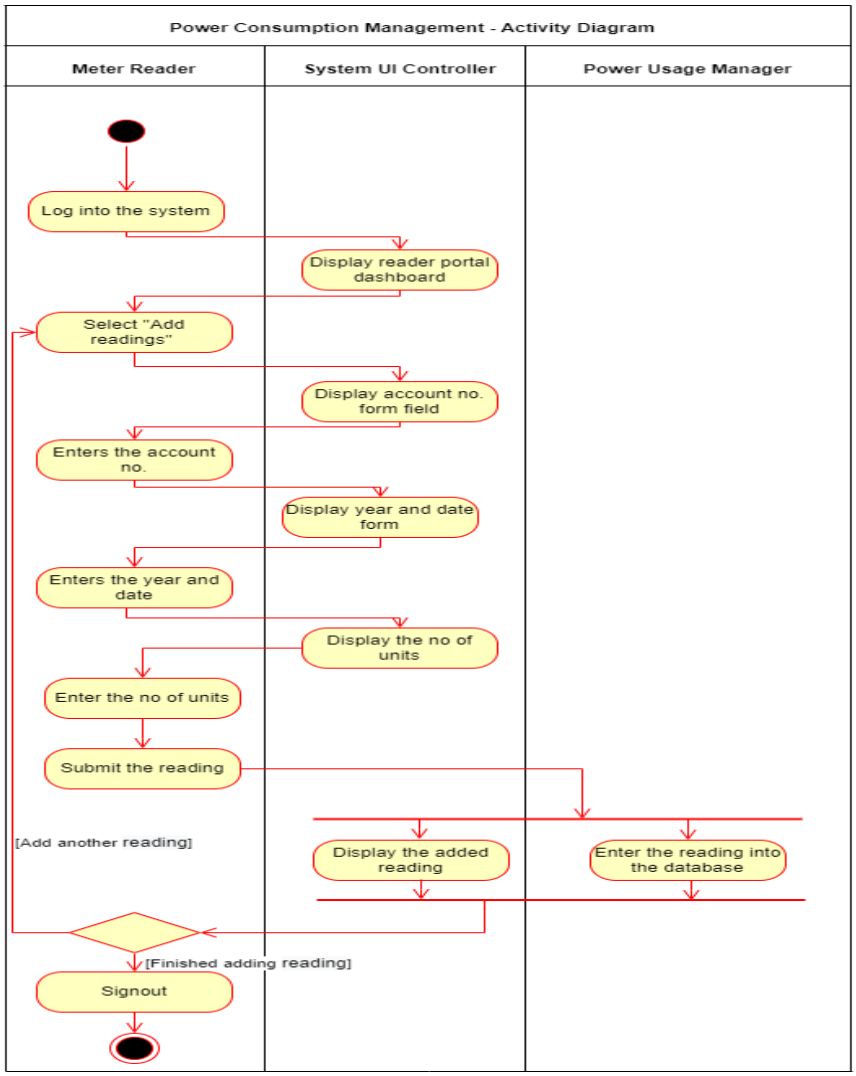
   Reason to use git as our version control system is that when we are developing we may come across to several type of errors since that it's easy to use a version control system to undo the changes which we had used to develop the project and restore to the previous versions, Since this a group project we need a collaboration among our group members so it's easy to work on the same shared folder which is easy to understand all the things that which have been done to the project.

Amanullath M.U - IT20155520

Class Diagram.



Activity Diagram.



Use Case Scenario Diagram.

Number	**EG005**	
Name	Add power consumption.	
Summary	Meter reader adds consumed units into the system.	
Priority (0-5)	5	
Preconditions	The user must be logged into the system	
Postconditions		
Primary Actor(s)	Meter reader	
Trigger	Meter reader wanting to add a reading.	
Main Scenario	**Step**	**Action**
	1	The Meter reader is directed to the portal home page
	2	The Meter reader presses the “Add Reading” button
	3	The system displays add account number form.
	4	The Meter reader enters the account no.
	5	The system displays add year and date form.
	6	The Meter reader enters the year and date.
	7	The system displays add used units form.
	8	The Meter reader enters the used units no. and submits the form.
	9	System enters the power consumption details to the database.
Extensions	**Step**	**Action**
	3a	System displays proper error message if fields are not filled.
	8a	System displays error message if the required fields are not filled.

Tools Used in the Development Process and the justification for using them

1. Dependency management tools – Maven.

   Maven eliminates the need to research and define the libraries that your own dependencies require by automatically creating transitive dependencies. It facilitates the management of project dependencies. It ensures that the same source code is used across several environments. Dependence Management consolidates all dependence information into a single POM file, making the references in the child POM file easier to understand. The dependency management section is a method of centralizing dependency information.

2. Testing tools – Postman.

   Postman is the best testing tool since it can automate a wide variety of test types, including unit, functional, integration, regression, mock, and end-to-end tests. One method for automating testing is to create test suites that will run until the application is error-free. Human errors are highly rare, if not impossible, to occur.

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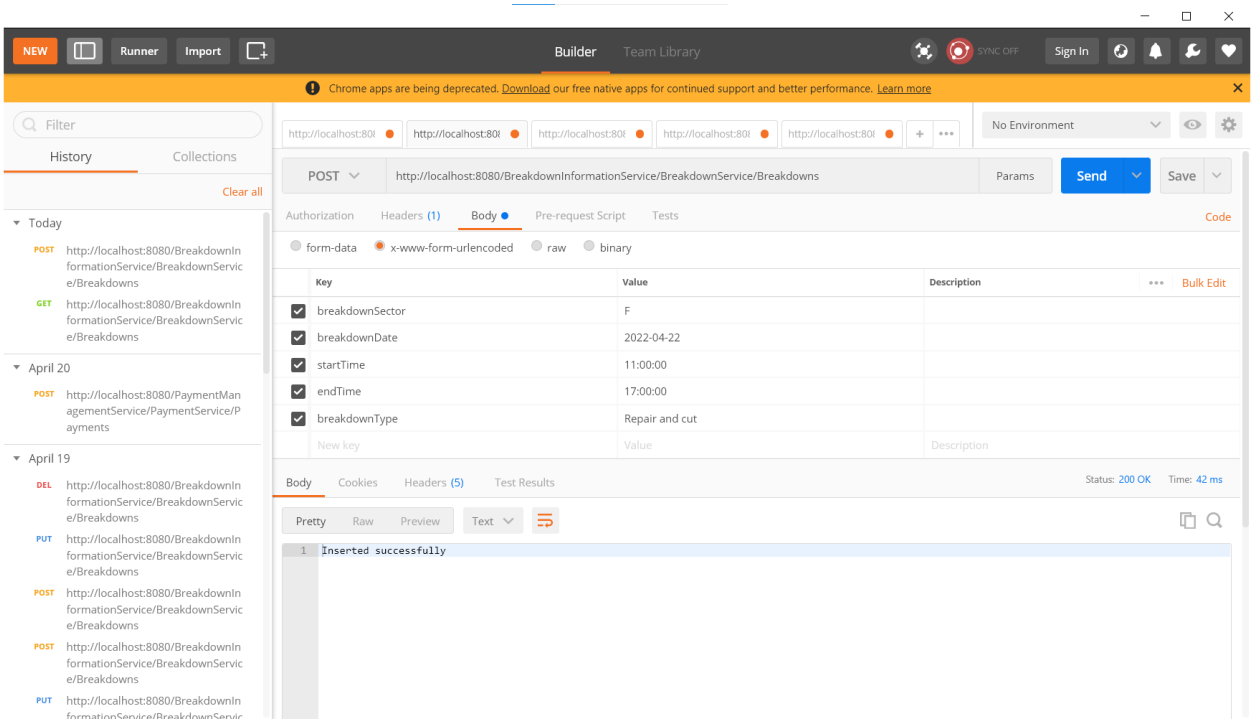
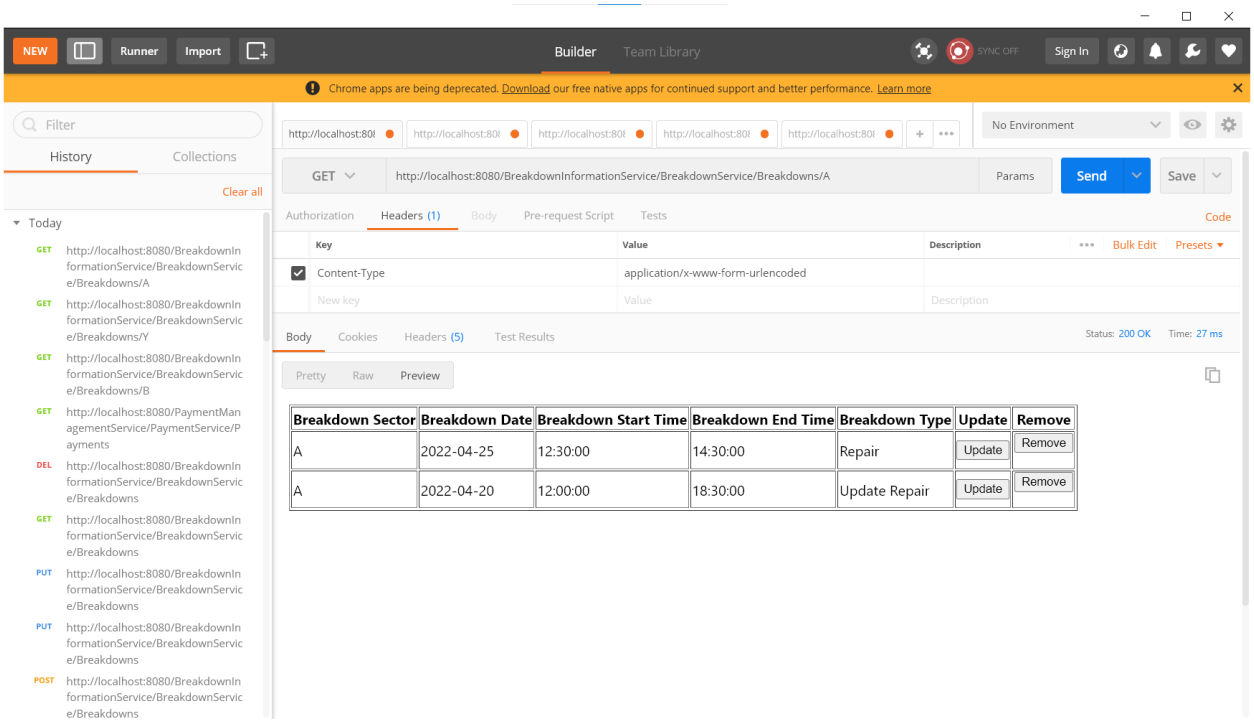
Testing Methodology and Results

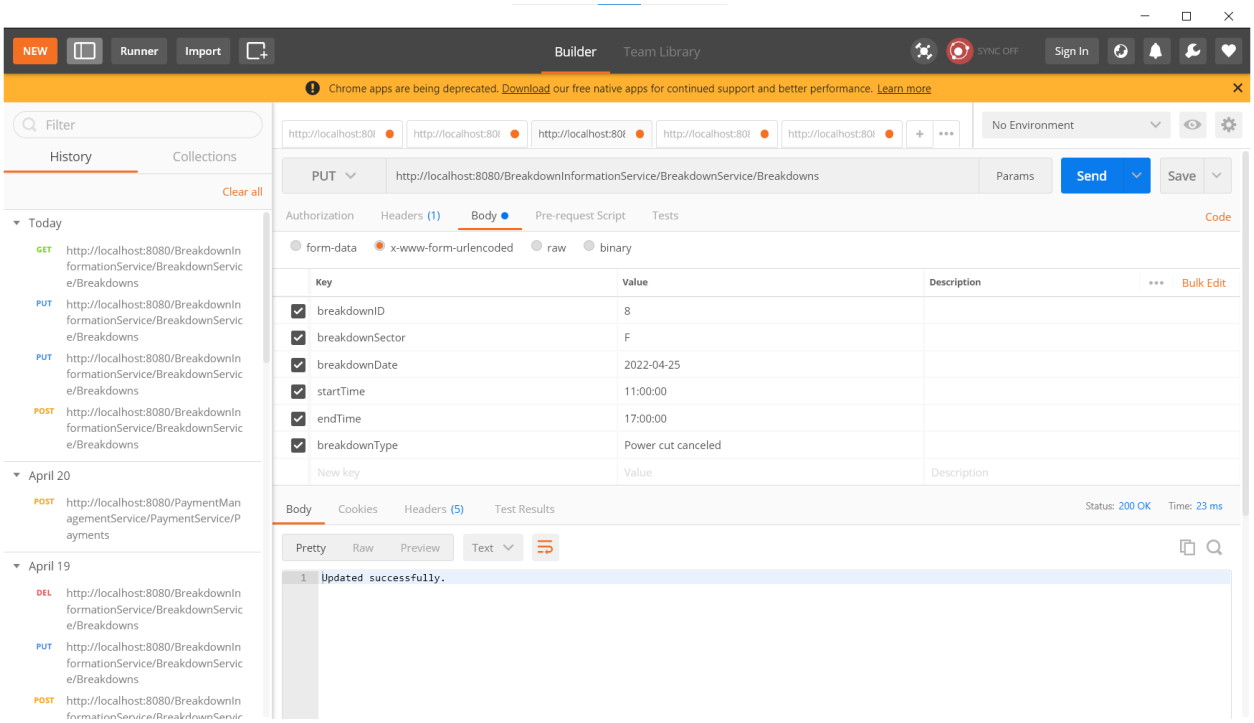
IT20250942 - Jayasooriya C. A

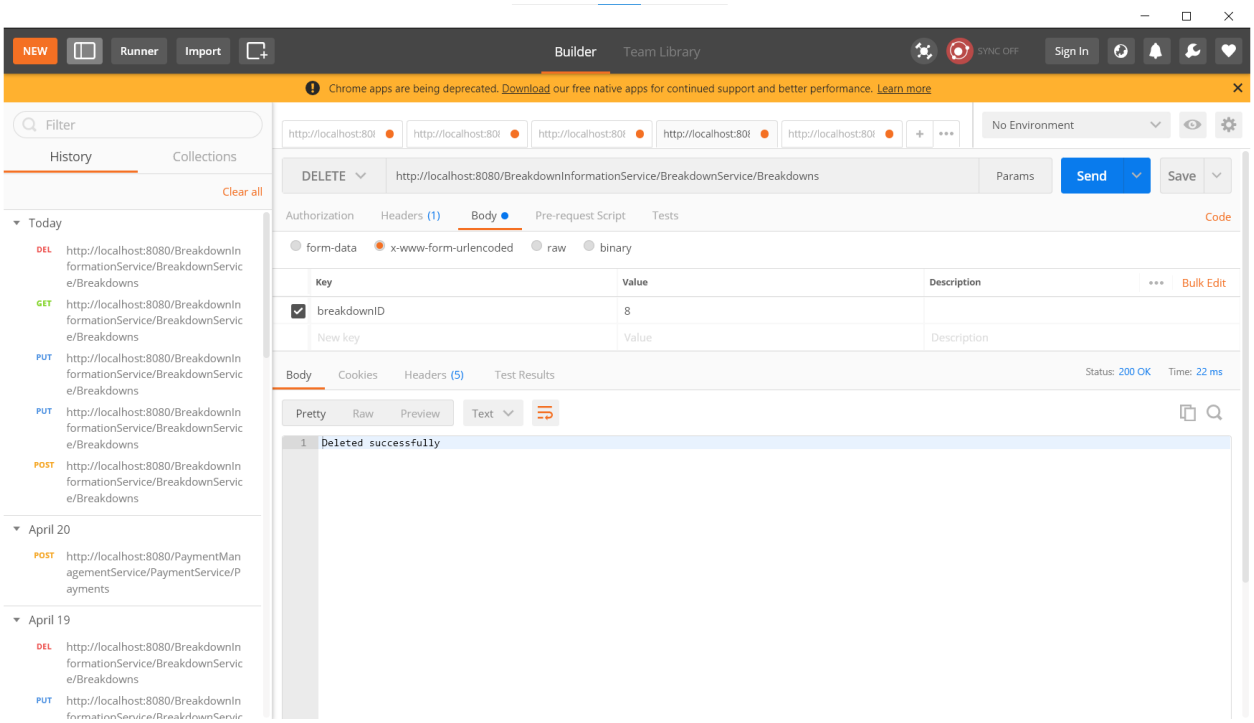
Testing – Breakdown Information Service and Payment Management Service (Create Payment function)

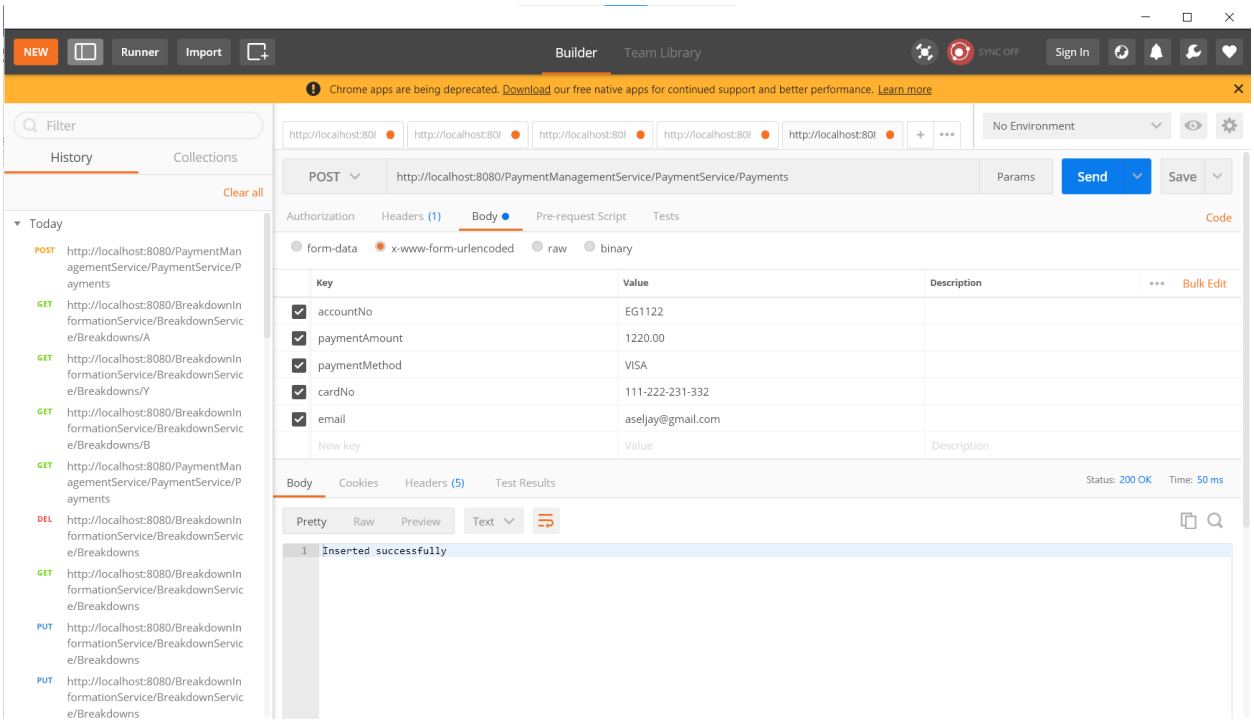
Test ID	Test Description	Test Inputs	Expected Outputs	Actual Outputs	Pass / Fail
T1001	Insert a breakdown	breakdownSector = “F” breakdownDate = “2022-04-22” startTime = “11:00:00” endTime = “17:00:00” breakdownType = “Repair and cut”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass
T1002	Read sector breakdowns	breakdownSector = “A”	Display all breakdowns of sector A	Display all breakdowns of sector A	Pass
T1003	Update a breakdown	breakdownID = “8” breakdownSector = “F” breakdownDate = “2022-04-25” startTime = “11:00:00” endTime = “17:00:00” breakdownType = “Power cut canceled”	Display message as “Updated successfully”	Display message as “Updated successfully”	Pass
T1004	Delete a breakdown	breakdownID = “8”	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass
T1005	Insert a payment	accountNo = “EG1122” paymentAmount = “1220.00” paymentMethod = “VISA” cardNo = “111-222-231-332” email= “aseljay@gmail.com”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass


NEW
Runner
Import
Builder
Team Library
Sign In
Chrome apps are being deprecated. Download our free native apps for continued support and better performance. Learn more
Filter
History
Collections
Clear all
Today
April 20
April 19
No Environment
POST
http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
form-data
x-www-form-urlencoded
raw
binary
Key
Value
Description
Bulk Edit
breakdownSector
F
breakdownDate
2022-04-22
startTime
11:00:00
endTime
17:00:00
breakdownType
Repair and cut
New key
Value
Description
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 42 ms
Pretty
Raw
Preview
Text
1
Inserted successfully


NEW
Runner
Import
Builder
Team Library
Sign In
Chrome apps are being deprecated. Download our free native apps for continued support and better performance. Learn more
Filter
History
Collections
Clear all
Today
No Environment
GET
http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns/A
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
Key
Value
Description
Bulk Edit
Presets
Content-Type
application/x-www-form-urlencoded
New key
Value
Description
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 27 ms
Pretty
Raw
Preview
Breakdown Sector
Breakdown Date
Breakdown Start Time
Breakdown End Time
Breakdown Type
Update
Remove
A
2022-04-25
12:30:00
14:30:00
Repair
Update
Remove
A
2022-04-20
12:00:00
18:30:00
Update Repair
Update
Remove


NEW
Runner
Import
Builder
Team Library
SYNC OFF
Sign In
Chrome apps are being deprecated. Download our free native apps for continued support and better performance. Learn more
Filter
History
Collections
Clear all
Today
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
POST http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
April 20
POST http://localhost:8080/PaymentManagementService/PaymentService/Payments
April 19
DEL http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
POST http://localhost:8080/BreakdownInformationService
No Environment
PUT
http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
form-data
x-www-form-urlencoded
raw
binary
Key
Value
Description
Bulk Edit
breakdownID
8
breakdownSector
F
breakdownDate
2022-04-25
startTime
11:00:00
endTime
17:00:00
breakdownType
Power cut canceled
New key
Value
Description
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 23 ms
Pretty
Raw
Preview
Text
1 Updated successfully.

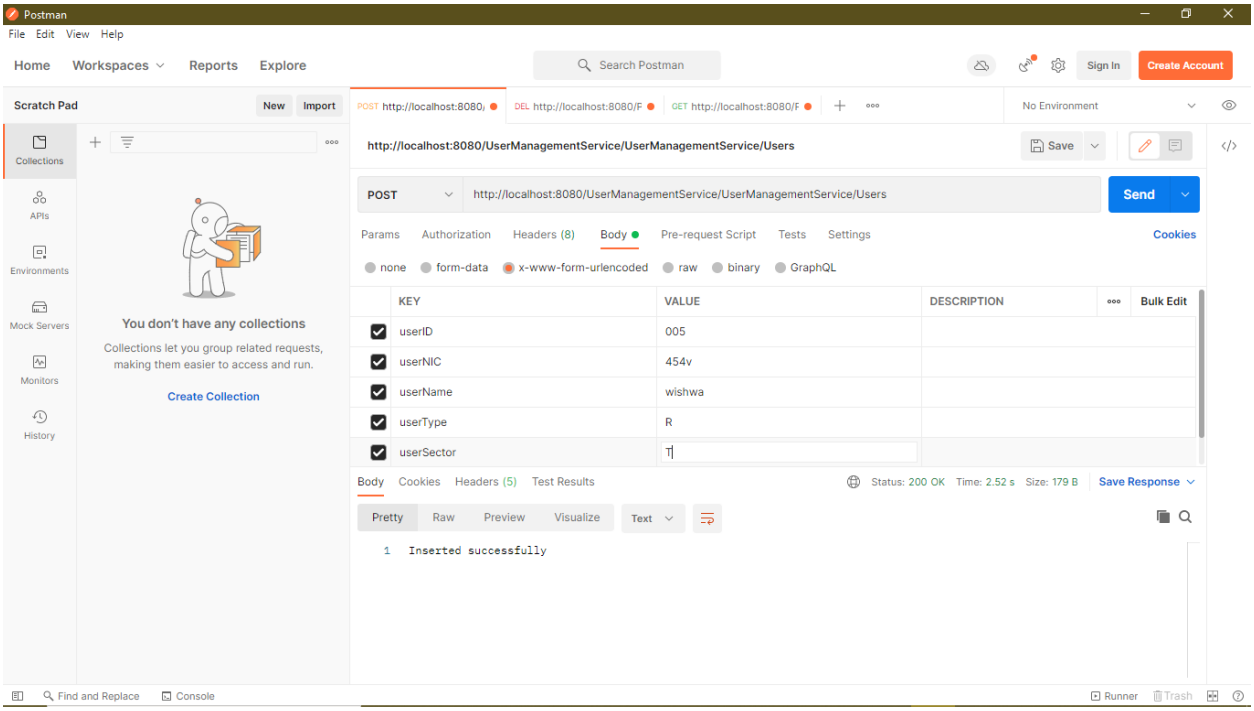

NEW
Runner
Import
Builder
Team Library
SYNC OFF
Sign In
Chrome apps are being deprecated. Download our free native apps for continued support and better performance. Learn more
Filter
History
Collections
Clear all
Today
DEL http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
POST http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
April 20
POST http://localhost:8080/PaymentManagementService/PaymentService/Payments
April 19
DEL http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService
No Environment
DELETE
http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
form-data
x-www-form-urlencoded
raw
binary
Key
Value
Description
Bulk Edit
breakdownID
8
New key
Value
Description
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 22 ms
Pretty
Raw
Preview
Text
1 Deleted successfully

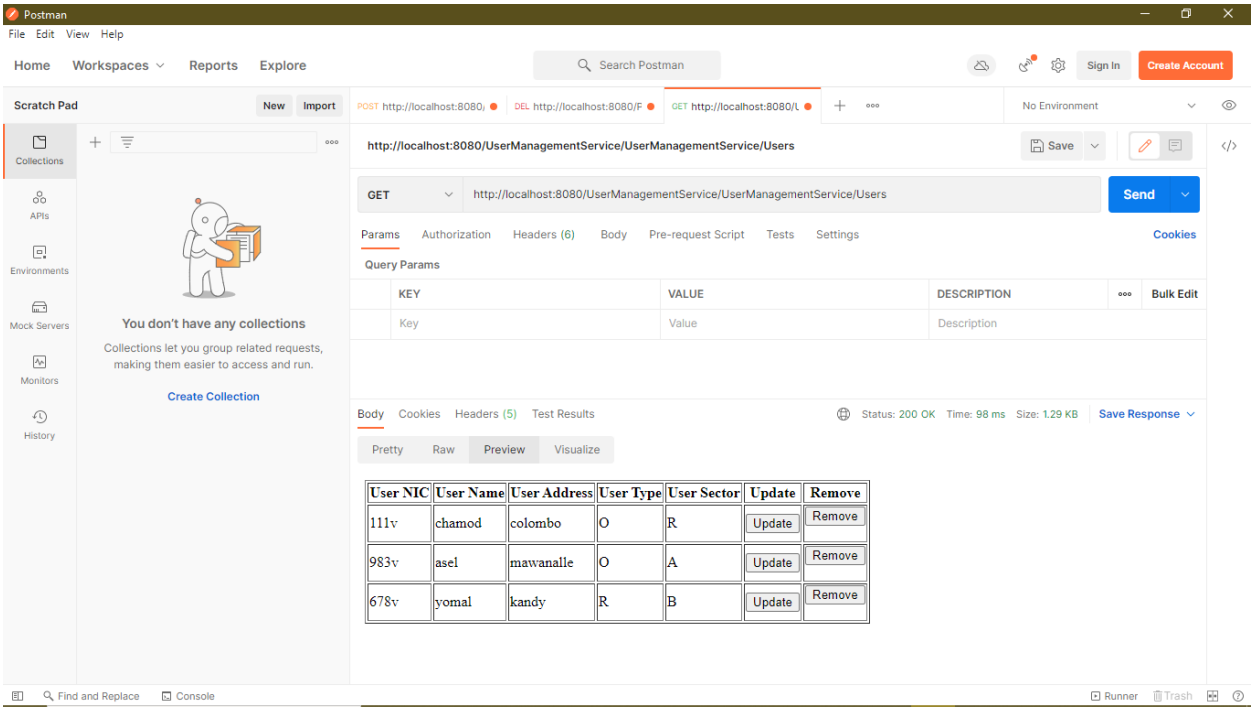

NEW
Runner
Import
Builder
Team Library
SYNC OFF
Sign In
Chrome apps are being deprecated. Download our free native apps for continued support and better performance. Learn more
Filter
History
Collections
Clear all
Today
POST http://localhost:8080/PaymentManagementService/PaymentService/Payments
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns/A
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns/Y
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns/B
GET http://localhost:8080/PaymentManagementService/PaymentService/Payments
DEL http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
GET http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
PUT http://localhost:8080/BreakdownInformationService/BreakdownService/Breakdowns
No Environment
POST
http://localhost:8080/PaymentManagementService/PaymentService/Payments
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
form-data
x-www-form-urlencoded
raw
binary
Key
Value
Description
Bulk Edit
accountNo
EG1122
paymentAmount
1220.00
paymentMethod
VISA
cardNo
111-222-231-332
email
aseljay@gmail.com
New key
Value
Description
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 50 ms
Pretty
Raw
Preview
Text
1
Inserted successfully

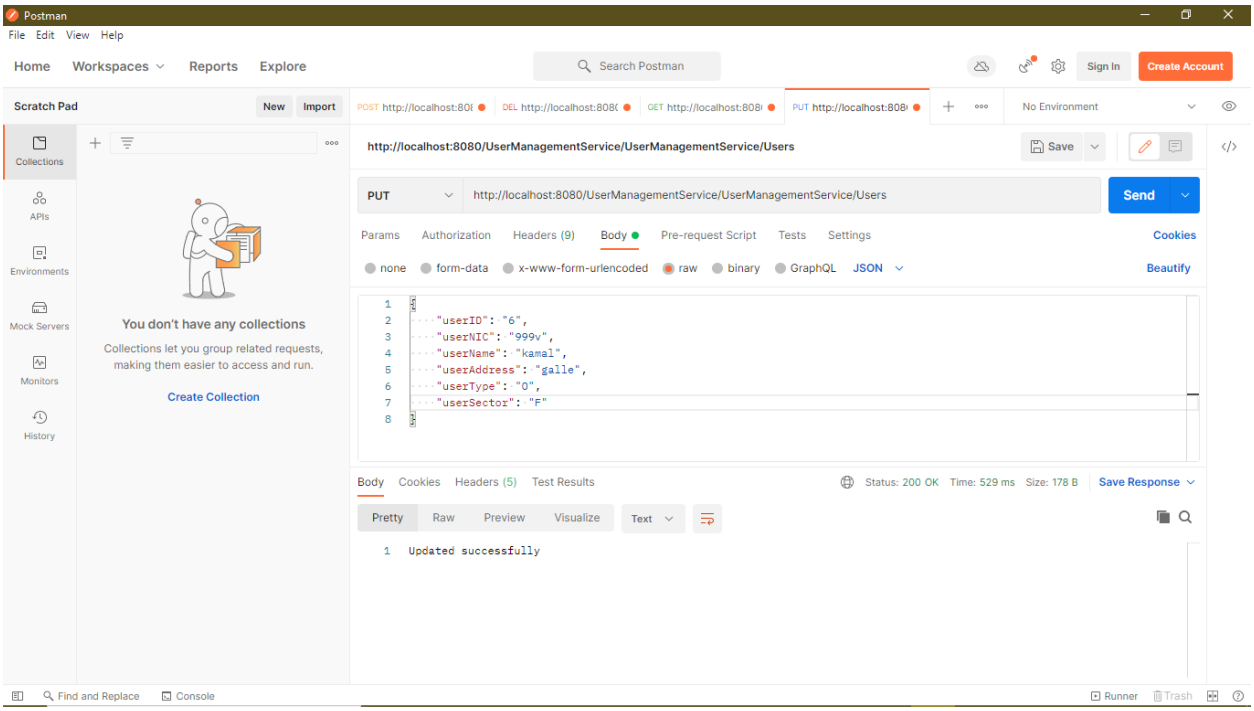
IT20409982 - Gavindya N.A.C

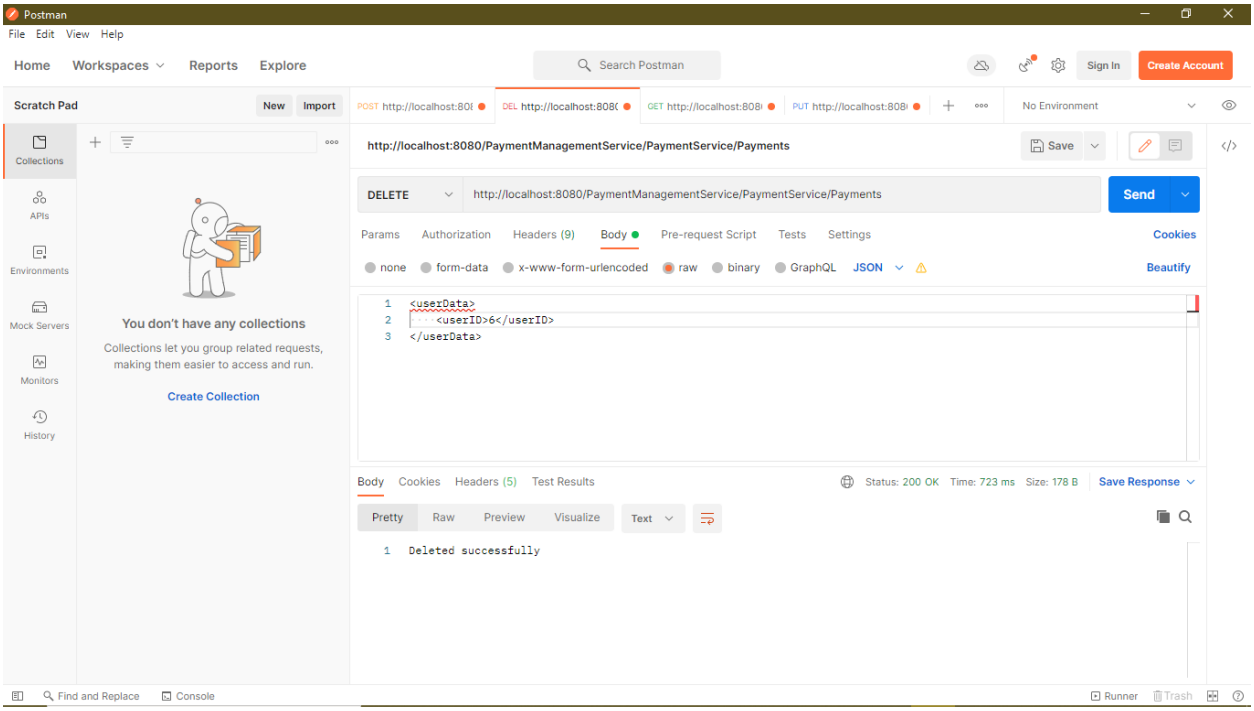
Testing – User Management Service and Payment Management Service (Delete Payment function)

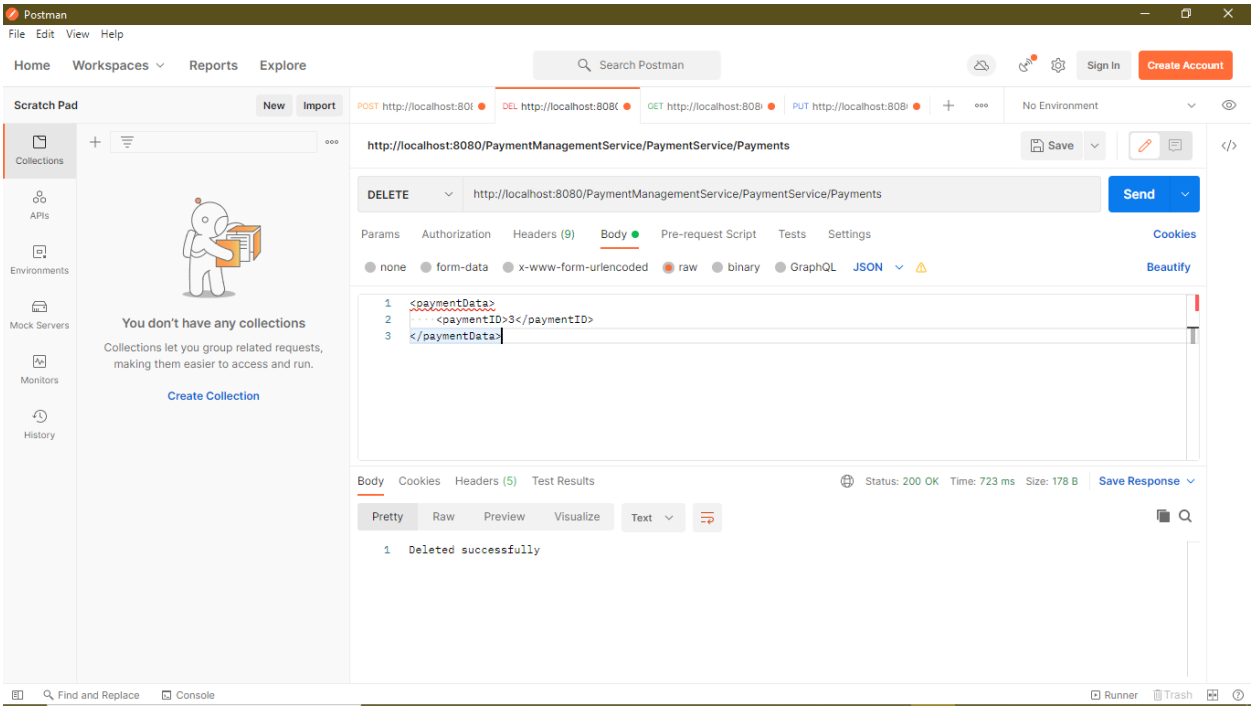
Test ID	Test Description	Test Inputs	Expected Outputs	Actual Outputs	Pass / Fail
T2001	Insert a User	userID = “6” userNIC = “678v” userName = “wishwa” userAddress = “kurunagala” userType = “O” userSector = “R”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass
T2002	Read Users		Display all users	Display all users	Pass
T2003	Update a user	userID = “6” userNIC = “999v” userName = “kamal” userAddress = “galle” userType = “O” userSector = “F”	Display message as “Updated successfully”	Display message as “Updated successfully”	Pass
T2004	Delete a user	userID = “6”	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass
T2005	Delete a payment	paymentID = “3”	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass


Postman
File Edit View Help
Home Workspaces Reports Explore
Search Postman
Sign In
Create Account
Scratch Pad
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
http://localhost:8080/UserManagementService/UserManagementService/Users
Save
POST
http://localhost:8080/UserManagementService/UserManagementService/Users
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
userID 005
userNIC 454v
userName wishwa
userType R
userSector T
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 2.52 s Size: 179 B
Save Response
Pretty Raw Preview Visualize Text
1 Inserted successfully
Find and Replace Console
Runner Trash


Postman
File Edit View Help
Home Workspaces Reports Explore
Search Postman
Sign In
Create Account
Scratch Pad
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
http://localhost:8080/UserManagementService/UserManagementService/Users
Save
GET
http://localhost:8080/UserManagementService/UserManagementService/Users
Send
Params Authorization Headers (6) Body Pre-request Script Tests Settings
Cookies
Query Params
KEY VALUE DESCRIPTION Bulk Edit
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 98 ms Size: 1.29 KB
Save Response
Pretty Raw Preview Visualize
User NIC User Name User Address User Type User Sector Update Remove
111v chamod colombo O R Update Remove
983v asel mawanalle O A Update Remove
678v yomal kandy R B Update Remove
Find and Replace Console
Runner Trash


Postman
File Edit View Help
Home Workspaces Reports Explore
Search Postman
Sign In
Create Account
Scratch Pad
New Import
No Environment
http://localhost:8080/UserManagementService/UserManagementService/Users
Save
PUT
http://localhost:8080/UserManagementService/UserManagementService/Users
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL JSON
Beautify
{
"userID": "6",
"userNIC": "999v",
"userName": "kamal",
"userAddress": "galle",
"userType": "0",
"userSector": "F"
}
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 529 ms Size: 178 B
Save Response
Pretty Raw Preview Visualize Text
Updated successfully
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
Find and Replace
Console
Runner
Trash

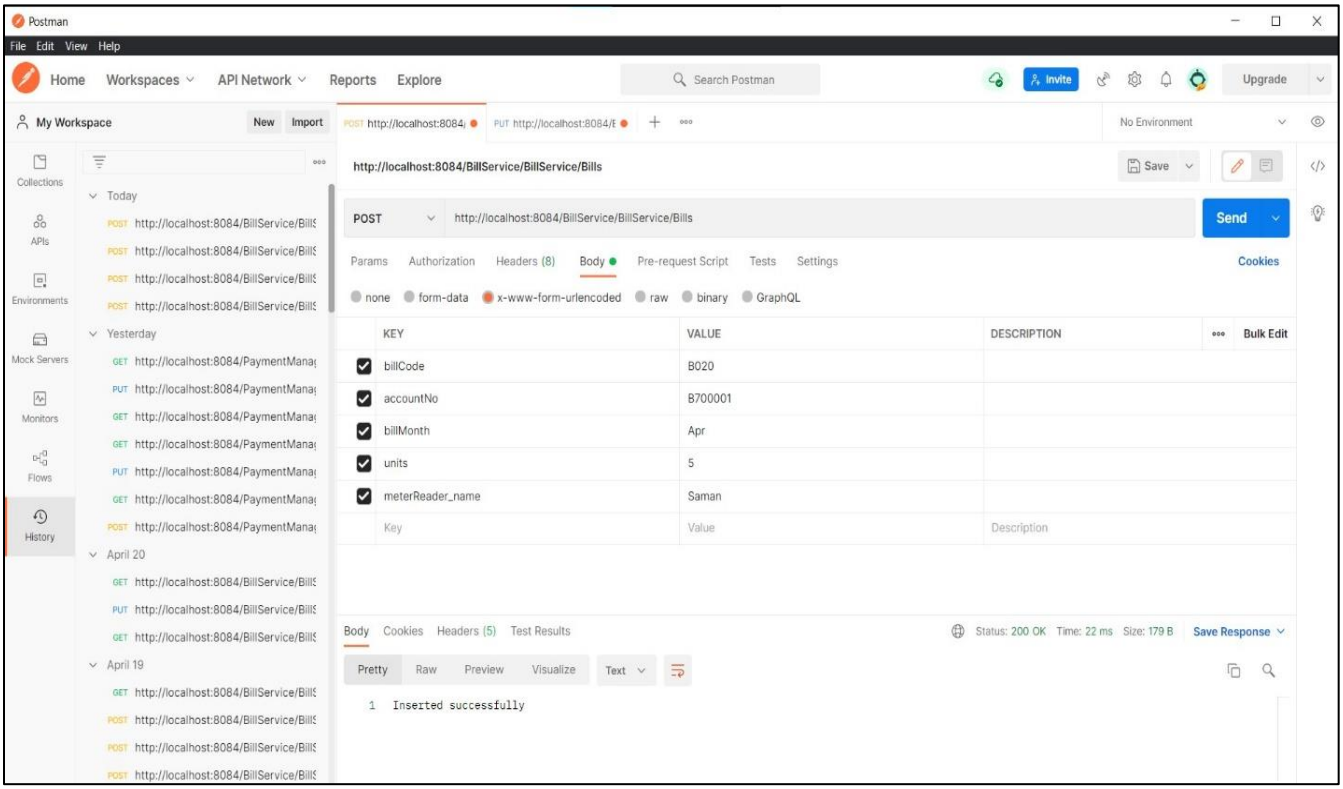

Postman
File Edit View Help
Home Workspaces Reports Explore
Search Postman
Sign In
Create Account
Scratch Pad
New Import
No Environment
http://localhost:8080/PaymentManagementService/PaymentService/Payments
Save
DELETE
http://localhost:8080/PaymentManagementService/PaymentService/Payments
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL JSON
Beautify
<userData>
<userID>6</userID>
</userData>
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 723 ms Size: 178 B
Save Response
Pretty Raw Preview Visualize Text
Deleted successfully
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
Find and Replace
Console
Runner
Trash

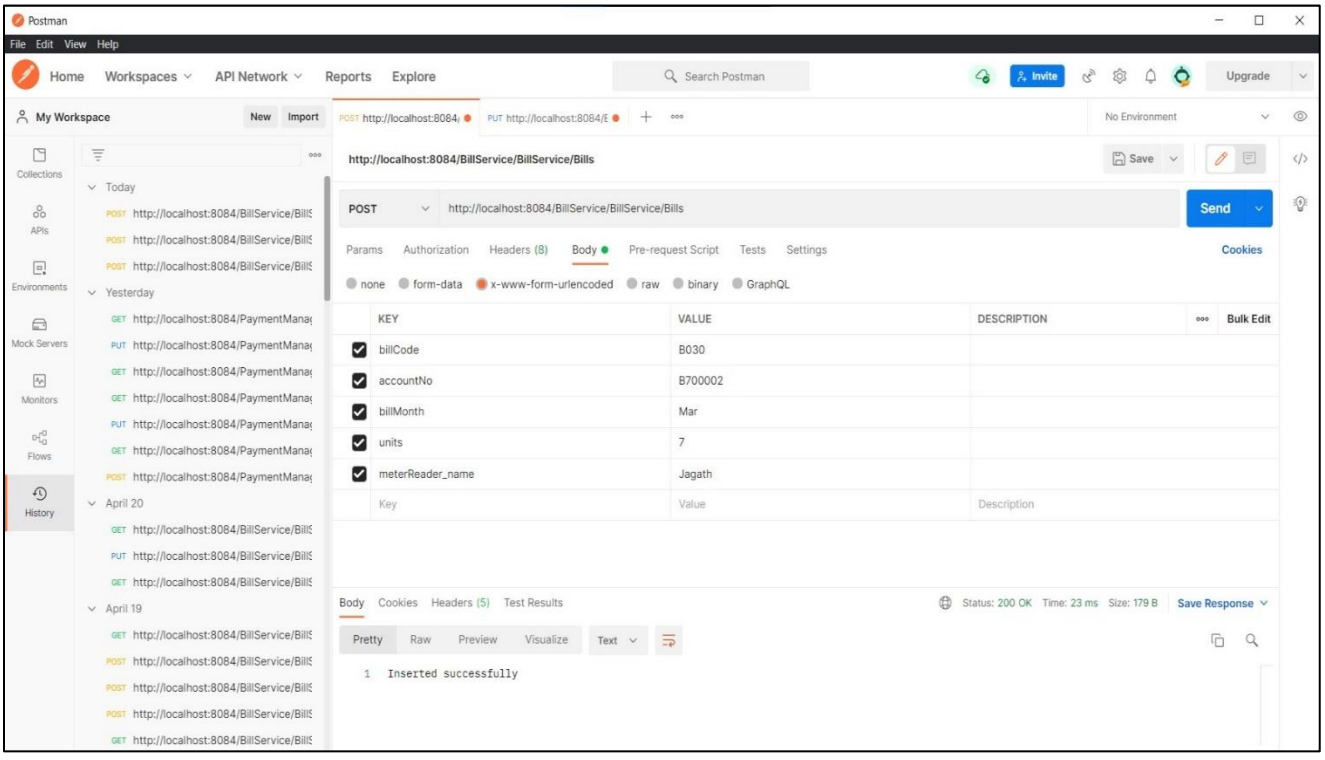

Postman
File Edit View Help
Home Workspaces Reports Explore
Search Postman
Sign In
Create Account
Scratch Pad
New
Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
http://localhost:8080/PaymentManagementService/PaymentService/Payments
Save
DELETE
http://localhost:8080/PaymentManagementService/PaymentService/Payments
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL JSON
Beautify
<paymentData>
<paymentID>3</paymentID>
</paymentData>
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 723 ms Size: 178 B
Save Response
Pretty Raw Preview Visualize Text
Deleted successfully
Find and Replace
Console
Runner
Trash

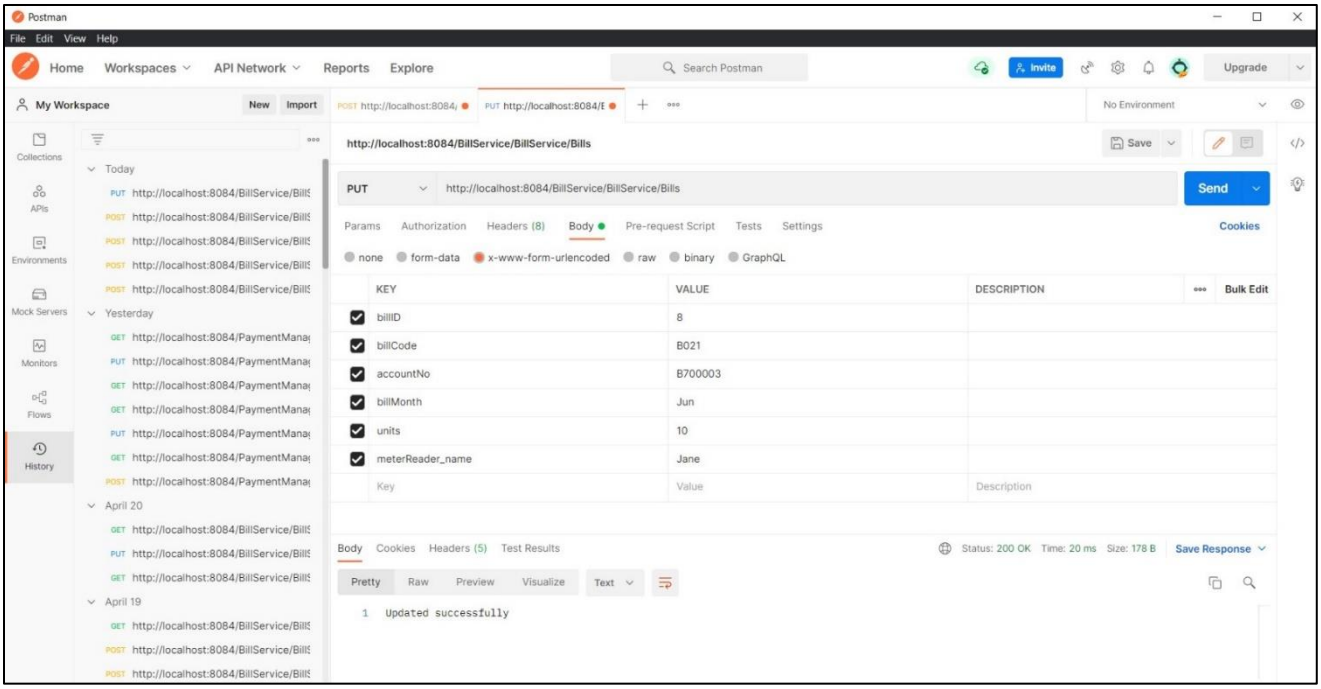
IT20492052 - Bandara T.M.Y.M

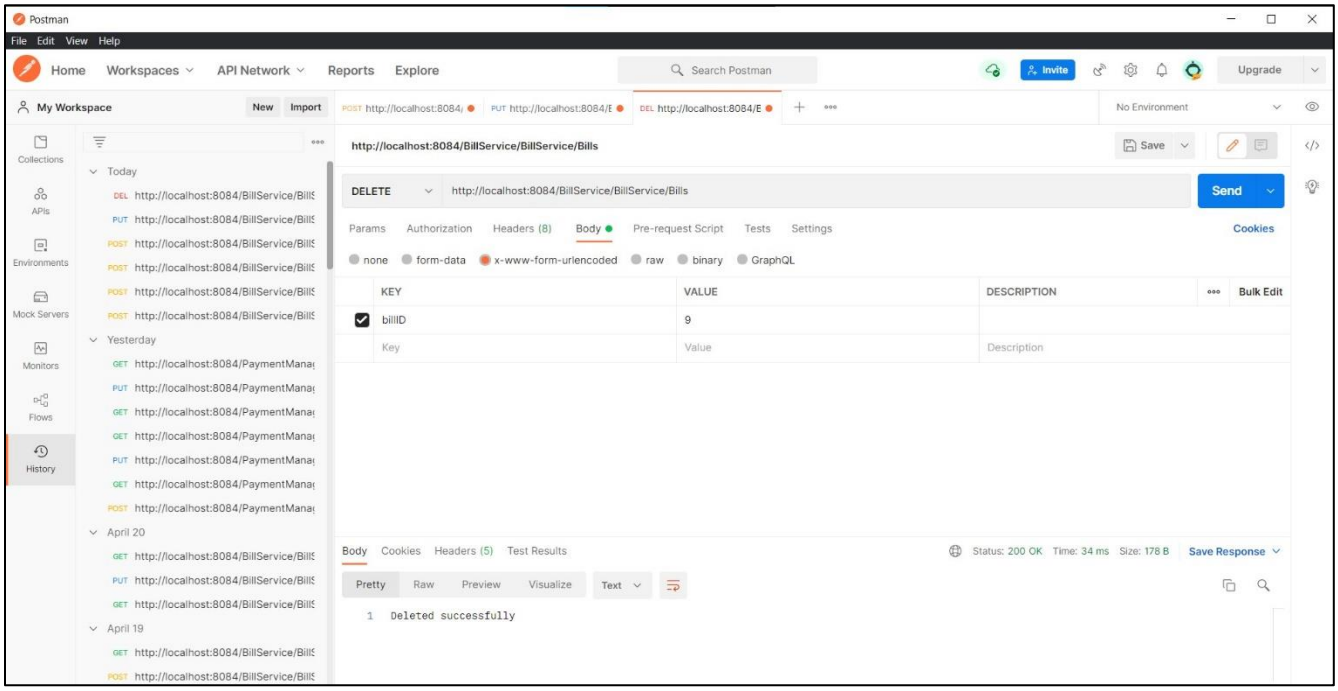
Testing – Bill Service and Payment Management Service (Update Payment function)

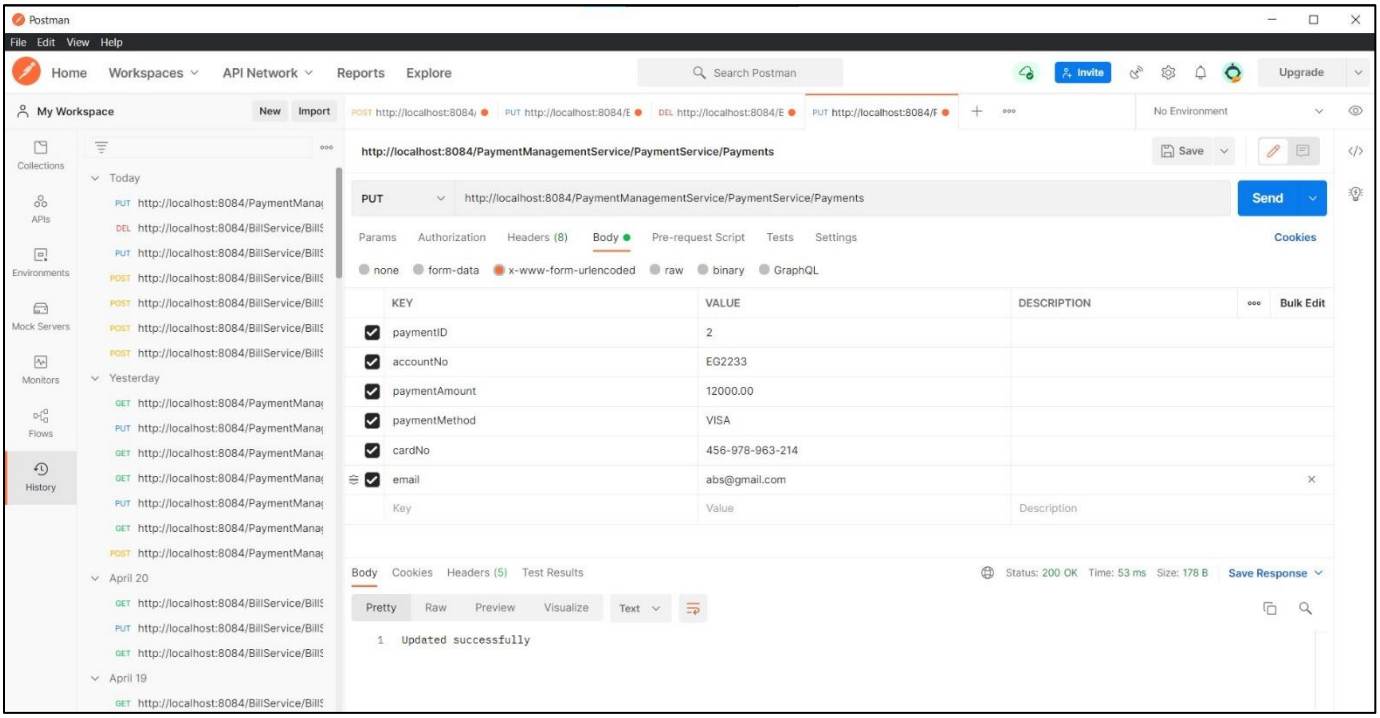
Test ID	Test Description	Test Inputs	Expected Outputs	Actual Outputs	Pass / Fail
TST1001	Insert a bill	billCode = “B020” accountNo = “B700001” billMonth = “Apr” units = 5 meterReader_name = “Saman”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass
TST1002	Insert a bill	billCode = “B030” accountNo = “B700002” billMonth = “Mar” units = 7 meterReader_name = “Jagath”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass
TST1003	Update a bill	billID = 8 billCode = “B021” accountNo= “B700003” billMonth = “Jun” units = 10 meterReader_name = “Jane”	Display message as “Updated successfully”	Display message as “Updated successfully”	Pass
TST1004	Delete a bill	billID = 9	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass
TST1005	Update a payment	paymentID = 2 accountNo = “EG2233” paymentAmount = “12000.00” paymentMethod = “VISA” cardNo = “456-978-963-214” email= “abs@gmail.com”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8084/BillService/BillService/Bills
Save
POST
http://localhost:8084/BillService/BillService/Bills
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
billCode B020
accountNo B700001
billMonth Apr
units 5
meterReader_name Saman
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 22 ms Size: 179 B
Save Response
Pretty Raw Preview Visualize Text
1 Inserted successfully
Collections APIs Environments Mock Servers Monitors Flows History
Today
Yesterday
April 20
April 19


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8084/BillService/BillService/Bills
Save
POST
http://localhost:8084/BillService/BillService/Bills
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
billCode B030
accountNo B700002
billMonth Mar
units 7
meterReader_name Jagath
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 23 ms Size: 179 B
Save Response
Pretty Raw Preview Visualize Text
1 Inserted successfully
Collections APIs Environments Mock Servers Monitors Flows History
Today
Yesterday
April 20
April 19


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8084/BillService/BillService/Bills
Save
PUT
http://localhost:8084/BillService/BillService/Bills
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
billID 8
billCode B021
accountNo B700003
billMonth Jun
units 10
meterReader_name Jane
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 20 ms Size: 178 B
Save Response
Pretty Raw Preview Visualize Text
1 Updated successfully

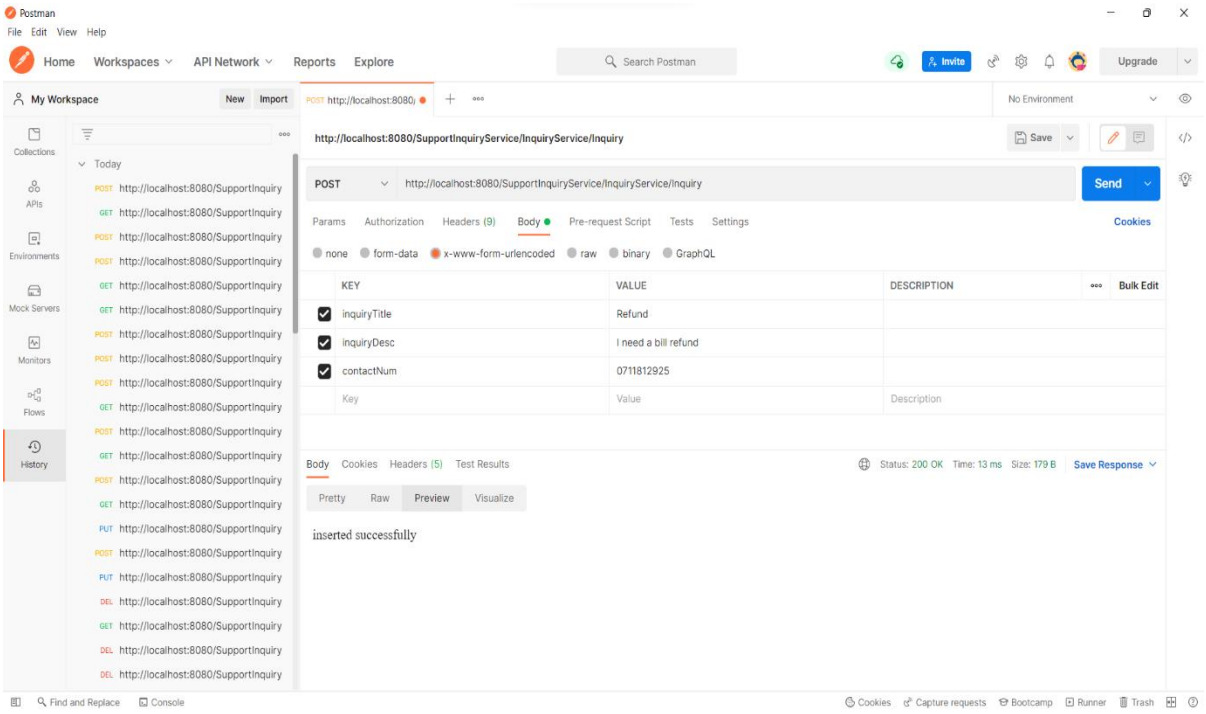

Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8084/BillService/BillService/Bills
Save
DELETE
http://localhost:8084/BillService/BillService/Bills
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
billID 9
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 34 ms Size: 178 B
Save Response
Pretty Raw Preview Visualize Text
1 Deleted successfully

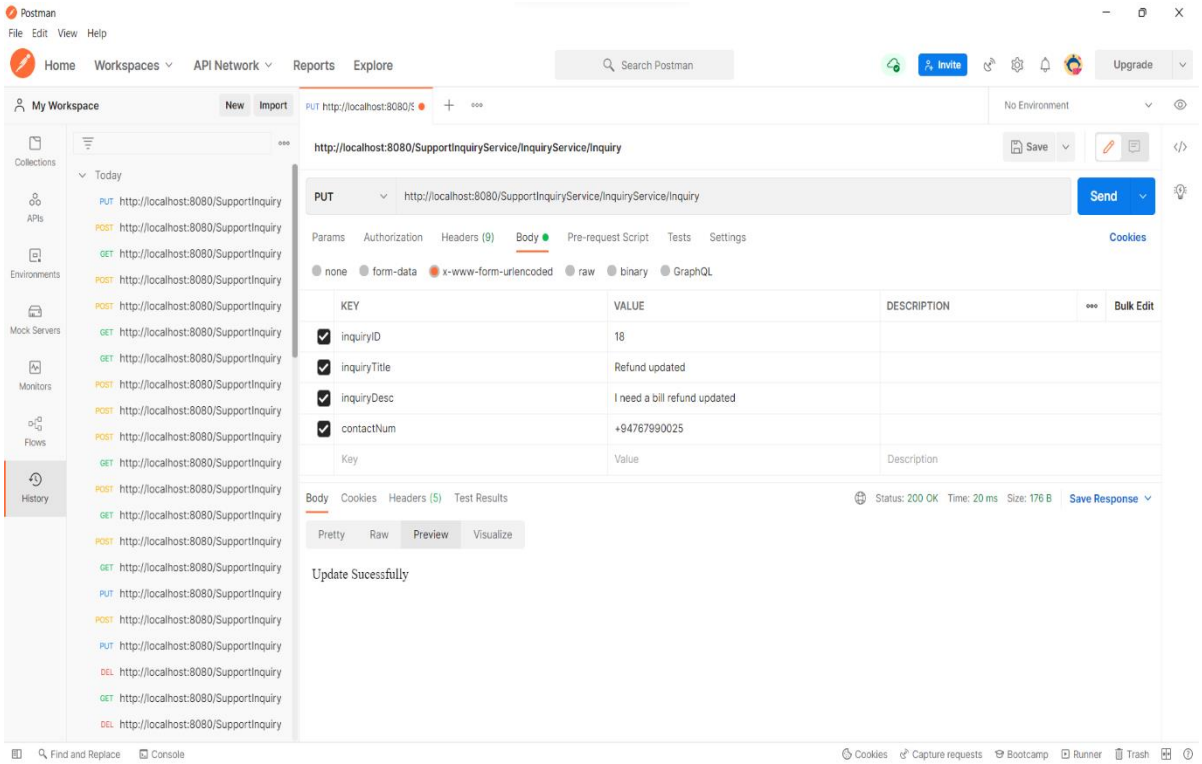

Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
Today
Yesterday
April 20
April 19
http://localhost:8084/PaymentManagementService/PaymentService/Payments
Save
PUT
http://localhost:8084/PaymentManagementService/PaymentService/Payments
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
paymentID 2
accountNo EG2233
paymentAmount 12000.00
paymentMethod VISA
cardNo 456-978-963-214
email abs@gmail.com
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 53 ms Size: 178 B Save Response
Pretty Raw Preview Visualize Text
1 Updated successfully

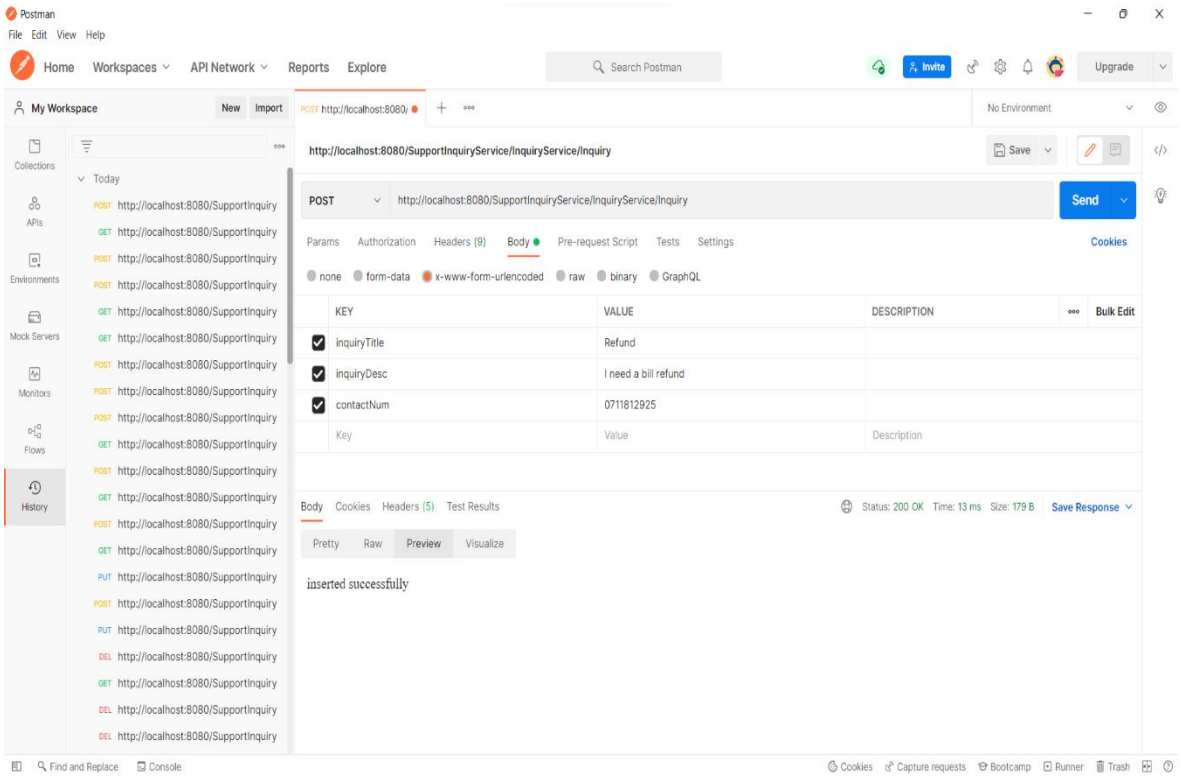
IT20237554 – Rathnaweera R.P.W.G

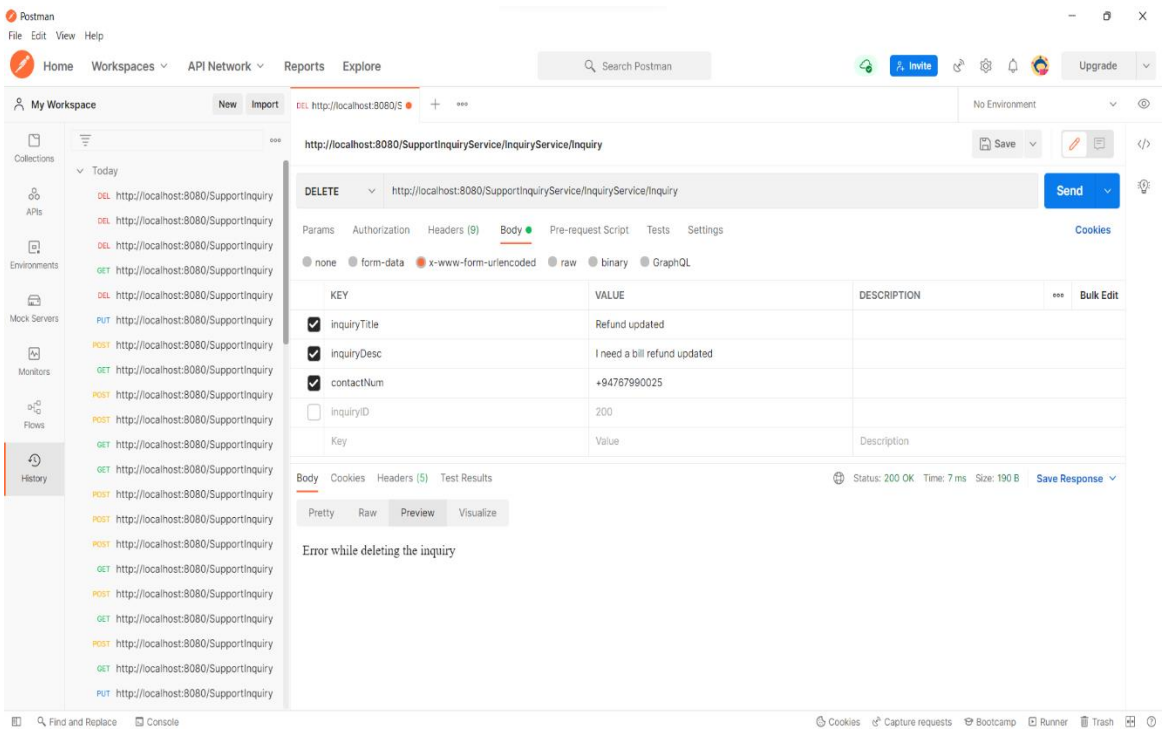
Testing – Support Inquiry Service and Payment Management Service (Read Payment function) –

Test ID	Test Description	Test Inputs	Expected Outputs	Actual Outputs	Pass / Fail
T1010	Insert an inquiry	inquiryTitle=”Refund” inquiryDesc=”Need a payment refund for the bill” contactNum=”0767990025”	Display message as “Inserted successfully”	Display message as “Inserted successfully”	Pass
T1011	Update an inquiry	inquiryID=”12” inquiryTitle=”Refund update” inquiryDesc=”Updated Description” contactNum=”0711812925”	Display message as “Update successfully”	Display message as “Update successfully”	Pass
T1012	Delete an Inquiry	inquiryID=”12”	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass
T1013	Delete an Inquiry without passing inquiryID	inquiryTitle=”Refund update” inquiryDesc=”Updated Description” contactNum=”0711812925”	Display message as “Error while deleting the inquiry”	Display message as “Error while deleting the inquiry”	Pass


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Save
POST
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
inquiryTitle Refund
inquiryDesc I need a bill refund
contactNum 0711812925
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 13 ms Size: 179 B Save Response
Pretty Raw Preview Visualize
inserted successfully
Collections APIs Environments Mock Servers Monitors Flows History
Today
Find and Replace Console
Cookies Capture requests Bootcamp Runner Trash


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Save
PUT
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
inquiryID 18
inquiryTitle Refund updated
inquiryDesc I need a bill refund updated
contactNum +94767990025
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 20 ms Size: 176 B Save Response
Pretty Raw Preview Visualize
Update Sucessfully
Collections APIs Environments Mock Servers Monitors Flows History
Today
Find and Replace Console
Cookies Capture requests Bootcamp Runner Trash

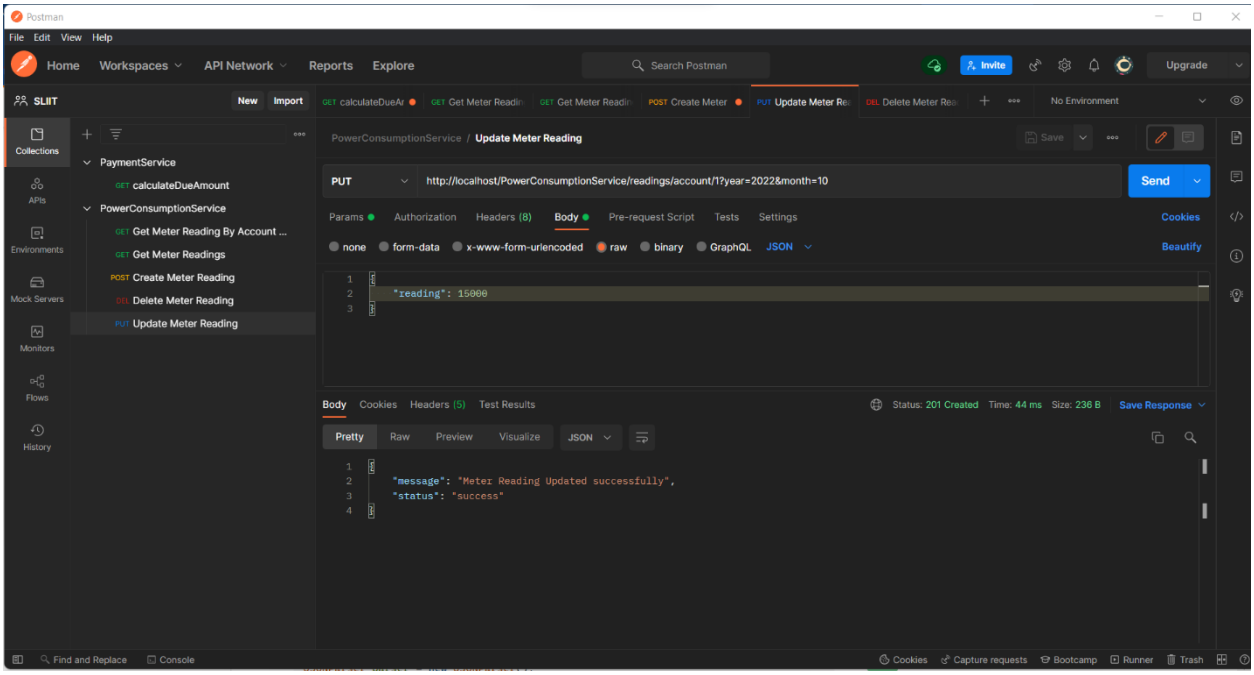

Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Save
POST
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
inquiryTitle Refund
inquiryDesc I need a bill refund
contactNum 0711812925
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 13 ms Size: 179 B Save Response
Pretty Raw Preview Visualize
inserted successfully
Collections APIs Environments Mock Servers Monitors Flows History
Today
Find and Replace Console
Cookies Capture requests Bootcamp Runner Trash

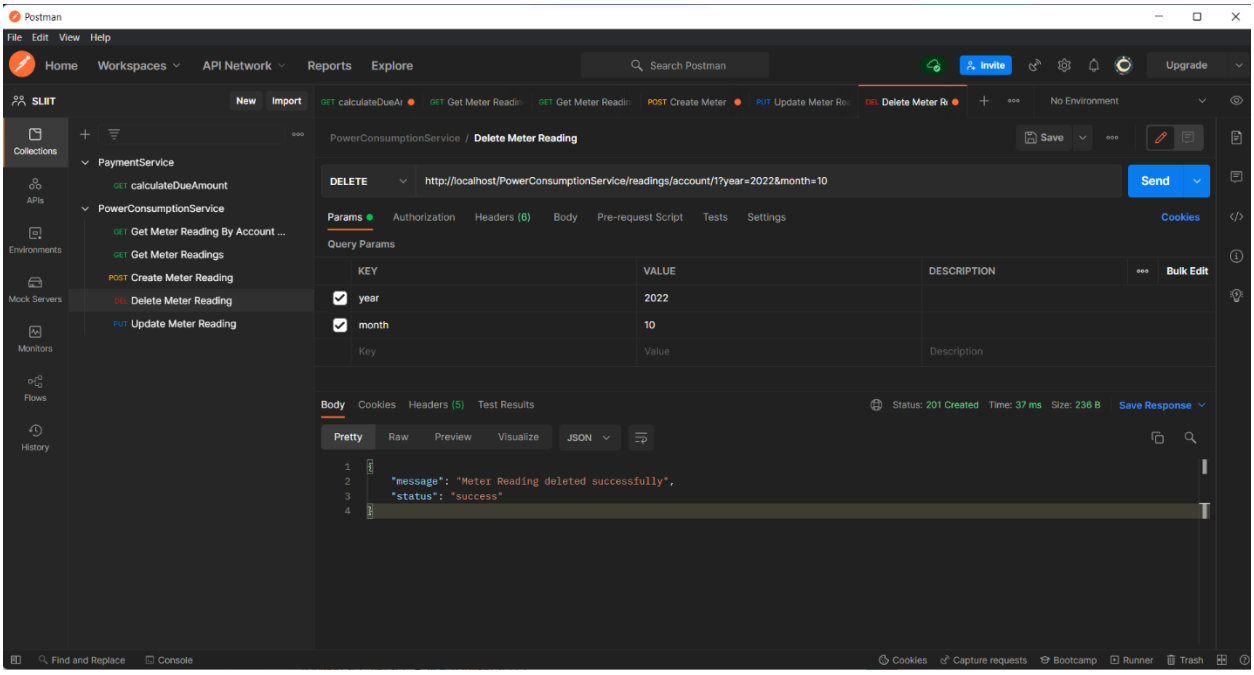

Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
My Workspace
New Import
No Environment
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Save
DELETE
http://localhost:8080/SupportInquiryService/InquiryService/Inquiry
Send
Params Authorization Headers (9) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL
KEY VALUE DESCRIPTION Bulk Edit
inquiryTitle Refund updated
inquiryDesc I need a bill refund updated
contactNum +94767990025
inquiryID 200
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 7 ms Size: 190 B Save Response
Pretty Raw Preview Visualize
Error while deleting the inquiry
Collections APIs Environments Mock Servers Monitors Flows History
Today
Find and Replace Console
Cookies Capture requests Bootcamp Runner Trash

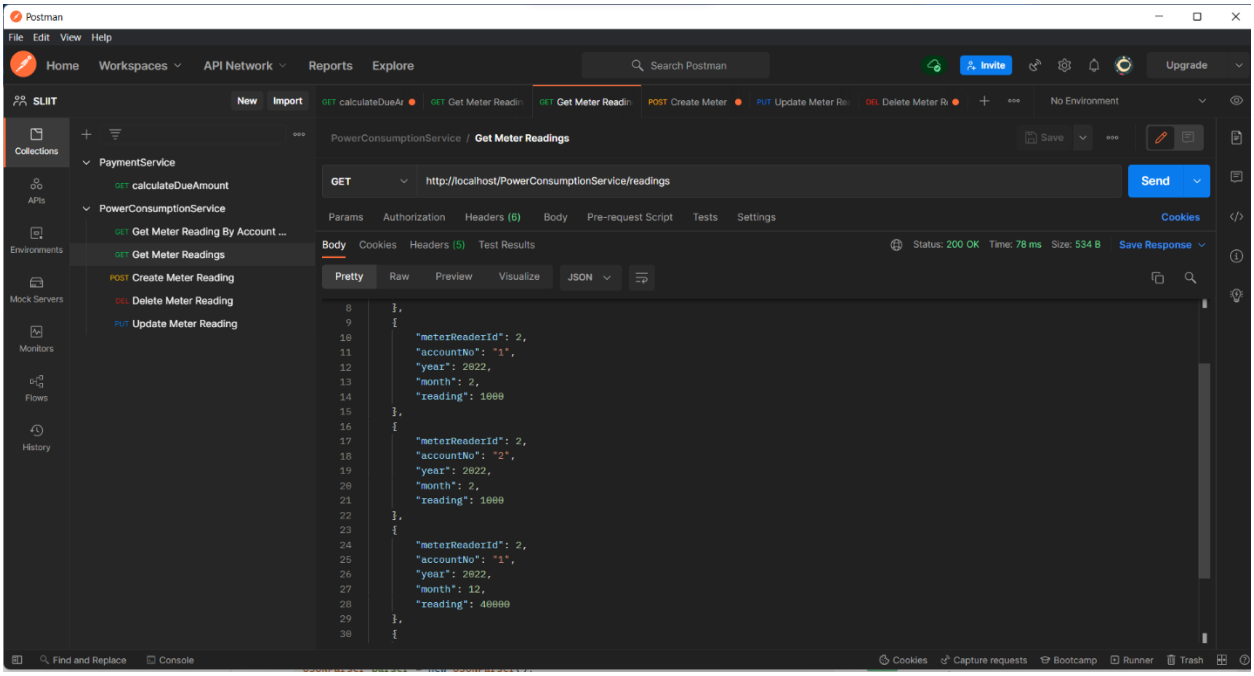
IT20155520 - Amanullath M.U

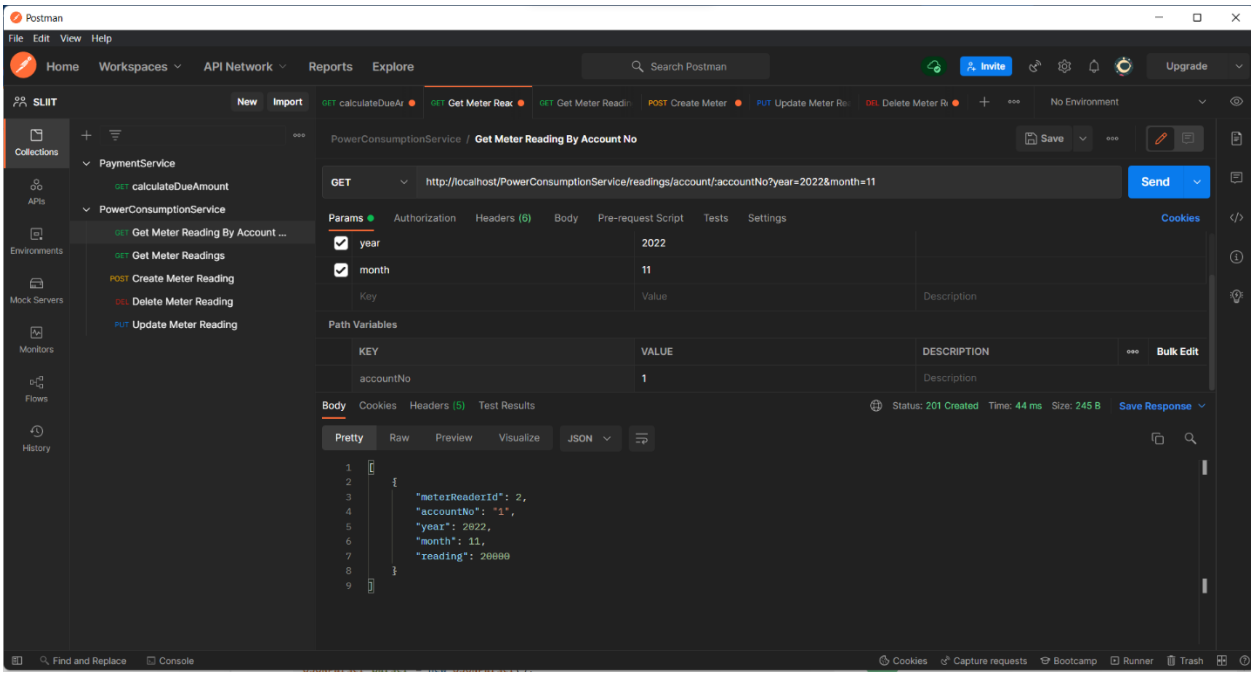
Testing – Power Consumption Information Service and Payment Management Service (Calculate Due Amount function) – IT20155520 Amanullath M. U

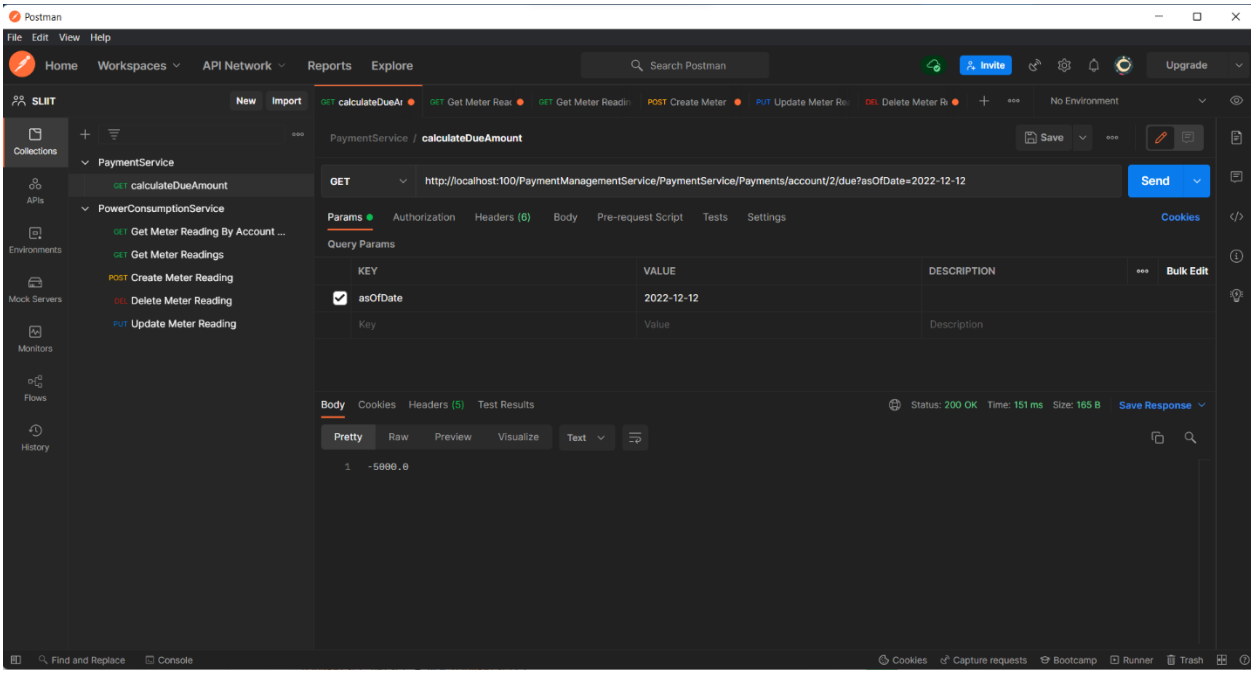
Test ID	Test Description	Test Inputs	Expected Outputs	Actual Outputs	Pass / Fail
T1001	Insert a meter reading	"meterReaderId": 2, "accountNo": "1", "year": 2022, "month": 12, "reading": 20000	Display message as “Meter Reading added successfully” with inserted data	Display message as “Meter Reading added successfully” with inserted data	Pass
T1002	Get all meter readings by account no	accountNo = “1”	Display all meter reading of account number 1	Display all meter reading of account number 1	Pass
T1003	Update a meter reading	Reading=10000 accountNo=”1” month=12 year=2022	Display message as “Updated successfully”	Display message as “Updated successfully”	Pass
T1004	Delete a meter reading	accountNo=”1” month=12 year=2022	Display message as “Deleted successfully”	Display message as “Deleted successfully”	Pass
T1005	Calculate due amount	accountNo=”1” month=12 year=2022	Display message as display the due amount as of 2022 december	Display message as display the due amount as of 2022 december	Pass


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
SLIIT
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
PaymentService
GET calculateDueAmount
PowerConsumptionService
GET Get Meter Reading By Account ...
GET Get Meter Readings
POST Create Meter Reading
DEL Delete Meter Reading
PUT Update Meter Reading
PowerConsumptionService / Update Meter Reading
Save
PUT
http://localhost/PowerConsumptionService/readings/account/1?year=2022&month=10
Send
Params Authorization Headers (8) Body Pre-request Script Tests Settings
Cookies
none form-data x-www-form-urlencoded raw binary GraphQL JSON
Beautify
"reading": 15000
Body Cookies Headers (5) Test Results
Status: 201 Created Time: 44 ms Size: 236 B
Save Response
Pretty Raw Preview Visualize JSON
"message": "Meter Reading Updated successfully",
"status": "success"
Find and Replace
Console
Cookies
Capture requests
Bootcamp
Runner
Trash


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
SLIIT
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
PaymentService
GET calculateDueAmount
PowerConsumptionService
GET Get Meter Reading By Account ...
GET Get Meter Readings
POST Create Meter Reading
DEL Delete Meter Reading
PUT Update Meter Reading
PowerConsumptionService / Delete Meter Reading
Save
DELETE
http://localhost/PowerConsumptionService/readings/account/1?year=2022&month=10
Send
Params Authorization Headers (6) Body Pre-request Script Tests Settings
Cookies
Query Params
KEY VALUE DESCRIPTION Bulk Edit
year 2022
month 10
Key Value Description
Body Cookies Headers (5) Test Results
Status: 201 Created Time: 37 ms Size: 236 B
Save Response
Pretty Raw Preview Visualize JSON
"message": "Meter Reading deleted successfully",
"status": "success"
Find and Replace
Console
Cookies
Capture requests
Bootcamp
Runner
Trash


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
SLIIT
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
PaymentService
GET calculateDueAmount
PowerConsumptionService
GET Get Meter Reading By Account ...
GET Get Meter Readings
POST Create Meter Reading
DEL Delete Meter Reading
PUT Update Meter Reading
PowerConsumptionService / Get Meter Readings
Save
GET
http://localhost/PowerConsumptionService/readings
Send
Params Authorization Headers (6) Body Pre-request Script Tests Settings
Cookies
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 78 ms Size: 534 B
Save Response
Pretty Raw Preview Visualize JSON
{
"meterReaderId": 2,
"accountNo": "1",
"year": 2022,
"month": 2,
"reading": 1000
},
{
"meterReaderId": 2,
"accountNo": "2",
"year": 2022,
"month": 2,
"reading": 1000
},
{
"meterReaderId": 2,
"accountNo": "1",
"year": 2022,
"month": 12,
"reading": 40000
},
{
Find and Replace
Console
Cookies
Capture requests
Bootcamp
Runner
Trash


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
SLIIT
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
PaymentService
GET calculateDueAmount
PowerConsumptionService
GET Get Meter Reading By Account ...
GET Get Meter Readings
POST Create Meter Reading
DEL Delete Meter Reading
PUT Update Meter Reading
PowerConsumptionService / Get Meter Reading By Account No
Save
GET
http://localhost/PowerConsumptionService/readings/account/:accountNo?year=2022&month=11
Send
Params Authorization Headers (6) Body Pre-request Script Tests Settings
Cookies
year 2022
month 11
Key Value Description
Path Variables
KEY VALUE DESCRIPTION Bulk Edit
accountNo 1 Description
Body Cookies Headers (5) Test Results
Status: 201 Created Time: 44 ms Size: 245 B
Save Response
Pretty Raw Preview Visualize JSON
[
{
"meterReaderId": 2,
"accountNo": "1",
"year": 2022,
"month": 11,
"reading": 20000
}
]
Find and Replace
Console
Cookies
Capture requests
Bootcamp
Runner
Trash


Postman
File Edit View Help
Home Workspaces API Network Reports Explore
Search Postman
Invite
Upgrade
SLIIT
New Import
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
Flows
History
PaymentService
GET calculateDueAmount
PowerConsumptionService
GET Get Meter Reading By Account ...
GET Get Meter Readings
POST Create Meter Reading
DEL Delete Meter Reading
PUT Update Meter Reading
PaymentService / calculateDueAmount
Save
GET
http://localhost:100/PaymentManagementService/PaymentService/Payments/account/2/due?asOfDate=2022-12-12
Send
Params Authorization Headers (6) Body Pre-request Script Tests Settings
Cookies
Query Params
KEY VALUE DESCRIPTION Bulk Edit
asOfDate 2022-12-12
Key Value Description
Body Cookies Headers (5) Test Results
Status: 200 OK Time: 151 ms Size: 165 B Save Response
Pretty Raw Preview Visualize Text
1 -5000.0
Find and Replace Console
Cookies Capture requests Bootcamp Runner Trash