

ERP 360° : A Robust Enterprise Resource Planning For Educational Institutions

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in partial fulfilment of the requirements for the Degree of
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Declaration

We, Md. Ashifur Rahaman, Md. Ariful Islam, declare that this thesis titled, ERP 360°: A Robust Enterprise Resource Planning for Educational Institutions and the work presented in it are my own. I confirm that:

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- Where any part of this thesis has previously been submitted for a degree or any other qualification at United International University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

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Certificate

I do hereby declare that the research works embodied in this thesis/project entitled “**ERP 360° : A Robust Enterprise Resource Planning For Educational Institutions**” is the outcome of an original work carried out by Md. Ashifur Rahaman and Md. Ariful Islam under my supervision.

I further certify that the dissertation meets the requirements and the standard for the degree of BSc in Computer Science and Engineering.

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Abstract

In most of the organizations mainly the educational institutions in Bangladesh does not have any digitalized system for complaint or requisition management for their employees. A software system could help the organization to run its management smoothly along with the wants of employees by managing complaints and requisitions. This system could also enhance the efficiency of the management by providing summarized data of the institution that may help top management to take decisions.

Acknowledgement

It is our pleasure and many thanks to almighty God that we finally released the first version of ERP 360⁰. We have gone through a narrow path during developing the system. From the depths of our heart we want to thank our supervisor 'Sanjay Saha' sir. Without him we may not come so far. As well as we are very grateful to our parents.

Md. Ashifur Rahaman

Md. Ariful Islam

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Chapter 1

I Introduction

In educational institutions the requisitions of its employees are processed manually. Moreover, there is no such way to place complaints. Though there are partial solutions to this scenario, there is no existing system providing all the solutions together. **ERP 360° : A Robust Enterprise Resource Planning For Educational Institutions** has four major modules i.e., complaint management, requisition management, office resource management and statistical report generation for administrative persons. ERP 360° also contains a discussion forum for administrative persons and faculty members and a partial management of human resource.

II Purpose Of The Project

In order to automate the complaint management, requisition management of the educational institutions by developing a software system is the prime goal of this project, that results in ERP 360°. Apart from these two modules to provide the facility to discuss on vital issues about the institution a discussion forum for the employees of the institution is developed. This forum helps the employees to understand the ongoing problems or important events of the institution. Furthermore, it is one of the important aim to develop a report generation system from existing data for the administrative personals that helps pretty much to take correct progressive decisions by top level management.

III Scope Of The Work

III a. Current Situation

1) The employees of the institution have to go through a manual process to submit a requisition. First, they have to fill a hard copy form with list of things required. Then the responsible administrative person assigns somebody to provide the required things placed in the requisition form.

2) Although there is a manual process to place requisitions, there is no systematic way, not even a paper form to place complaints. In general cases, employees call their superintendent administrative person over phone to acknowledge their complaints.

3) In the institution the employees have no platform to discuss or share their views that helps the organization to go towards the right direction with its employees. The discussion forum identifies the general problems of the institution currently its employees are facing.

4) The administrative personals have no way to trace the requisitions and their types. Although with necessity administrative personals can retrieve data about the requisitions placed by its employees from the hard copy of requisition forms. But that costs a huge amount of time.

Chapter 2

Background Studies

Going through Internet and other references, we have found that in market most of the ERP software are built focusing the accounts and financial management of the organizations. Along with other regular features there is no available FRP solution that provides a complaint and requisition management that is essential for educational institutions mostly in universities. In ERP 360⁰ with regular features of an ERP software a fully automated complaint and requisition management as well as an open discussion forum for employees is provided. A benchmark analysis is given below.

ERP	Complaint Management	Requisition Management	Discussion Forum	Office Resource Management	Human Resource Management	Statistical Report
Pridesys IT ERP ^[1]	x	x	x	√	√	√
Cmsn Network ERP ^[2]	x	x	x	x	√	√
ERP .com .bd ^[3]	x	x	x	Partial	√	√
ERP 360 ⁰	√	√	√	√	√	√

Table 1: Benchmark Analysis

IV Product Scenarios

ERP 360° : A Robust Enterprise Resource Planning For Educational Institutions has four major modules i.e., complaint management, requisition management, office resource management and statistical report generation for administrative persons.

IV a. Product Scenario List

- 1) Complaints
 - a) Place complaints
 - b) View own pending/solved complaints
 - c) Solve complaints
- 2) Requisitions
 - a) Place requisitions
 - b) View own pending/solved requisitions
 - c) Solve requisitions
- 3) Discussion Forum
 - a) Post in the forum
 - b) Comment in a post
 - c) Reply to a comment
 - d) Visit own posts
 - e) Visit others' posts
 - f) Search post by tag/tags
- 4) Office Resource
 - a) Add office resource
 - b) View office resource by floor/room
 - c) Update office resource
- 5) Human Resource
 - a) Add new employee
 - b) View employees list
 - c) Search employees by name
 - c) View the details of role and access of an employee
 - d) Change the role or access of an employee
- 6) Statistical Report
 - a) View complaint report by graph/list
 - b) Download complaint report by graph/list as pdf

- d) View requisition report by graph/list
- e) Download requisition report by graph/list as pdf
- f) View office resource report by graph/list
- g) Download office resource report by graph/list as pdf
- f) View human resource report by graph/list
- g) Download human resource report by graph/list as pdf
- h) Change graph style to Pie/Columnar

7) Employee Profile

- a) Change password
- b) Change Name (First Name/Last Name)
- c) Change email
- d) Change image

V Stakeholders

V a. Administrative Personals

Administrative personals are one of the stakeholders of the system. They play a role of normal users along with administrative role.

V b. Faculty Members

Faculty members are major stakeholders. Most of the faculty members act as normal users. Some of the faculty members have access to act as different administrative personals.

V c. Office Resource Provider

The office resource provider is a stakeholder for the system. Their provided number of resources are inserted into the system by a data entry operator.

V d. The Institution Itself

The institution is benefited from by the system. The management can easily take decisions and run the institution.

Chapter 3

VI Requirements

VI a. User Accessibility

As the system works in a private scope, its domains are the employees of the institution. Among the employees there is a difference in access. There is an administrative personal who has all the access. The other administrative personals has different access. The normal user access is common to all other users. A diagram bellow explains the user accessibility.

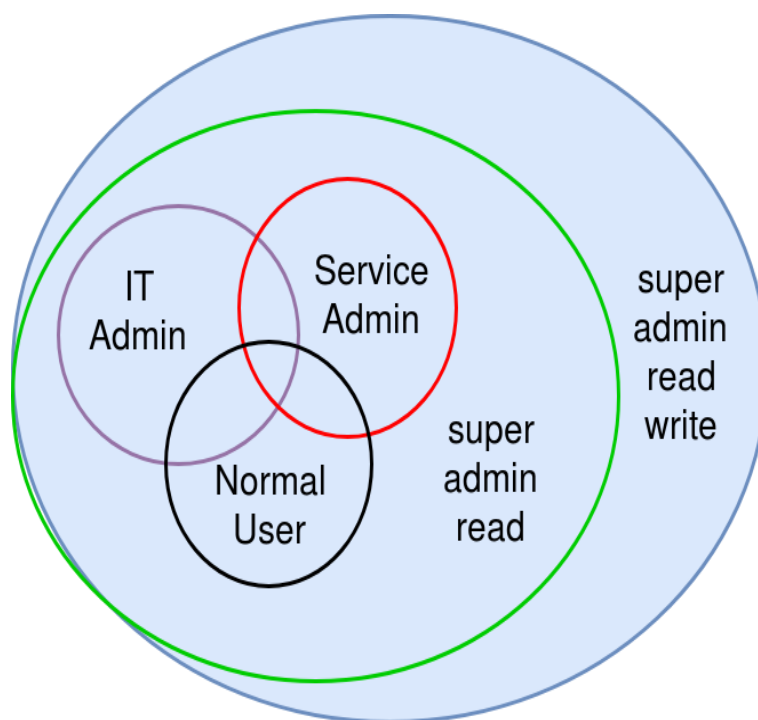


Illustration 1: User Accessibility

VI b. Use Case Diagrams

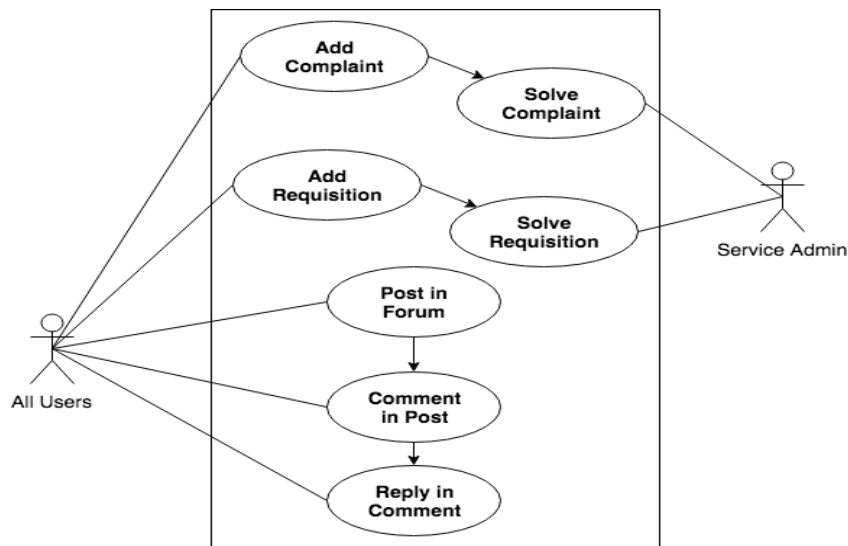


Illustration 2: Use Case -1

The diagram above illustrates the common access of all users in the system. Here it says, all the users can place complaints and requisitions. Those complaints are then solved by the responsible administrative personals who are called ‘service admin’ by system. In addition, all users have the access to post in the discussion forum. They can share their views and opinions by commenting on the post and replying to others’ comments.

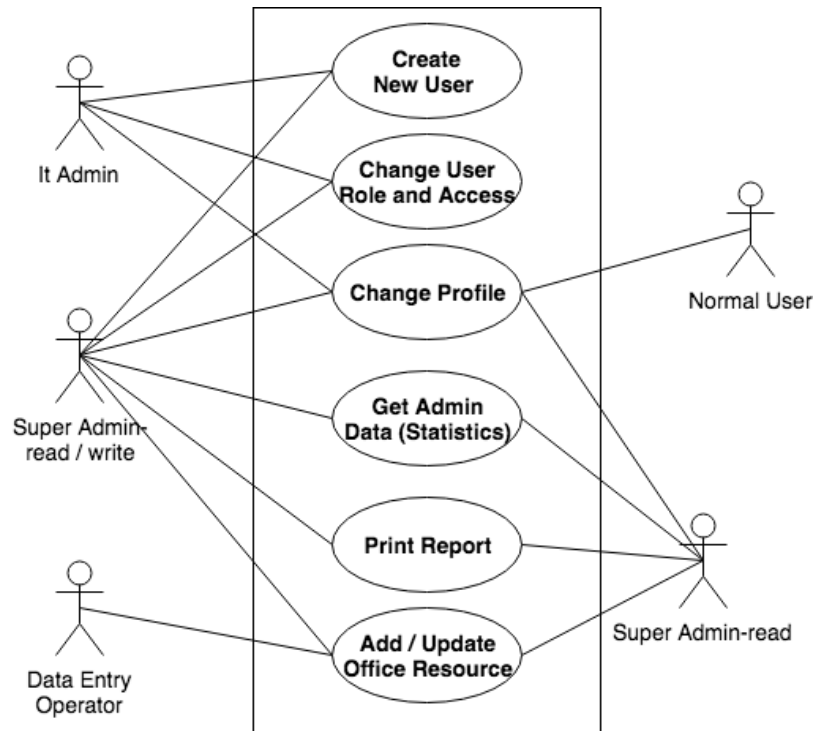


Illustration 3: Use Case -2

This diagram explains how different administrative personals interact with the system. ‘Super Admin-read/write’ has all the access. On the other hand, ‘Super Admin-read’ has only the administrative read access. A data entry operator has a partial access of ‘super admin’ i.e., ‘add/update office resource’. Creating new employee and changing their access is the responsibility of ‘IT admin’.

VI c. Technological Requirements

Back end:

Language: Java^[4]

Framework: Spring^[5], Hibernate^[6], Jackson Json^[7]

Database: MySQL^[8]

Server: Apache Tomcat^[9]

Front end:

Language: HTML^[10], CSS^[11], JAVASCRIPT^[12]

Framework: W3.css^[13], jQuery^[14]

VII Entity Relationship Diagram

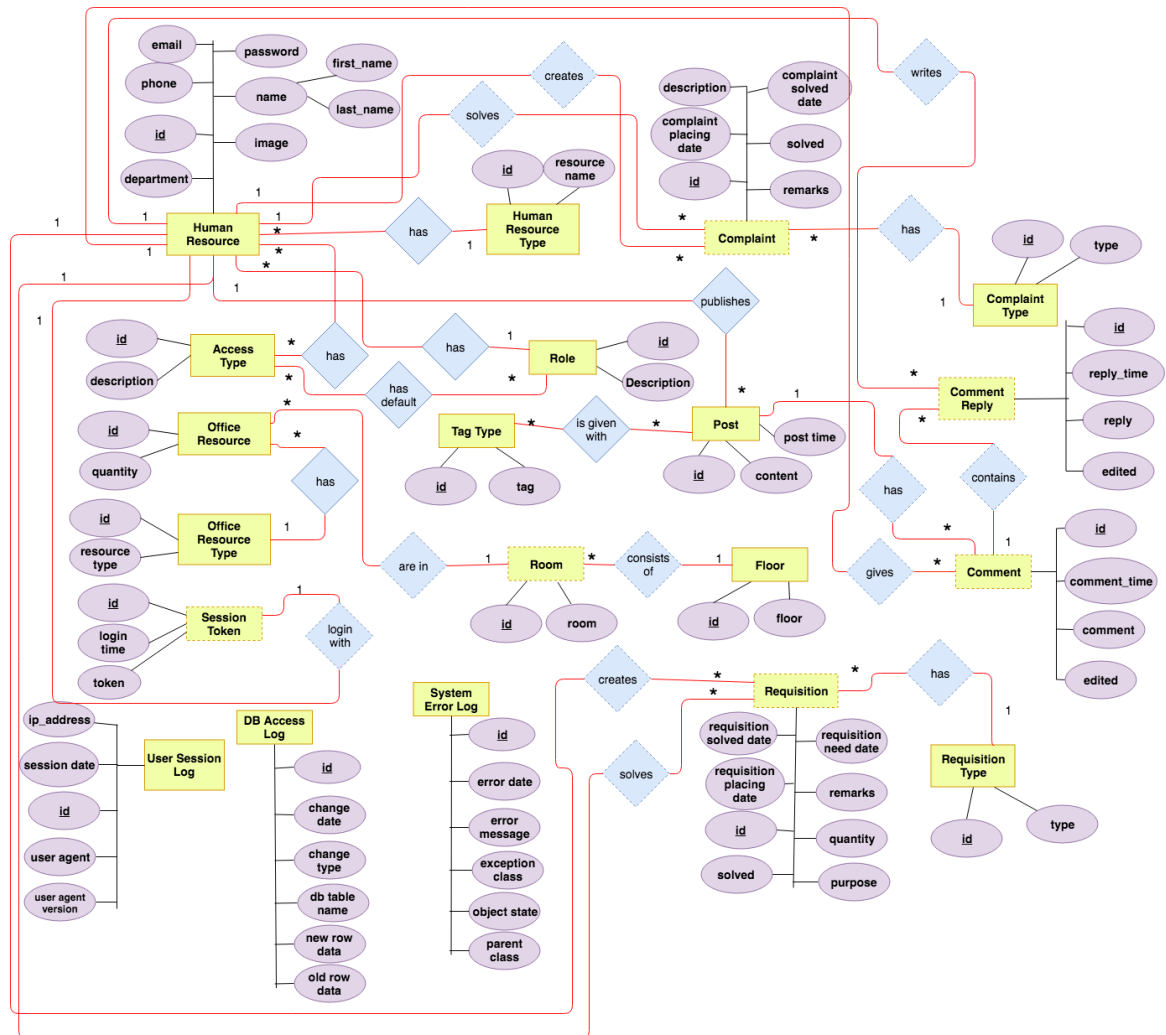
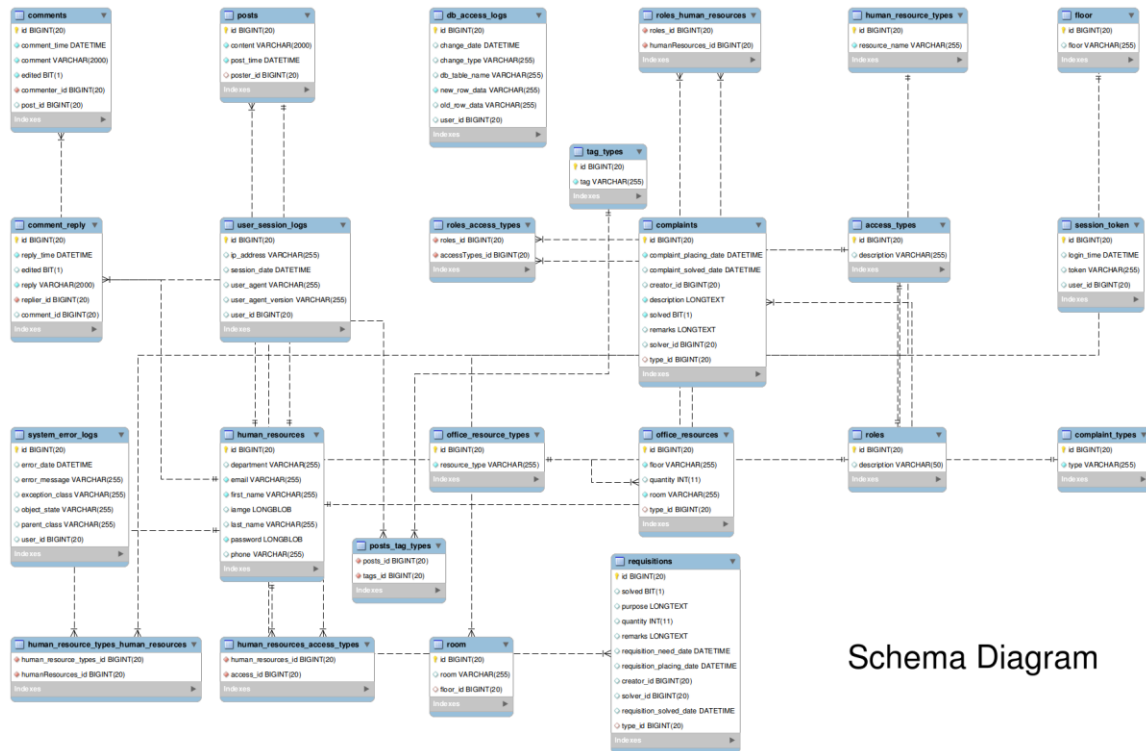


Illustration 4: Entity Relationship Diagram

VIII Schema Diagram



Schema Diagram

Illustration 5: Schema Diagram

IX Sequence Diagram

IX a. Login Sequence Diagram

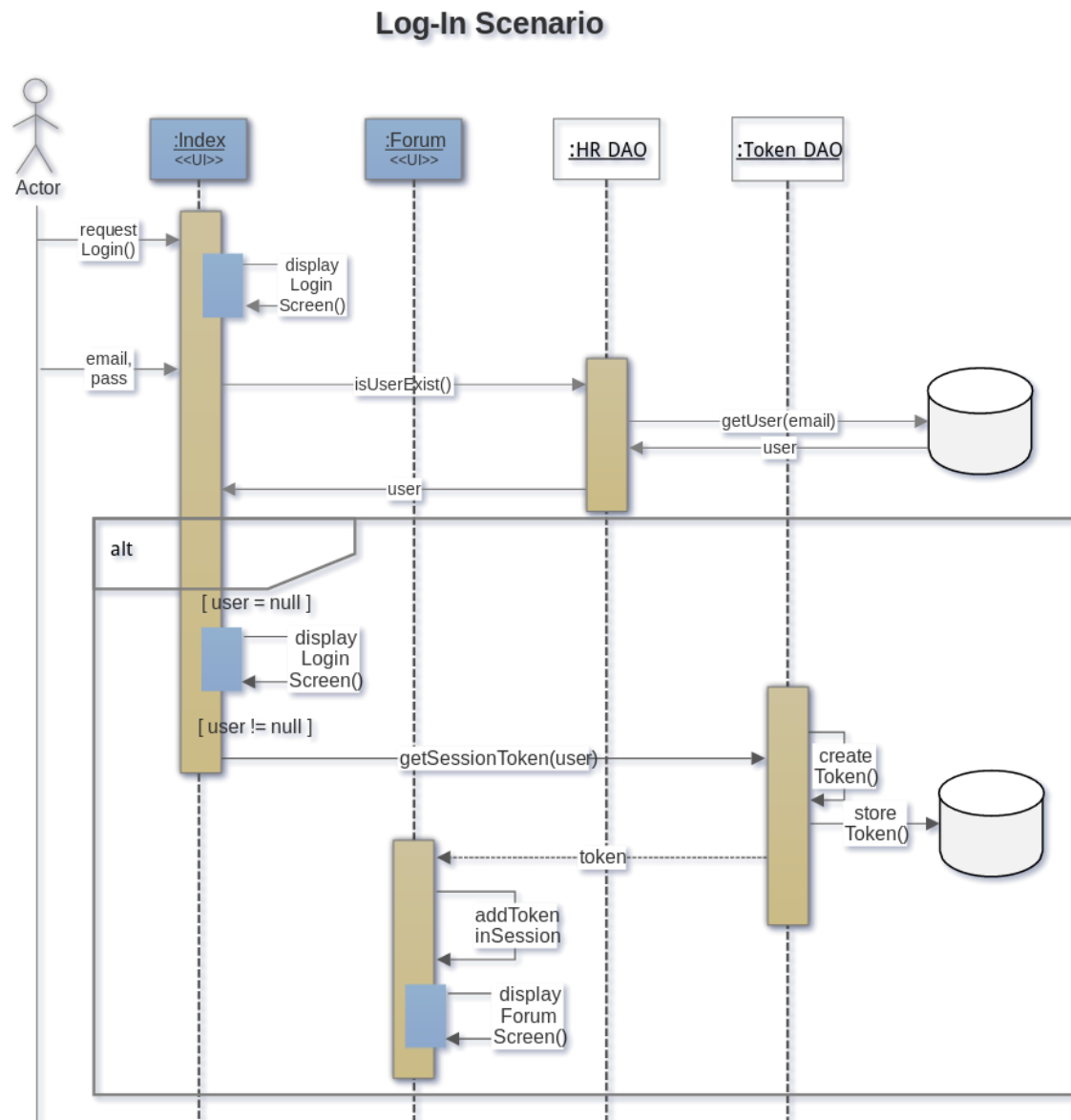


Illustration 6: Login Sequence Diagram

IX b. Logout Sequence Diagram

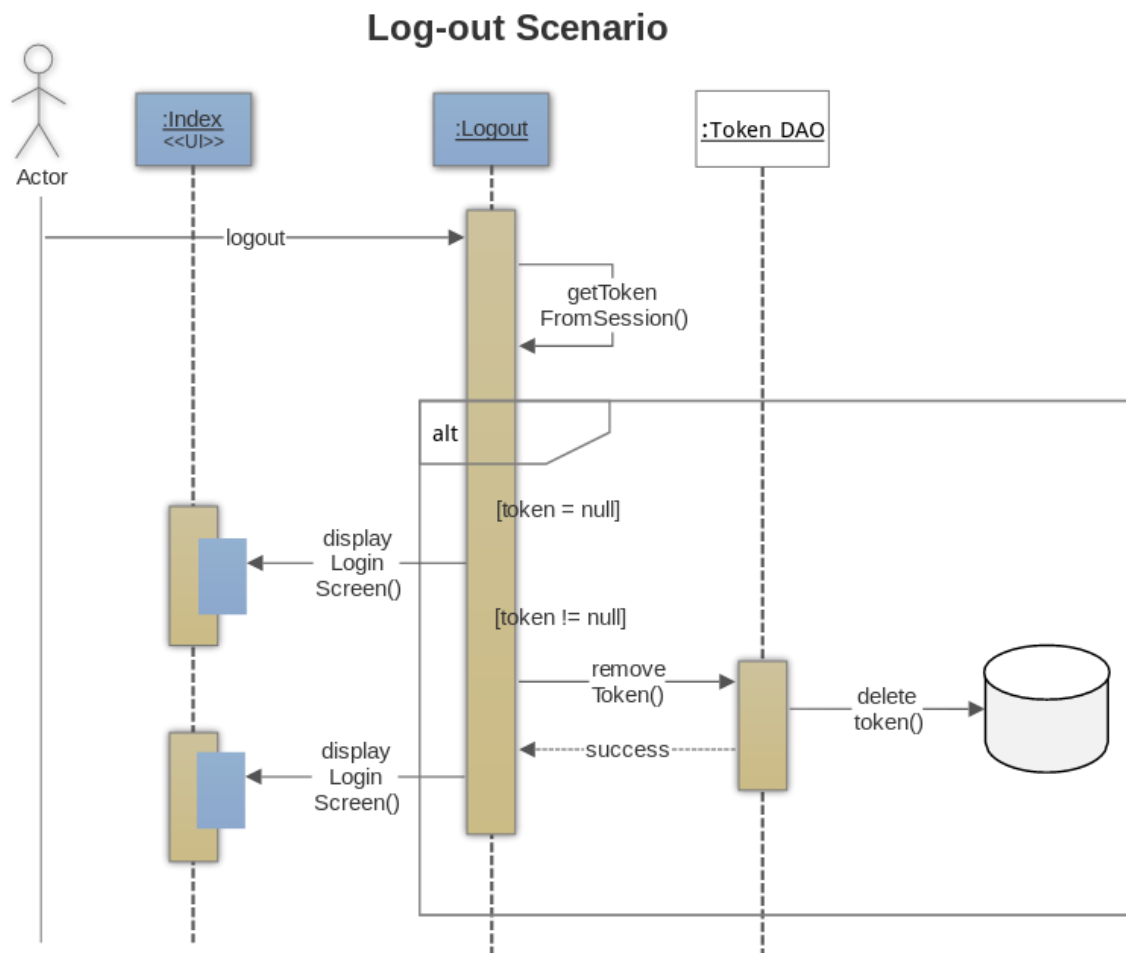


Illustration 7: Logout Sequence Diagram

IX c. Add Complaint Sequence Diagram

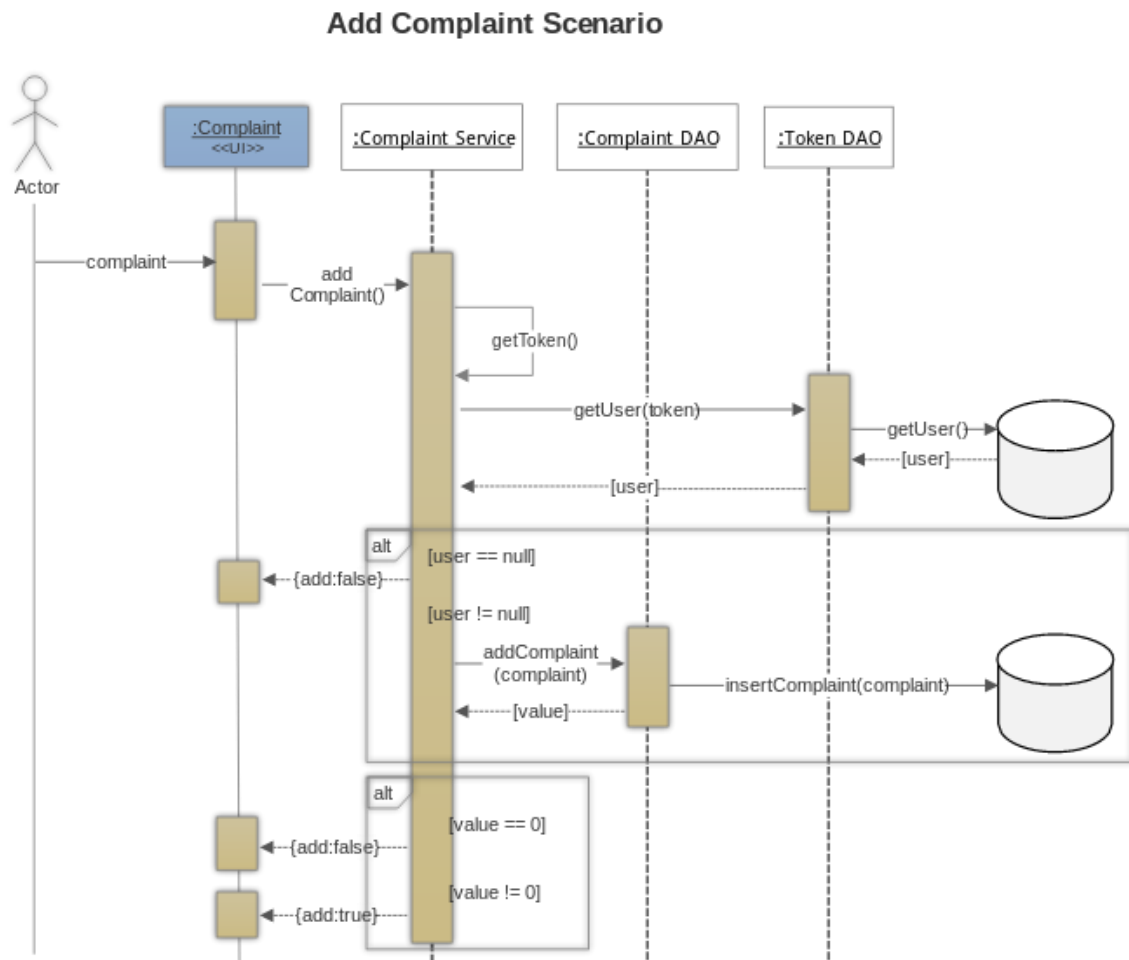


Illustration 8: Add Complaint Sequence Diagram

IX d. Add Requisition Sequence Diagram

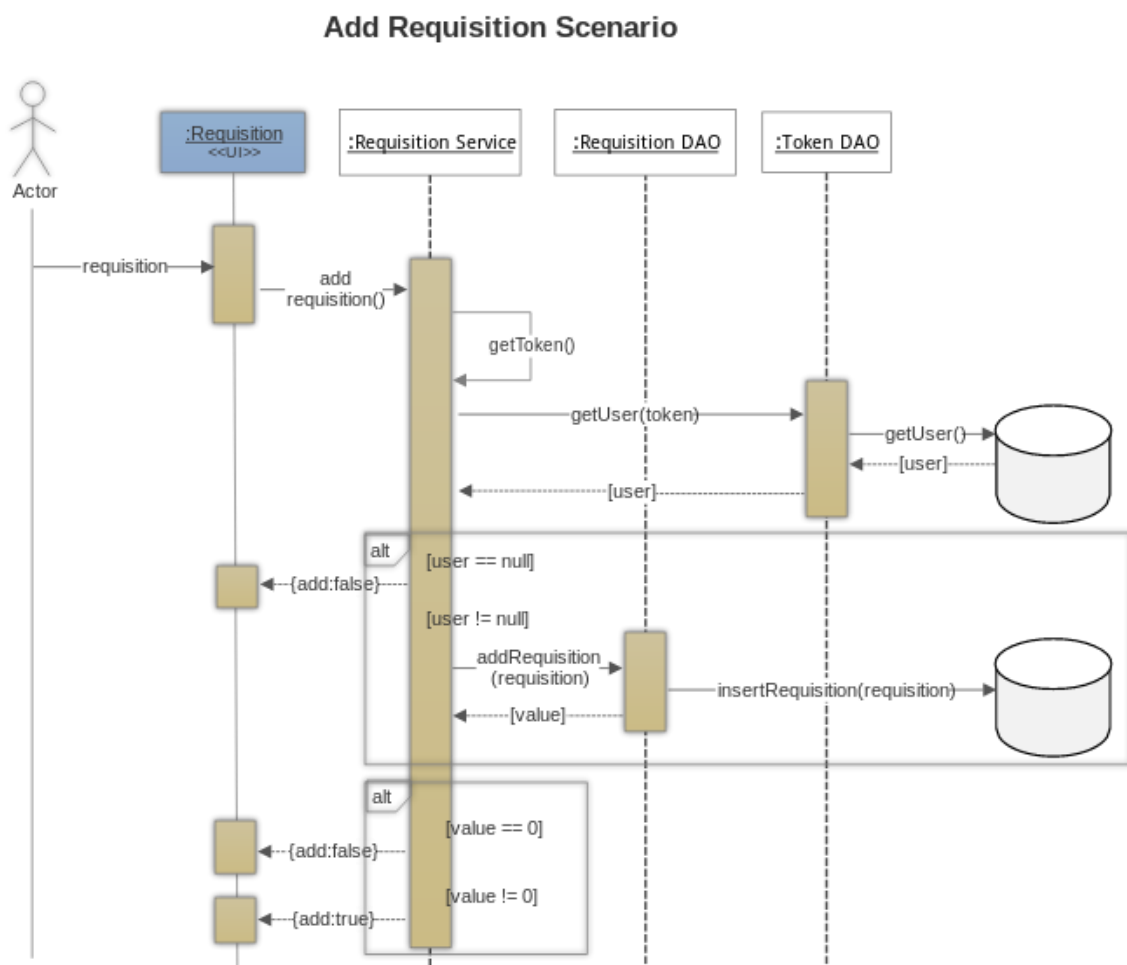


Illustration 9: Add Requisition Sequence Diagram

IX e. Add Post Sequence Diagram

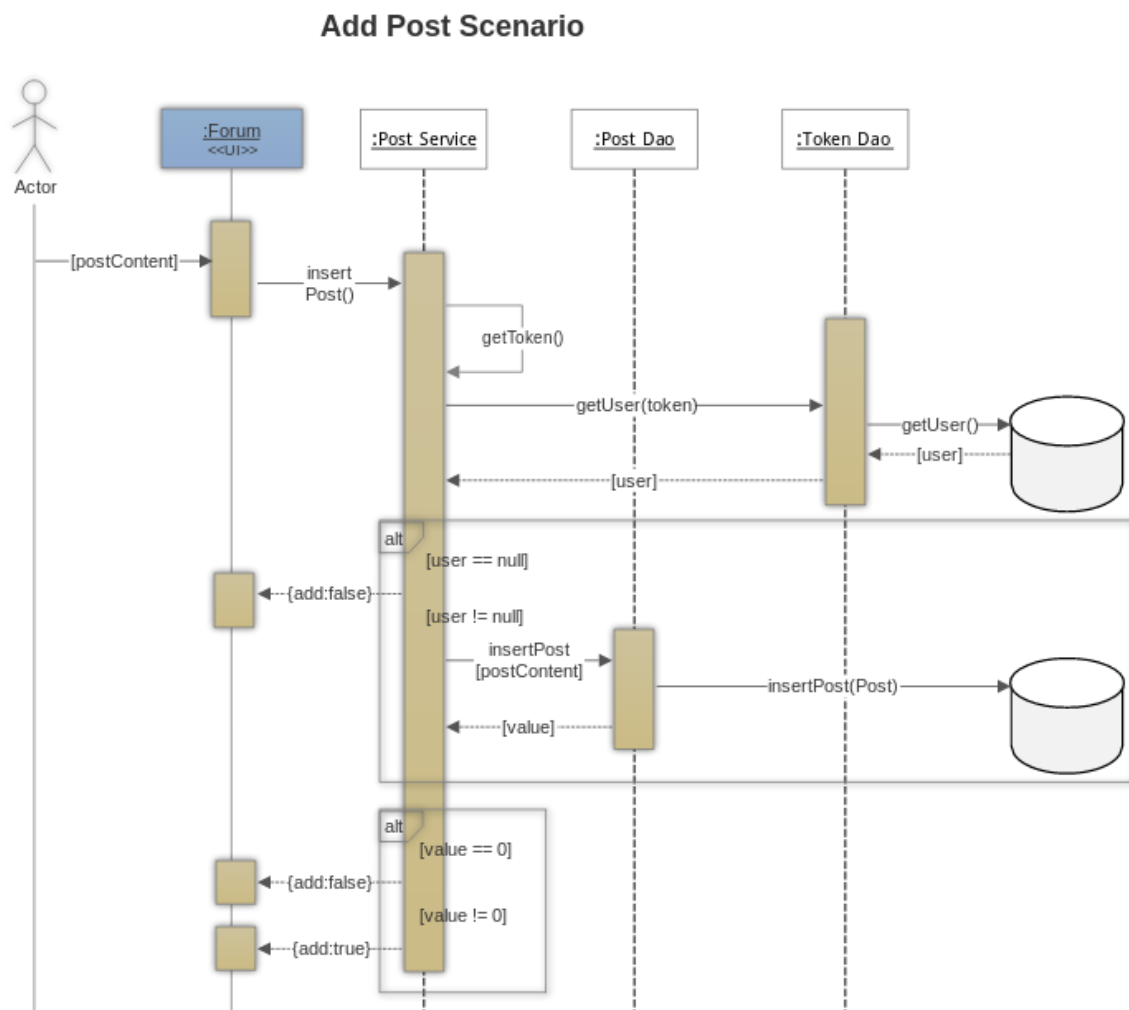


Illustration 10: Add Post Sequence Diagram

IX f. Get Incoming Complaints Sequence Diagram

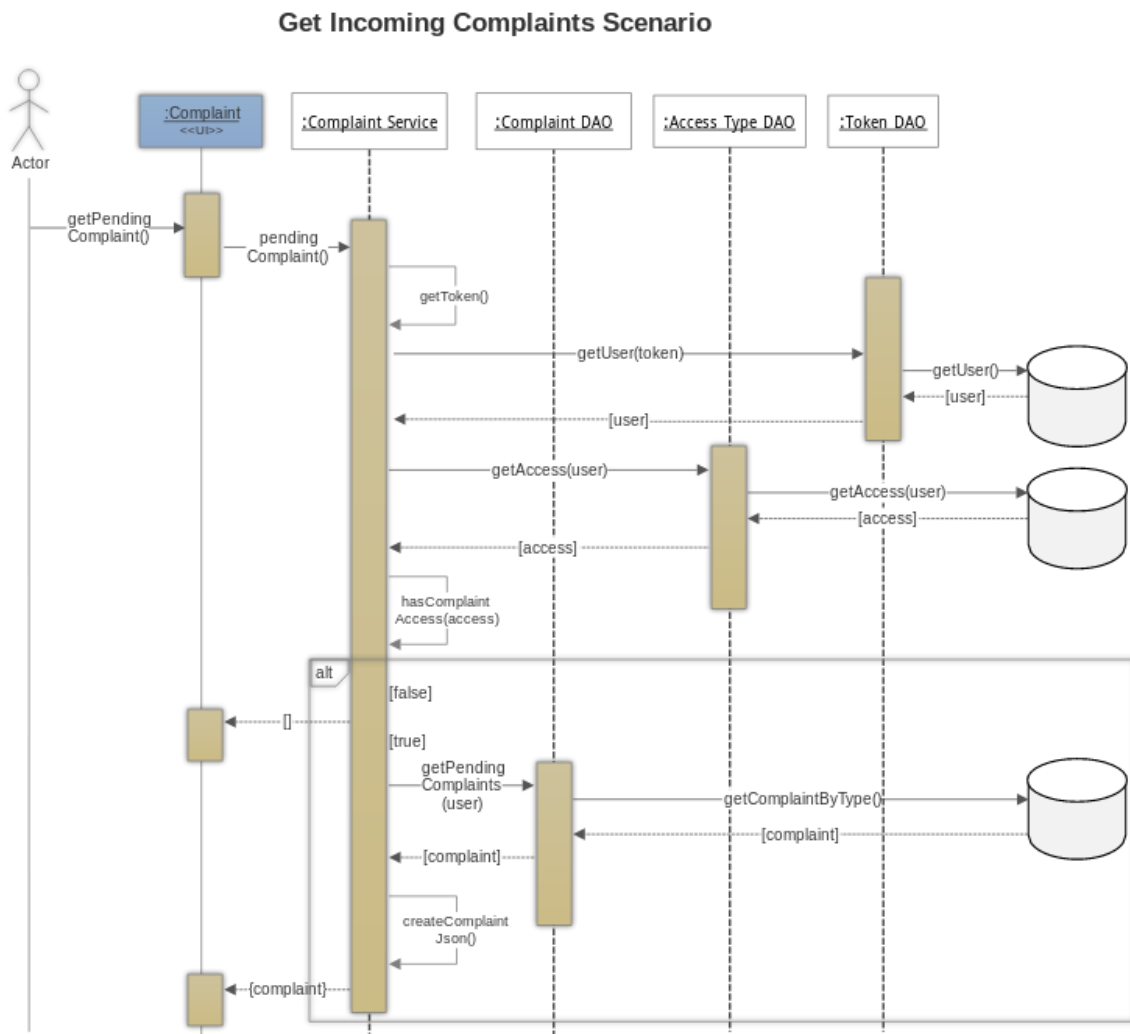


Illustration 11: Get Incoming Complaints Sequence Diagram

IX g. Get Incoming Requisitions Sequence Diagram

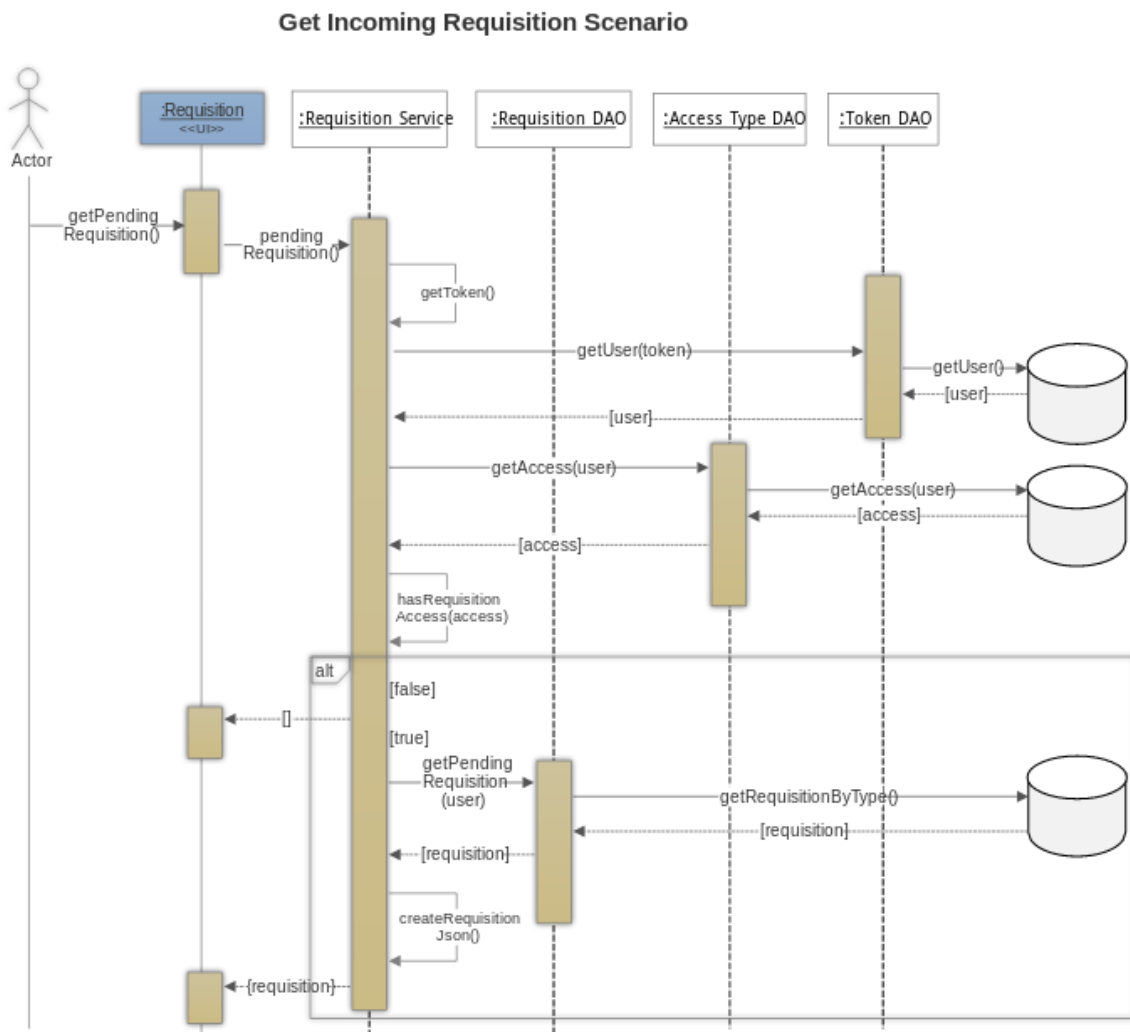


Illustration 12: Get Incoming Requisitions Sequence Diagram

IX h. Administrative Statistical Data Sequence Diagram

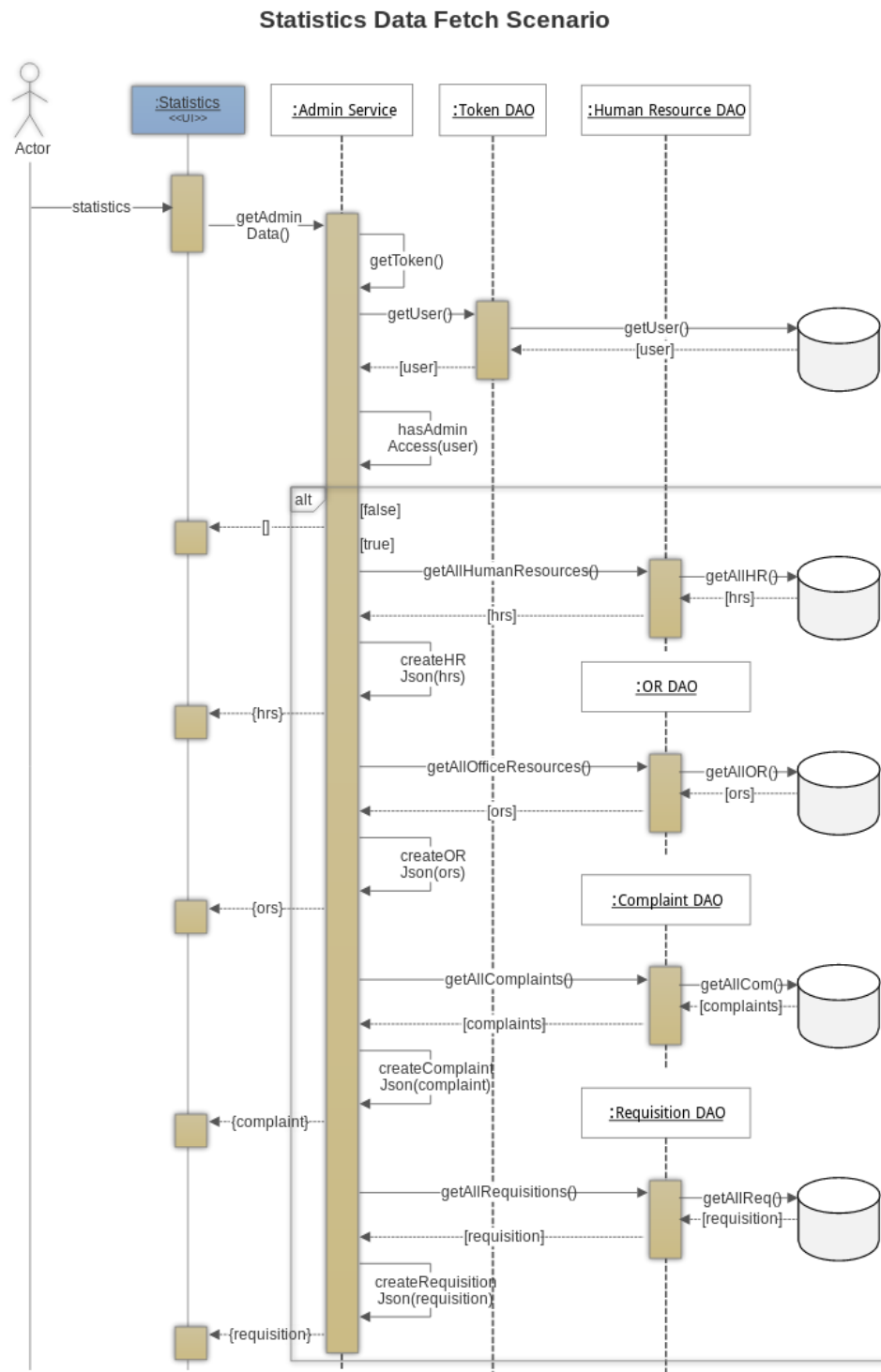


Illustration 13: Administrative Statistical Data Sequence Diagram

X Class Diagram

X a. Bird Eye View

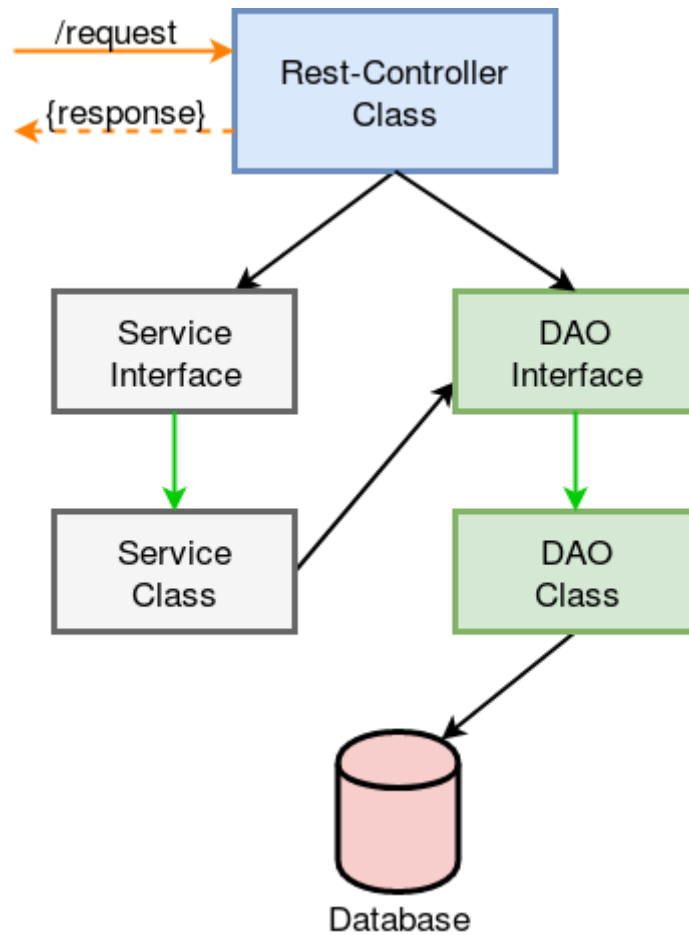


Illustration 14: Class Diagram- Bird Eye View

X b. Class Diagram of Complaint Module

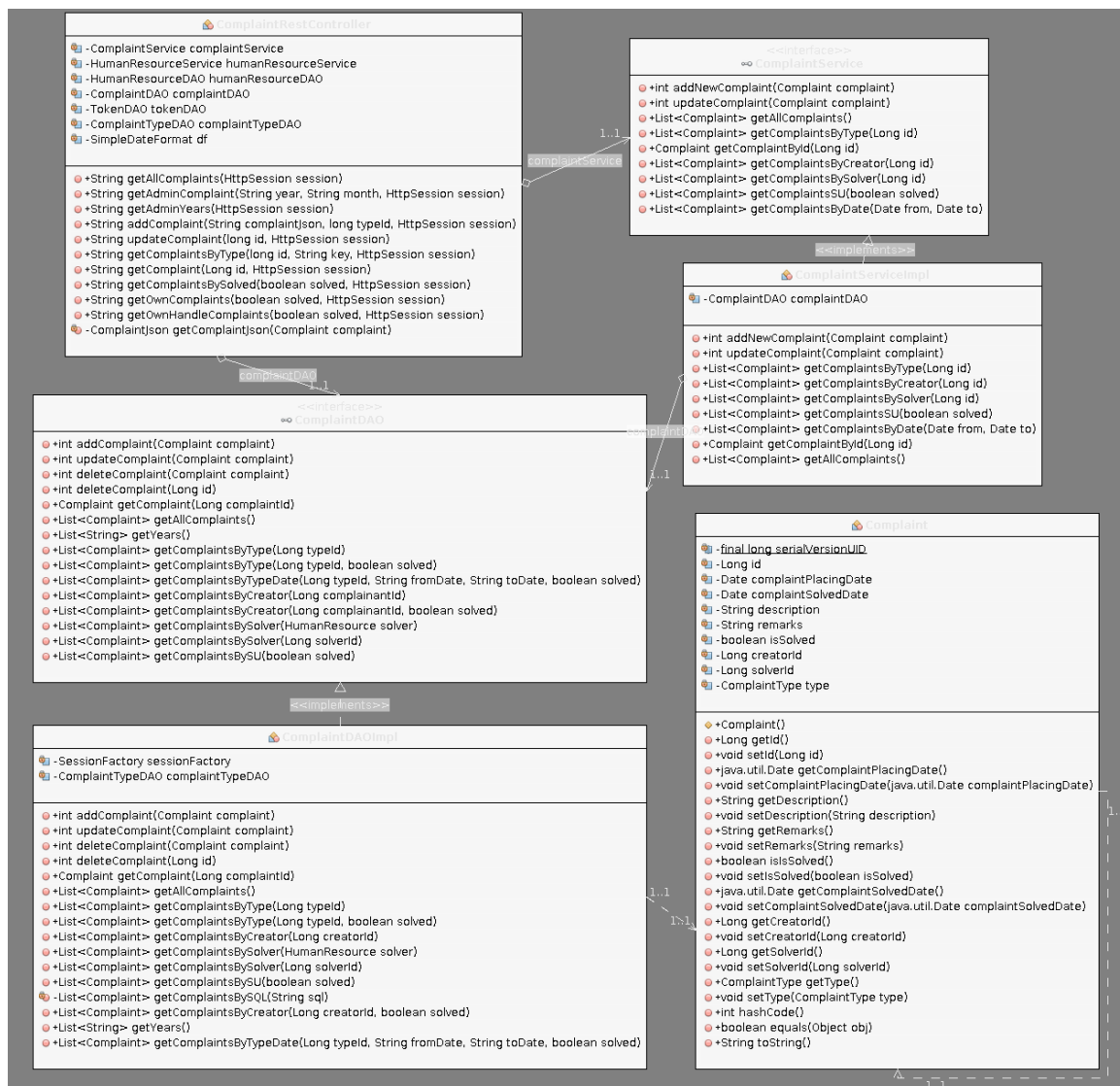


Illustration 15: Class Diagram- Complaint Module

Chapter 4

Conclusion

During the development of the software ERP 360⁰, we had to pass through a narrow path. We faced many challenges that we have never thought about. We came up with the solutions to the problems, we learned a lot of new things. Previously we did not have a transparent idea on building web application with spring and hibernate. Even we did not know how json works and how to build a web application with web service by creating json API. By the end of the development of the project we learned these stuffs. As well as we learned to solve numerous interesting errors in setting up projects in maven with spring and hibernate.

References

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- [4] Java : <https://docs.oracle.com/javase/8/docs/>
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