INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

INFO 2304 - SYSTEM ANALYSIS AND DESIGN

SECTION 2

SEMESTER 2, 2023/2024

PROJECT TITLE: ENERGY TRACKING SYSTEM

GROUP NAME: BIT BYTE

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1. Energy Tracking System Actors

No	Actor(s)	Synonym	Description
1	User	KICT Members	Individuals comprising KICT students, lecturers, and staff who interact with the energy monitoring system. They can register, view reports, and leave feedback on the system.
2	System Admin	Administrator	Authorized personnel responsible for managing and overseeing the energy monitoring system. Admins can register, activate the system, generate reports, and maintain its functionality.

Table 1: List of Business Actors in The New Proposed System

2. Energy Tracking System Use Cases

Use Case name	Description	Participating Actors and Roles	Subsystem
Register/Login	This use case describes the event of a user or admin registering in the energy monitoring system.	User Admin	-
View Report	This use case describes the event of a user viewing energy consumption reports.	User	-
Leave Feedback	This use case describes the event of a user providing feedback on the energy monitoring system.	User	-

Activate System	This use case describes the event of an admin activating the energy monitoring system.	Admin	Admin Management
Maintain the System	This use case describes the event of an admin maintaining the overall functionality of the energy monitoring system.	Admin	Admin Management

Table 2: List of Business Requirements of the Energy Monitoring System

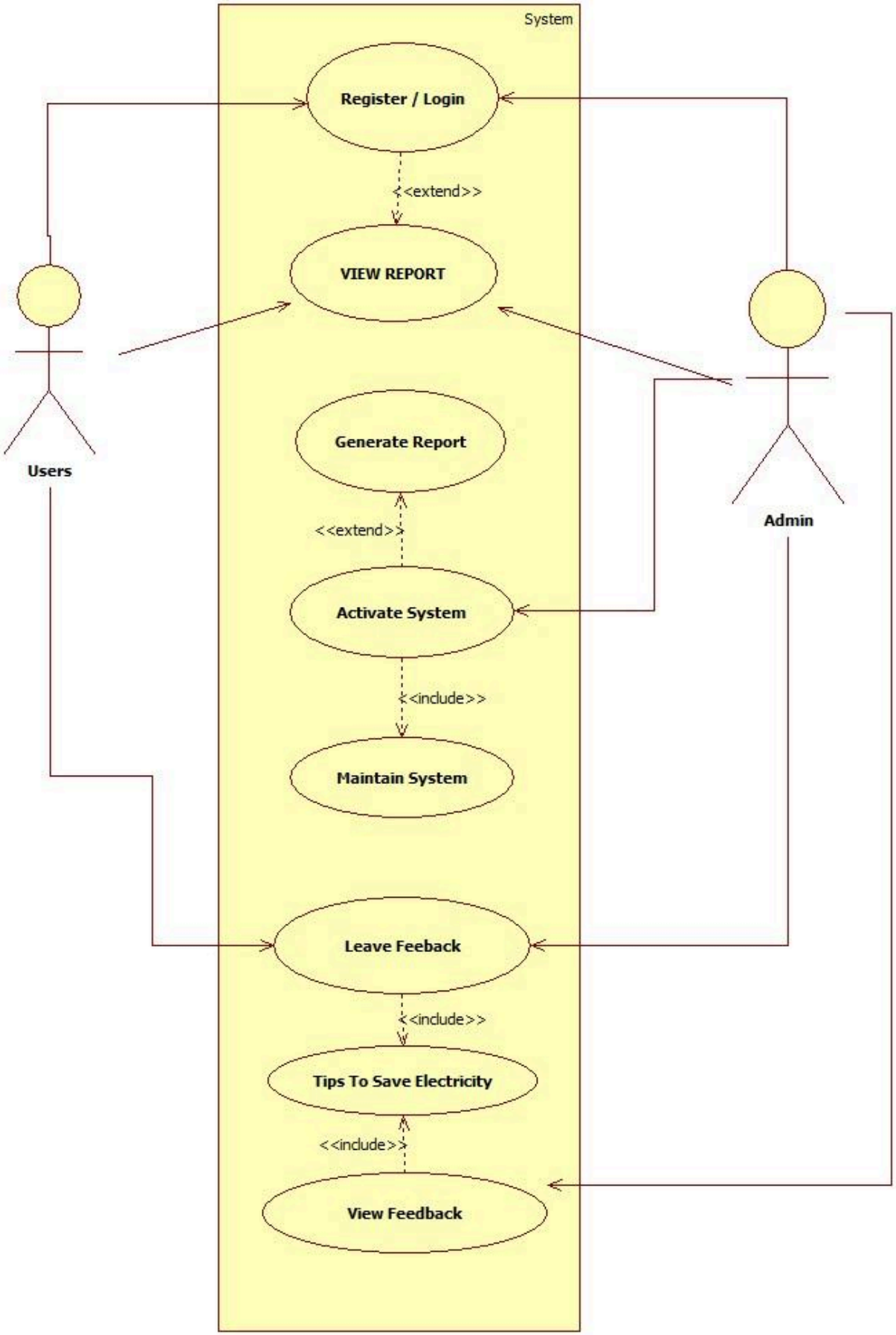
System
Register / Login
<<extend>>
VIEW REPORT
Users
Generate Report
<<extend>>
Admin
Activate System
<<include>>
Maintain System
Leave Feeback
<<include>>
Tips To Save Electricity
<<include>>
View Feedback

Figure 1.0 : Use Case Diagram of the Energy Tracking System

3. Use Case Narratives

Table 3.1: Register/Login

ENERGY TRACKING SYSTEM

Author: Yusuf Mohammad Yunus **Date:** 23rd May 2024

USE CASE NAME:	**Register/Login**	**USE CASE TYPE**
USE CASE ID:	ETS-01	Business Requirements: □ System Analysis: □ System Design: □
PRIORITY:	High	
SOURCE:	Admin	
PRIMARY BUSINESS ACTOR:	User	
PRIMARY SYSTEM ACTOR:	System Admin	
OTHER PARTICIPATING ACTORS:	None	
OTHER INTERESTED STAKEHOLDERS:	None	
DESCRIPTION:	Event where a user or admin want to register/login	
PRE-CONDITION:	User/Admin not registered or login yet	
TRIGGER:	Selection of 'Register' and ‘login’ option	
TYPICAL COURSE OF EVENTS:	**Actor Action**	**System Response**
	Step 1: User selects the 'Register' or ‘Login’ option.	**Step 2**: System displays registration form. If user wants to login, systems displays the login form
	Step 3: User enters required information.	**Step 4**: System validates the information.
	Step 5: User submits the form.	**Step 6**: System registers/login the user and displays a confirmation message.
ALTERNATE COURSES:	None	
CONCLUSION:	Registration/login successful	
POST-CONDITION:	User/admin can access the system	

BUSINESS RULES	1. All fields must be completed to register. 2. Passwords must meet security requirements. 3. Users must accept the Terms and Conditions.
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	System must support concurrent users
ASSUMPTIONS:	Internet access is available for system registration.
OPEN ISSUES:	None

Table 3.2: View Report

ENERGY TRACKING SYSTEM

Author: Wan Ahmed Fauzizafry bin Wan Khalid **Date:** 23rd May 2024

USE CASE NAME:	**View Report**	**USE CASE TYPE**
USE CASE ID:	ETS-02	Business Requirements: □ System Analysis: □ System Design: □
PRIORITY:	Low	
SOURCE:	Admin	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	User	
OTHER PARTICIPATING ACTORS:	Admin	
OTHER INTERESTED STAKEHOLDERS:	None	
DESCRIPTION:	View report function is to giving user viewing the energy consumption reports in the system	
PRE-CONDITION:	1. The user registered to the system 2. The Energy Monitoring System is operational	
TRIGGER:	Admin provided the report of the Energy Monitoring System usage to the user	
TYPICAL COURSE OF EVENTS:	**Actor Action**	**System Response**
	Step 1: The use case starts when the user register up in the system	**Step 2**: The system verifies the credentials and grants access to the application
	Step 3: The user selects the "View Reports" in the menu selection	**Step 4**:The system navigates to the report page
	Step 5 : The user viewing the report of the system	**Step 6**: The system provided the report of the energy consumption reports and all records in the system
ALTERNATE COURSES:	If the specified parameters are invalid, the system provides feedback to the admin, allowing them to correct the inputs.	
CONCLUSION:	The user can view the reports of the Energy Monitoring System to make sure they follow up with all of the records in the system.	
POST-CONDITION:	The generated report is stored for future reference.	
BUSINESS RULES	The report can only be authorized and perform by the admin of the system	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	The user can leave and create reports for the system	
ASSUMPTIONS:	User is allowed to view the reports	

OPEN ISSUES:	Providing live report for the user to make sure they keep getting follow up and notice with the system

Table 3.3: Leave Feedback

ENERGY TRACKING SYSTEM

Author: Tengku Muhammad Abduh bin Tengku Mohamad Zulkifli **Date:** 23rd May 2024

USE CASE NAME:	**Leave Feedback**	**USE CASE TYPE**
USE CASE ID:	ETS-03	Business Requirements: □ System Analysis: □ System Design: □
PRIORITY:	Medium	
SOURCE:	Survey	
PRIMARY BUSINESS ACTOR	User	
PRIMARY SYSTEM ACTOR	Energy Monitoring System	
OTHER PARTICIPATING ACTORS:	Admin	
OTHER INTERESTED STAKEHOLDERS:	None	
DESCRIPTION:	The primary objective for this use-case is collecting feedback provided by users who have interacted with the application.	
PRE-CONDITION:	The user must have interacted with the application at least once.	
TRIGGER:	User decides to leave feedback.	
TYPICAL COURSE OF EVENTS:	**Actor Action**	**System Response**
	Step 1: User access and interacts with the feedback option	**Step 2**: The application displays the feedback form to the user
	Step 3: User provides any sort of feedback	**Step 4**: Application records the feedback
	Step 5: User submits the feedback response	**Step 6**: EMS Stores the feedback for further analysis by admin.
ALTERNATE COURSES:	If a user decides to modify their feedback, perhaps due to a change of mind or grammatical correction, they can edit their feedback after submission.	
CONCLUSION:	The application successfully receives the feedback and stores it so that it can be viewed.	
POST-CONDITION:	User's feedback is stored in the system	
BUSINESS RULES	Feedback must be authentic	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Admin can develop a user-friendly feedback interface	
ASSUMPTIONS:	User is allowed to leave feedback	
OPEN ISSUES:	Having suitable database management for all the feedback received and stored.	

Table 3.4 Activate system

ENERGY TRACKING SYSTEM

Author: Akif Asyrani bin Mohamad Izani **Date:** 23rd May 2024

USE CASE NAME:	**Activate System**	**USE CASE TYPE**
USE CASE ID:	ETS-04	Business Requirements: □ System Analysis: □ System Design: □
PRIORITY:	High	
SOURCE:	Admin	
PRIMARY BUSINESS ACTOR	Admin	
PRIMARY SYSTEM ACTOR	Energy Tracking System	
OTHER PARTICIPATING ACTORS:	None	
OTHER INTERESTED STAKEHOLDERS:	None	
DESCRIPTION:	The system is for admin to activate the monitoring system	
PRE-CONDITION:	The system is off	
TRIGGER:	The activate button in system activation	
TYPICAL COURSE OF EVENTS:	**Actor Action**	**System Response**
	Step 1: Admin log in into the system	**Step 2**: System authenticate Admin credentials
	Step 3: Admin open system activation panel	**Step 4**: System navigate to and display the activation panel
	Step 5: Admin activates the system button.	**Step 6**: System is activated
ALTERNATE COURSES:	1. The admin wrongly input the login credentials and denied access. 2. The system was not deactivated or stayed on	
CONCLUSION:	The admin has control to activate and deactivate the system	
POST-CONDITION:	The system is on and admin is able to monitor real time energy consumption	
BUSINESS RULES	The system must always be deactivated when classes are all done	
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Only the admin has access over the activation of the system	
ASSUMPTIONS:	The admin must activate and deactivate the system	
OPEN ISSUES:	The admin forgot to deactivate the system and energy consumption is overload	

Table 3.5: Maintain the System

ENERGY TRACKING SYSTEM

Author: Ahmad Syawqi bin Wahid **Date:** 23rd May 2024

USE CASE NAME:	**Maintain the system**		**USE CASE TYPE**
USE CASE ID:	ETS-06		Business Requirements: □ System Analysis: □ System Design: □
PRIORITY:	High		
SOURCE:	Admin		
PRIMARY BUSINESS ACTOR	Admin		
PRIMARY SYSTEM ACTOR	Admin		
OTHER PARTICIPATING ACTORS:	None		
OTHER INTERESTED STAKEHOLDERS:	None		
DESCRIPTION:	This use case encompasses the activities related to the ongoing maintenance and management of the energy monitoring system by the admin.		
PRE-CONDITION:	1. The admin is logged into the system. 2. The energy monitoring system is operational.		
TRIGGER:	Admin identifies the need for system maintenance, updates, or enhancements.		
TYPICAL COURSE OF EVENTS:	**Actor Action**	**System Response**	
	Step 1: The use case starts when the admin opts to perform system maintenance	**Step 2**: The system provides access to maintenance tools and functionalities.	
	Step 3: Admin reviews system logs and identifies any potential issues or areas for improvement.	**Step 4**: The system presents detailed logs and diagnostic information.	
	Step 5: Admin applies updates or patches to ensure the system's security and performance.	**Step 6**: The system updates its components and notifies the admin upon completion.	
	Step 7: Admin monitors system performance and addresses any identified issues.	**Step 8**: The system provides confirmation and status updates.	
ALTERNATE COURSES:	If the admin identifies critical issues, they may initiate emergency maintenance procedures, temporarily taking the system offline if necessary.		
CONCLUSION:	The admin concludes the maintenance activities, ensuring that the energy monitoring system is in optimal condition.		
POST-CONDITION:	1. The energy monitoring system has undergone the necessary maintenance or updates. 2. The system remains operational and stable.		

BUSINESS RULES	Maintenance tasks should be performed during low system usage periods to minimize disruption.
IMPLEMENTATION CONSTRAINTS AND SPECIFICATIONS	Maintenance activities should align with system architecture and specifications.
ASSUMPTIONS:	The admin has the necessary permissions and knowledge to perform system maintenance.
OPEN ISSUES:	Regular backups are in place to mitigate data loss during maintenance.

4. Activity Diagram

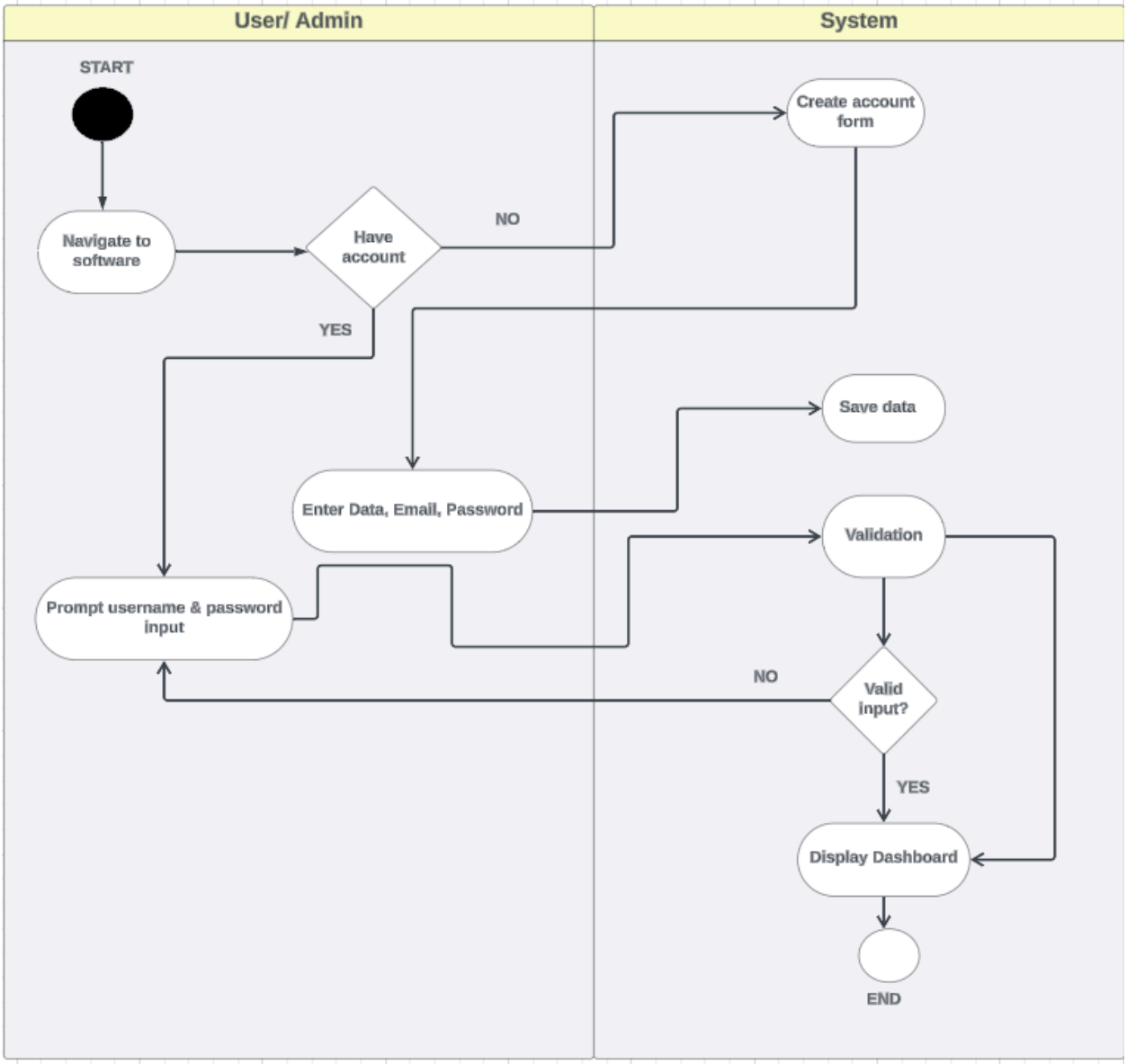

Figure 2: Register Activity Diagram

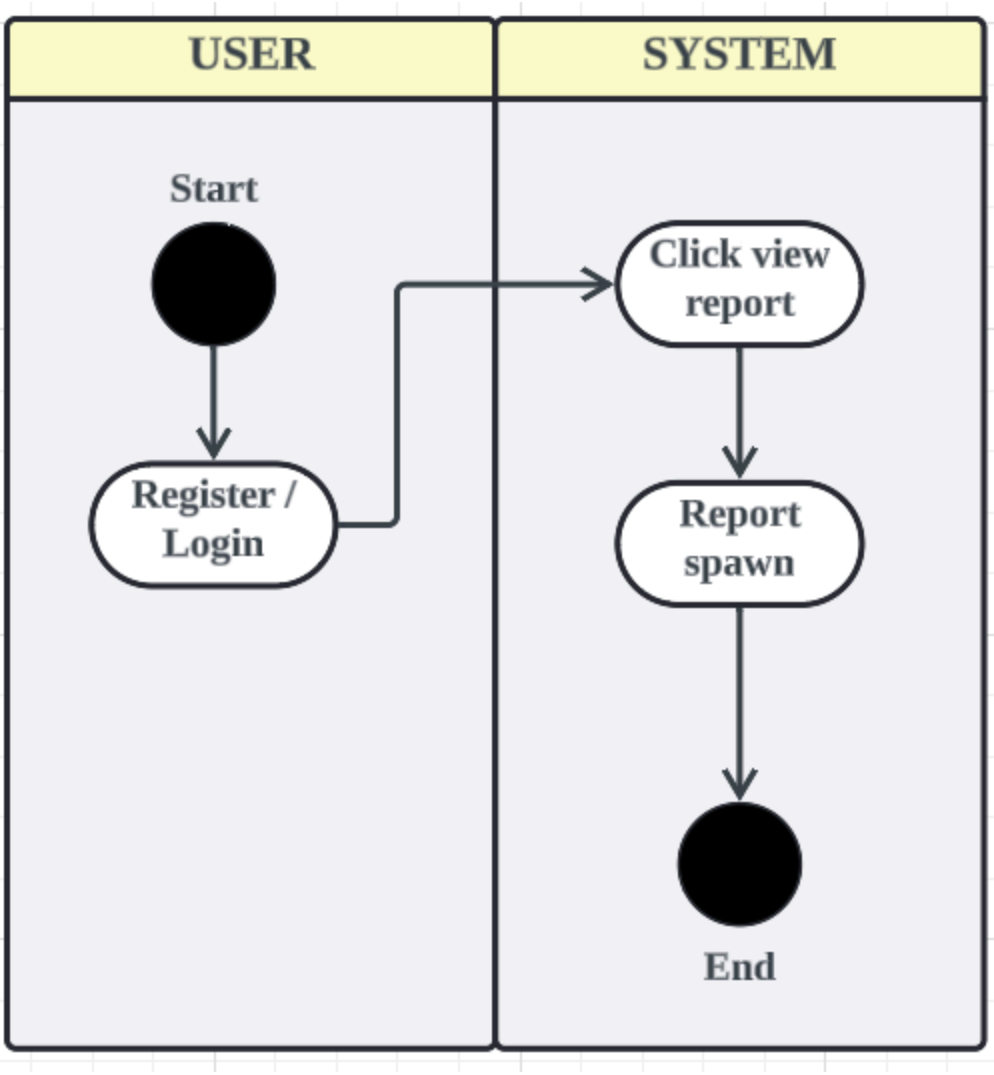

Figure 3: View Report Activity Diagram

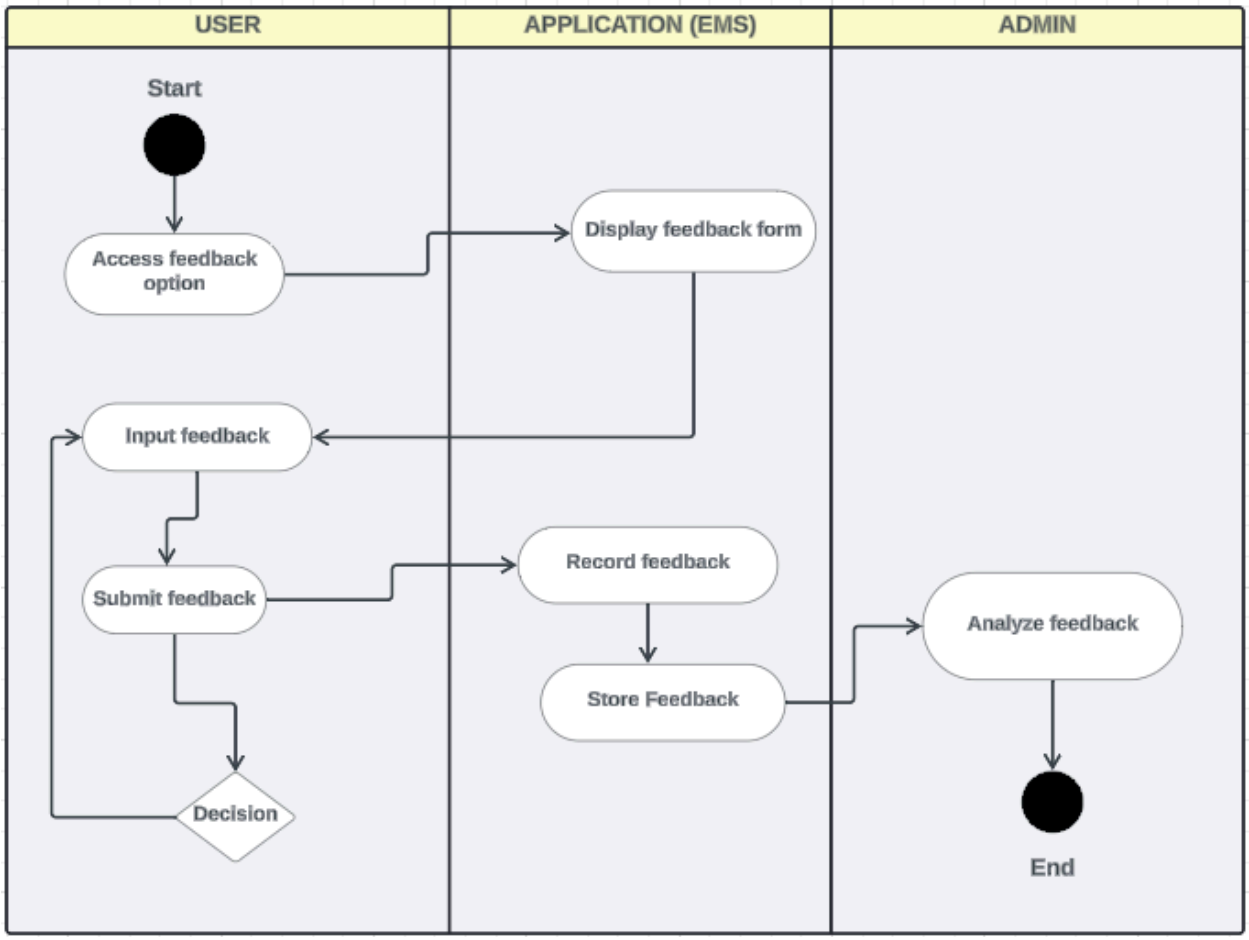

Figure 4: Leave Feedback Activity Diagram

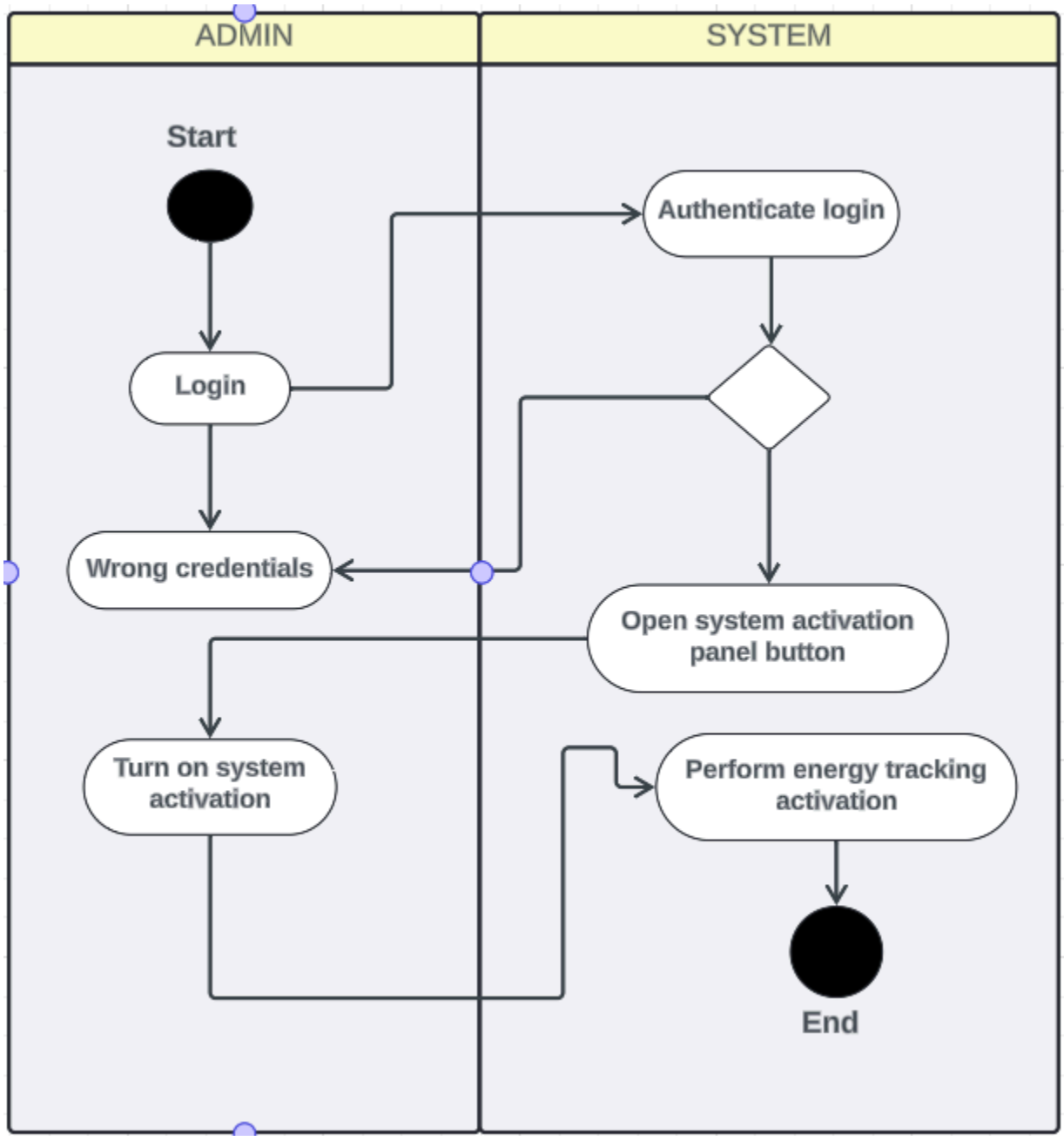

Figure 5: Activate system activity diagram

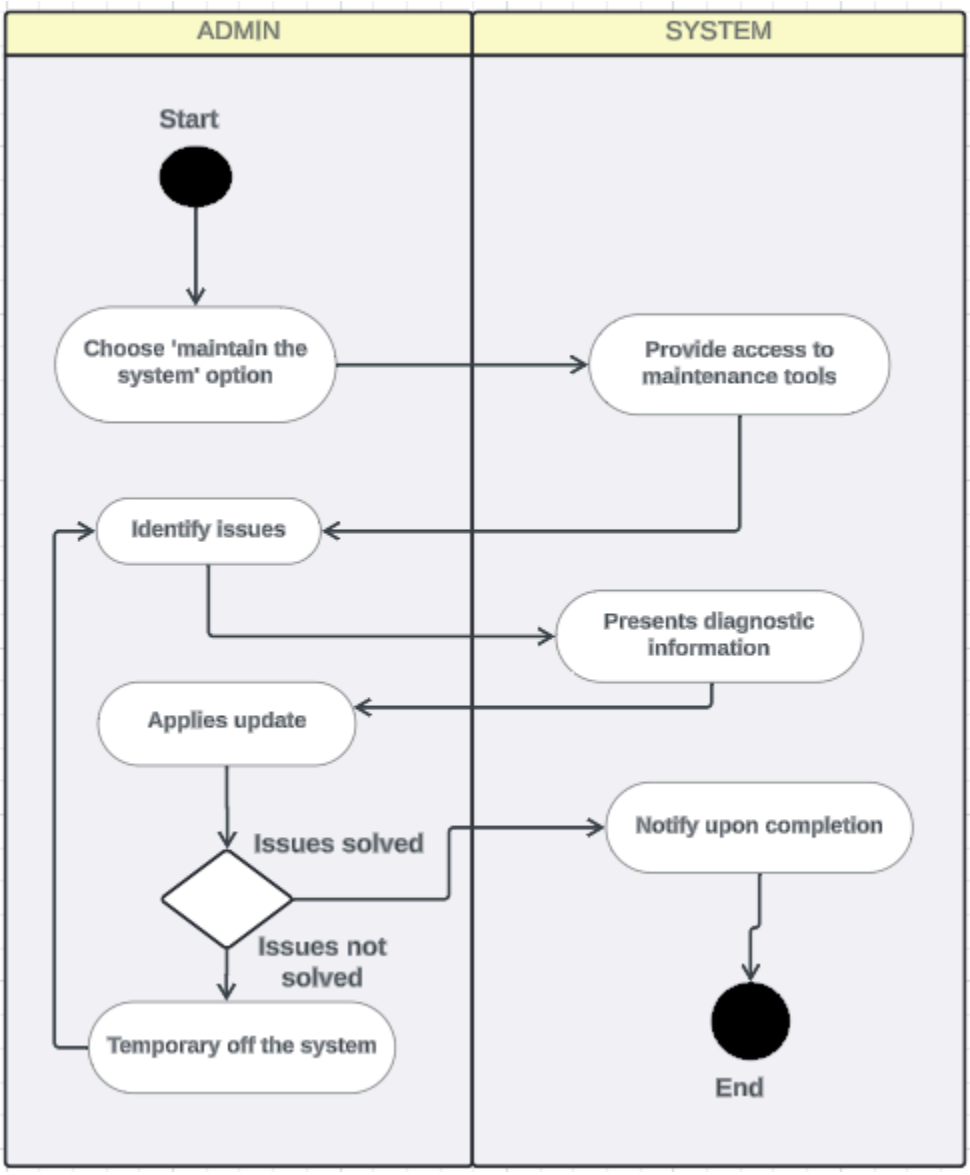

Figure 6: Maintain the System Activity Diagram

5. Sequence Diagram

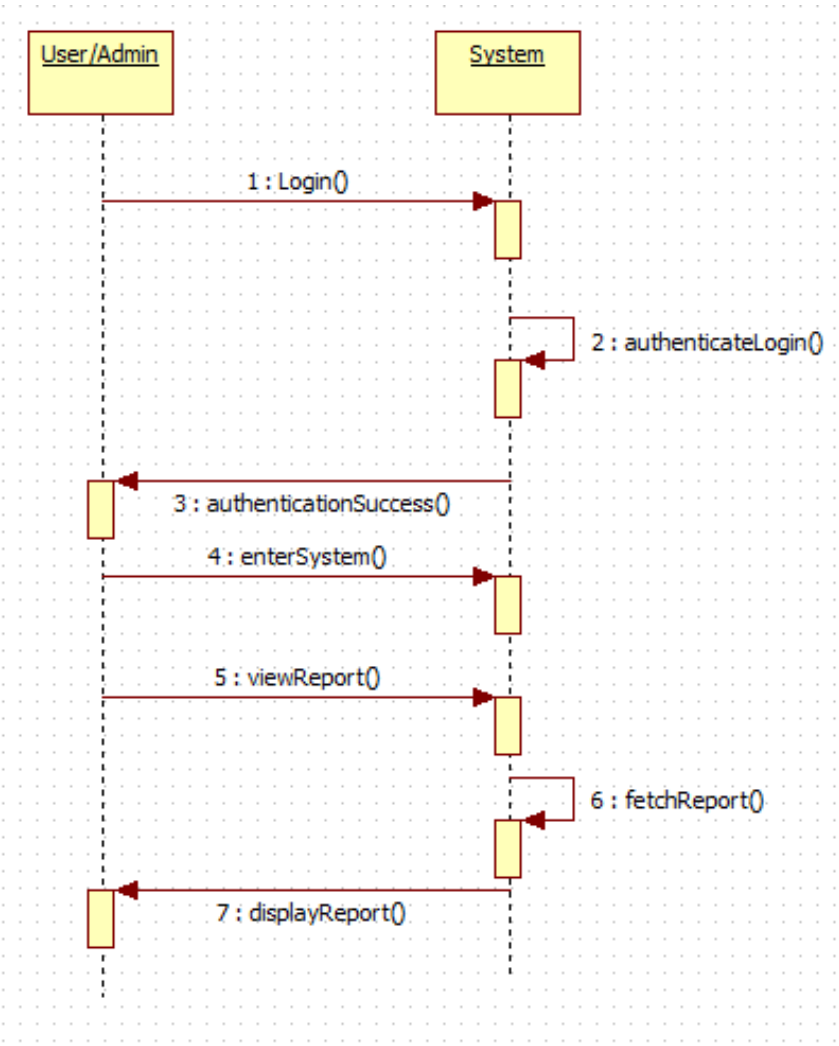

Figure 7: User/Admin View Report Sequence Diagram

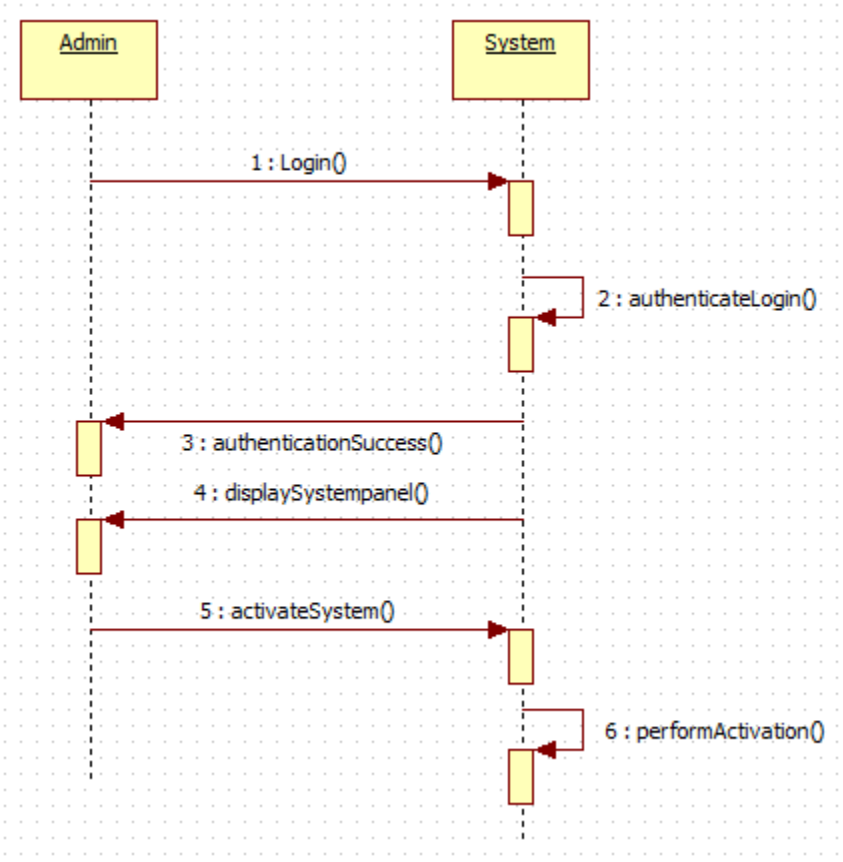

Figure 8: Admin System Activation Sequence Diagram

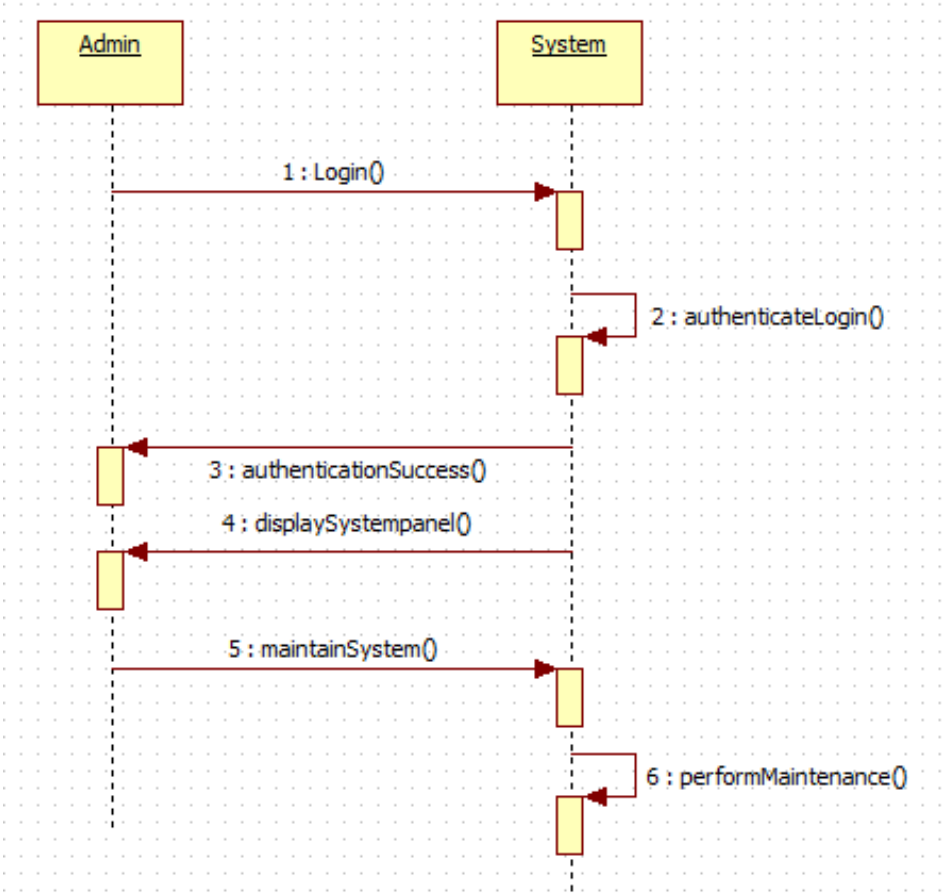

Figure 9: Admin System Maintenance Sequence Diagram

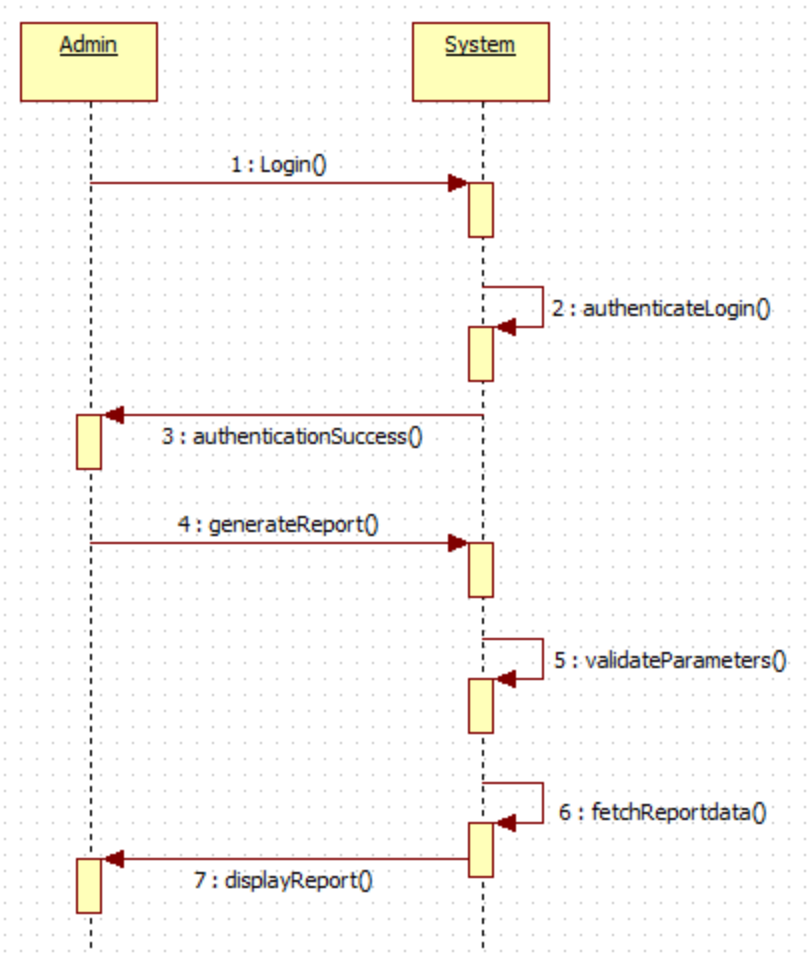

Figure 10: Admin Generate Report Sequence Diagram

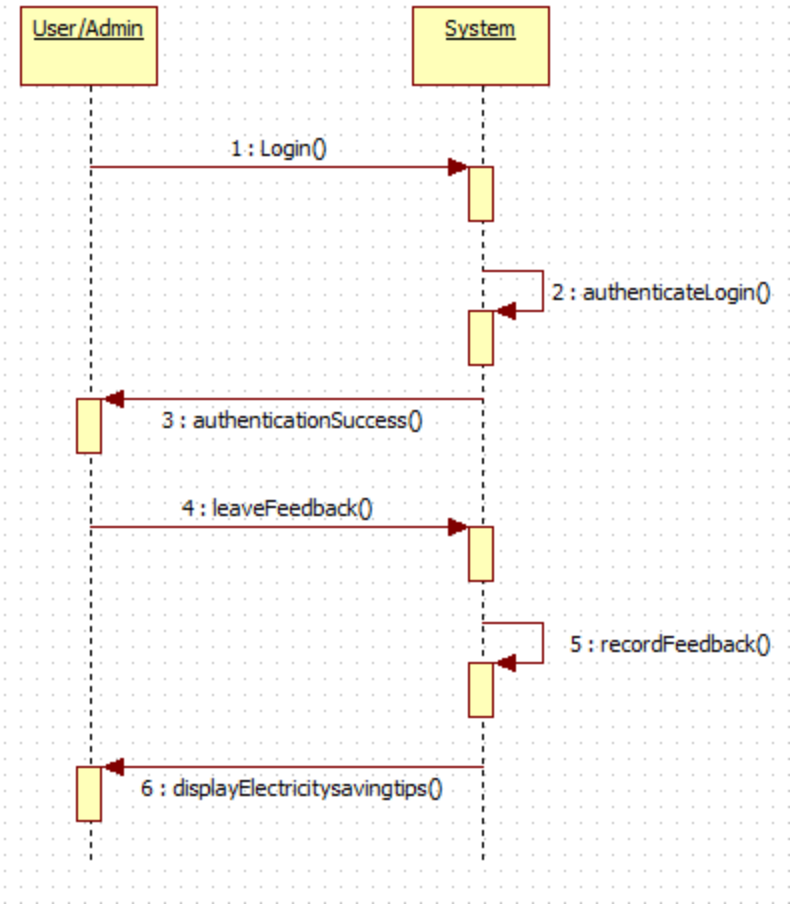

Figure 11: User/Admin Give Feedback Sequence Diagram

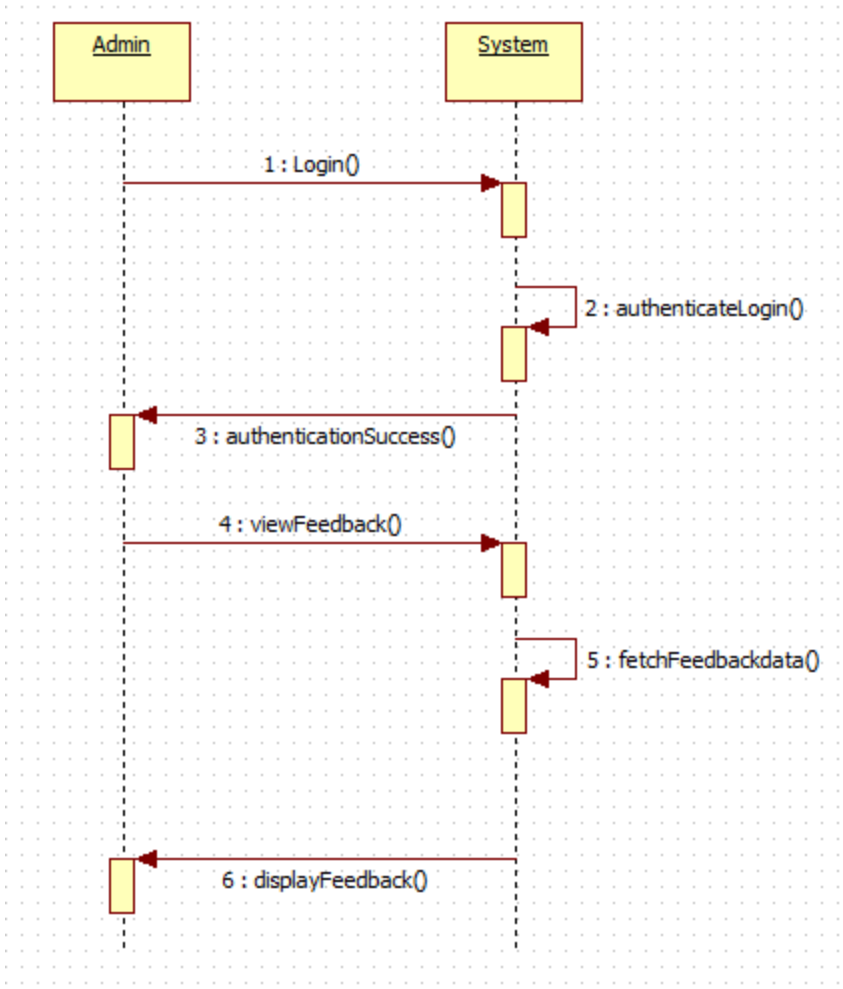

Figure 12: Admin View Feedback Sequence Diagram

6. Class Diagram