SCSJ2203: Software Engineering

System Documentation

Kindergarten Management System

Version 1

Due Date

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School of Computing, Faculty of Engineering

Prepared by: TechC

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AQILAH HANIM BINTI MOHD TAUFIK B19EC0006

Revision Page

a. Overview

This first version of our system documentation is divided into four sections which consists of Introduction, Specific Requirements, Detailed Description of Components, Requirement Matrix and Appendices.

In introduction, this system documentation shows the Purpose, Scope, Definitions, Acronyms and Abbreviations, References and Overview of the project. Specific Requirements on the other hand contains the External Interface Requirements, System Features, Performance Requirements, Design Constraints and the Software System Attributes.

Detailed Description of Components contains the complete system Package Diagram and the Detailed Descriptions of the subsystems.The Requirements Matrix consists of the use case versus classes . Last but not least, the Appendices consists of only the Traceability Matrix.

b. Target Audience

1. Staffs of Tadika Ihsan.

2. Parents and guardians of Tadika Ihsan students.

3. Developers.

4. System Analysts.

c. Project Team Members

Team Member	Tasks assigned	Status
Aqilah Hanim Binti Mohd Taufik	1.3 Definitions, Acronyms and Abbreviation 1.4 References 2.1.3 Software Interfaces 2.2.1 UC001 2.2.2 UC002 2.2.3 UC006 2.2.7 UC007 4.0 Requirements Matrix 5.0 Appendix	Complete
Lee Chen Hong	1.1 Purpose 1.2 Scope 2.2.10 UC010 2.3 Performance Requirements 3.1 Complete Package Diagram 3.2 Detailed Description 4.0 Requirement Matrix	Complete
Abdallah Malam	2.1 External Interface Requirements 2.1.1 User Interfaces 2.1.2 Hardware Interfaces 2.2 System Features	Complete

Li Zhao Song	1.5 Overview 2.1.4 Communication Interfaces 2.2.3 UC003 2.2.4 UC004 2.2.5 UC005 2.2.8 UC008 2.2.9 UC009	Complete

d. Version Control History

Version	Primary Author(s)	Description of Version	Date Completed
Version 1.0	Li Zhao Song	Completed the system proposal	16/04/2020
Version 2.0	Aqilah Hanim Binti Mohd Taufik	Completed the system documentation	20/05/2020

Table of Contents

1. Introduction

1.1 : Purpose

This system documentation describes the kindergarten management system that are to change and simplify the management process of the kindergarten. This system documentation is created for the following purpose:

- To provide the necessary information to develop training program for operator and user.
- To create a vehicle of information to provide evidence of progress in the system development process and to monitor the process.
- To make conversion of a system from one machine to another machine easier.
- To make system modification and implementation easier.
- To narrow down the communication gaps among users, designer and management.
- To provide a means to determine in advance what will occur and when.

1.2 : Scope

The software product is Kindergarten Management System. This software product will help kindergarten teacher to manage the information of children in kindergarten and the children's parent. This system also allow teacher to record the activity and evaluate the expression of the children in the activity. Parent also can trace the children learning progress in the system.

This system will help kindergarten to save the cost in management of that data and make that job more efficiency. Parents also get the benefit to know what their child had learn from the kindergarten.

1.3 : Definitions, Acronyms and Abbreviation

- KMS – Kindergarten Management System

1.4 : References

- Satzinger, J. W., Jackson, R. B., & Burd, S. D. (2008). *Systems Analysis and Design in a Changing World (with CourseMate Printed Access Card)* (5th ed., Vol. 1). Boston, USA: Course Technology.

1.5 : Overview

This system is to help kindergarten to manage their child and parent information and also provide a platform for teacher to share their teaching progress to the parent. The system is divided into mainly 4 subsystem which is user management subsystem, child information maintenance subsystem, child evaluation subsystem, and e-mail message management subsystem.

2. Specific Requirements

2.1 : External Interface Requirements

This section shall describe the interface requirements for the Kindergarten management system. They specify the way the user shall interact with the system as well as define the necessary hardware interfaces and communication interfaces required by the software to store and retrieve data.

2.1.1 : User Interfaces

Req.ID	Requirements description	Priority	Complexity
UIR.01	Text boxes to enter Username & Password shall be present besides the "Username:" & "Password:" labels respectively.	High	Medium
UIR.02	"Login" & "Cancel" Buttons to be present in the Screen.	Medium	Low
UIR.03	"Sign-Up" Link shall be present below the Login Button to register the new Users.	High	Low
UIR.04	"Forgot Password" Link shall be present below the "Sign-up" Button.	High	Low

2.1.2 : Hardware Interfaces

The application can run on any hardware which supports Windows 7 or greater. The system must have at least 100 Megabytes of free disk space to install the program and 512MB-IGB of memory is required to load the application. The program does not write information directly to the user's computer, but instead uses a database which is located on a network server. The user's computer transfers and but instead uses a database which is located on a network server. The user's computer transfers and receives data from the server using basic networking protocols. All systems' information is stored in the server's database which stores the data on the server's disk.

2.1.3 : Software Interfaces

The system requires a properly configured version of Windows 7,8 or windows 10 to run the application. These computers must have Microsoft .NET Framework 3.1 or greater installed. The system's server can use either Windows, Linux or UNIX, but it must have MySQL properly installed and configured.

2.1.4 : Communication Interfaces

All data transferred between the server and the individual computers shall use the TCP/IP networking protocol over an Ethernet connection. This network is closed and is not accessible from the interne. This ensures unauthorized access is prohibited and provides more security.

2.2 : System Features

The system features include two user which is teacher and parent with 7 use cases. Bellow is the use case diagram, class diagram and state machine diagram of the system:

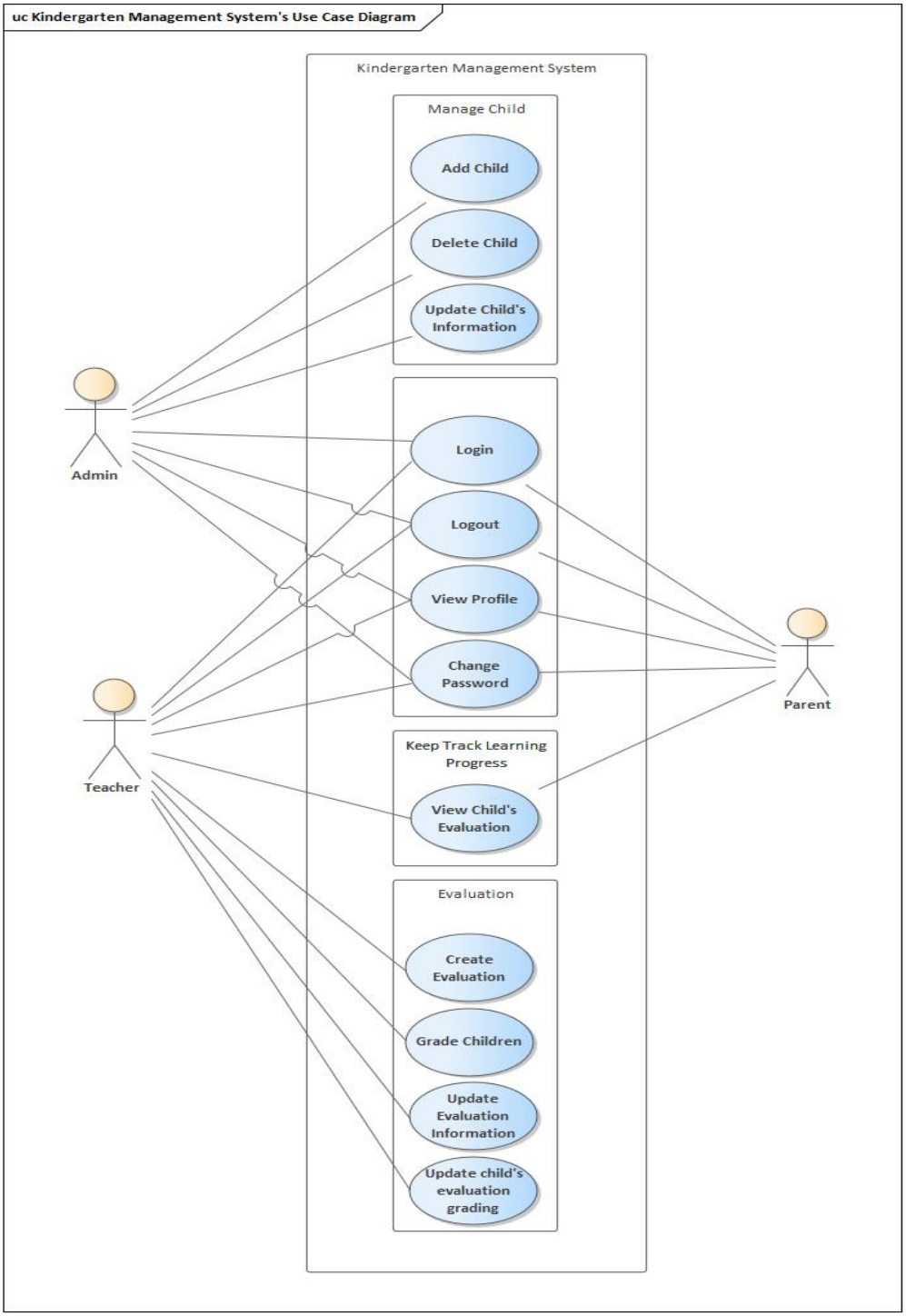

Figure 1 : Use Case Diagram for Kindergarten Management System

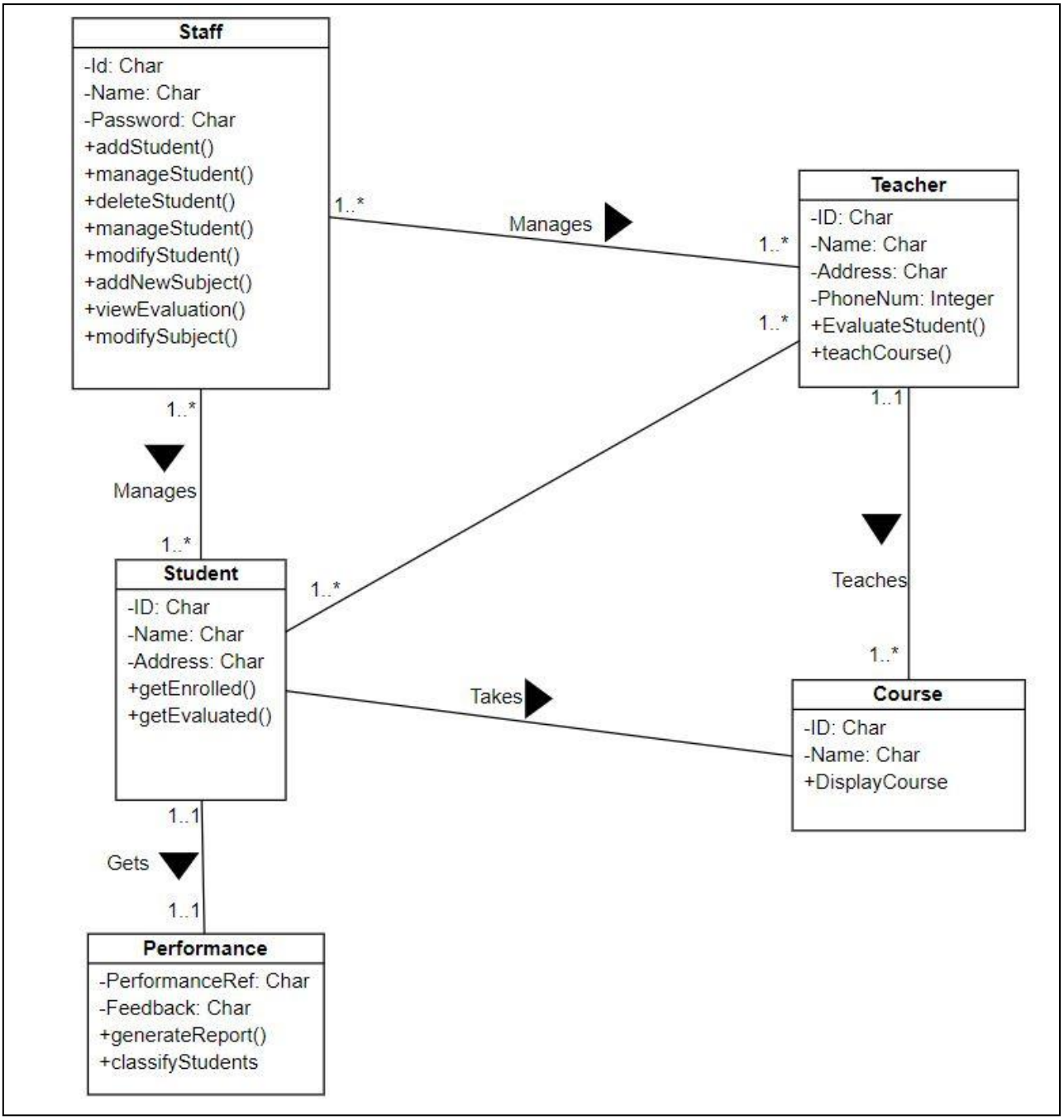

Figure 2 : Domain Model for Kindergarten Management System

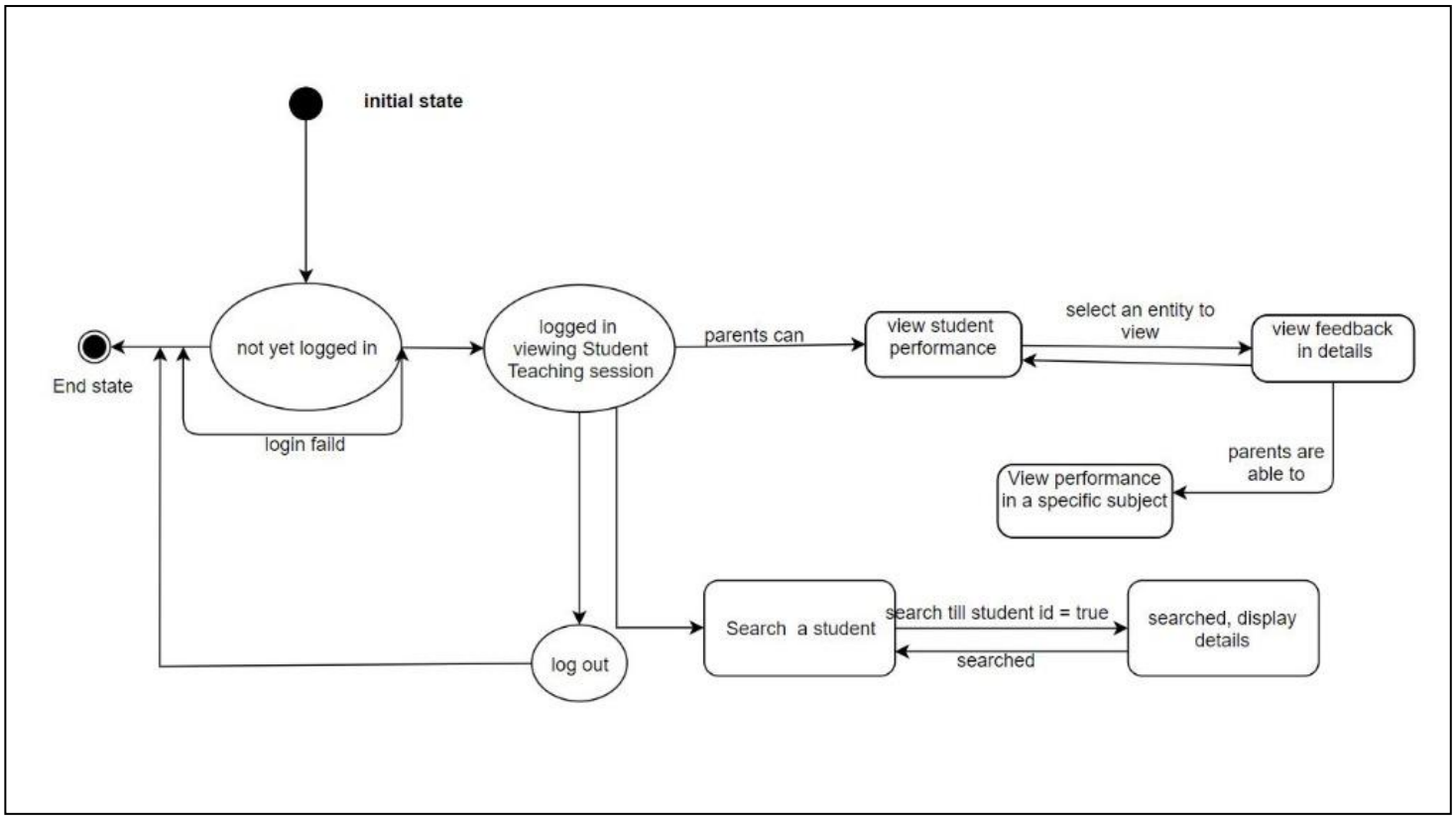

Figure 3 : State Machine Diagram for Kindergarten

2.2.1 : UC001 : Use Case Login

Use case: Login
ID: UC001
Actors: Admin Teachers Parents
Preconditions: Admin must have account in the system Teachers must have account in the system Parents must have account in the system
Flow of events: 1. Use case provide the fields for actor to enter the e-mail and the password. 2. The actor enter the e-mail and password 3. The actor click the submit button 4. The use case verify the email and password 5. The use case login to user's main page.
Postconditions: Admin successfully logs into the system Teachers successfully logs into the system Parents successfully logs into the system
Alternative flow 1: The e-mail field and password field are not filled 1. Use case pop up a message to alert the actor to fill the e-mail field and password field 2. The actor enter the e-mail and password 3. The actor click the submit button 4. The use case verify the email and password 5. The use case login to user's main page.
Postconditions: Admin successfully logs into the system Teachers successfully logs into the system Parents successfully logs into the system
Exception flow (if any): Fail to verify the email and password 1. Use case pop up a login failed message.

Table 1 : Use Case Description for Login

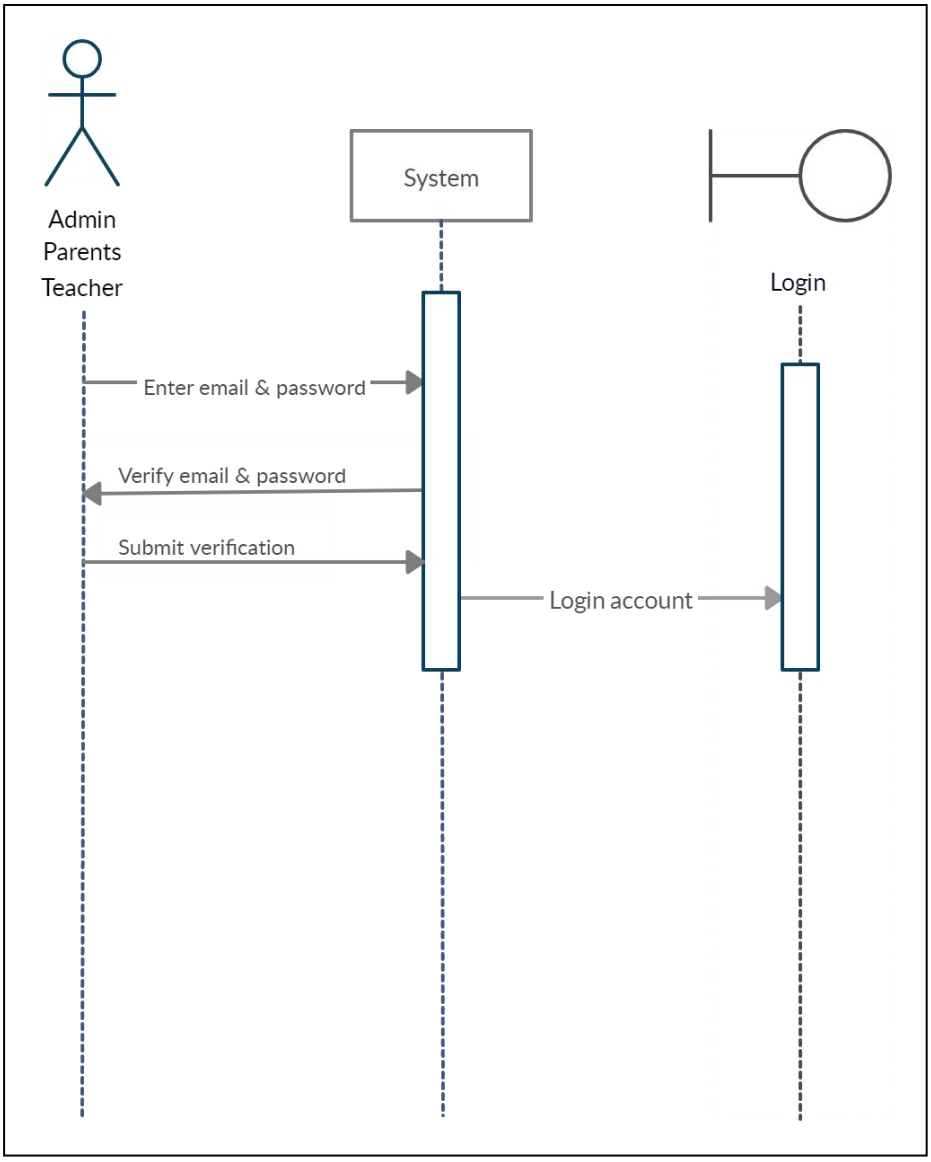

Figure 4 : Sequence Diagram for Login

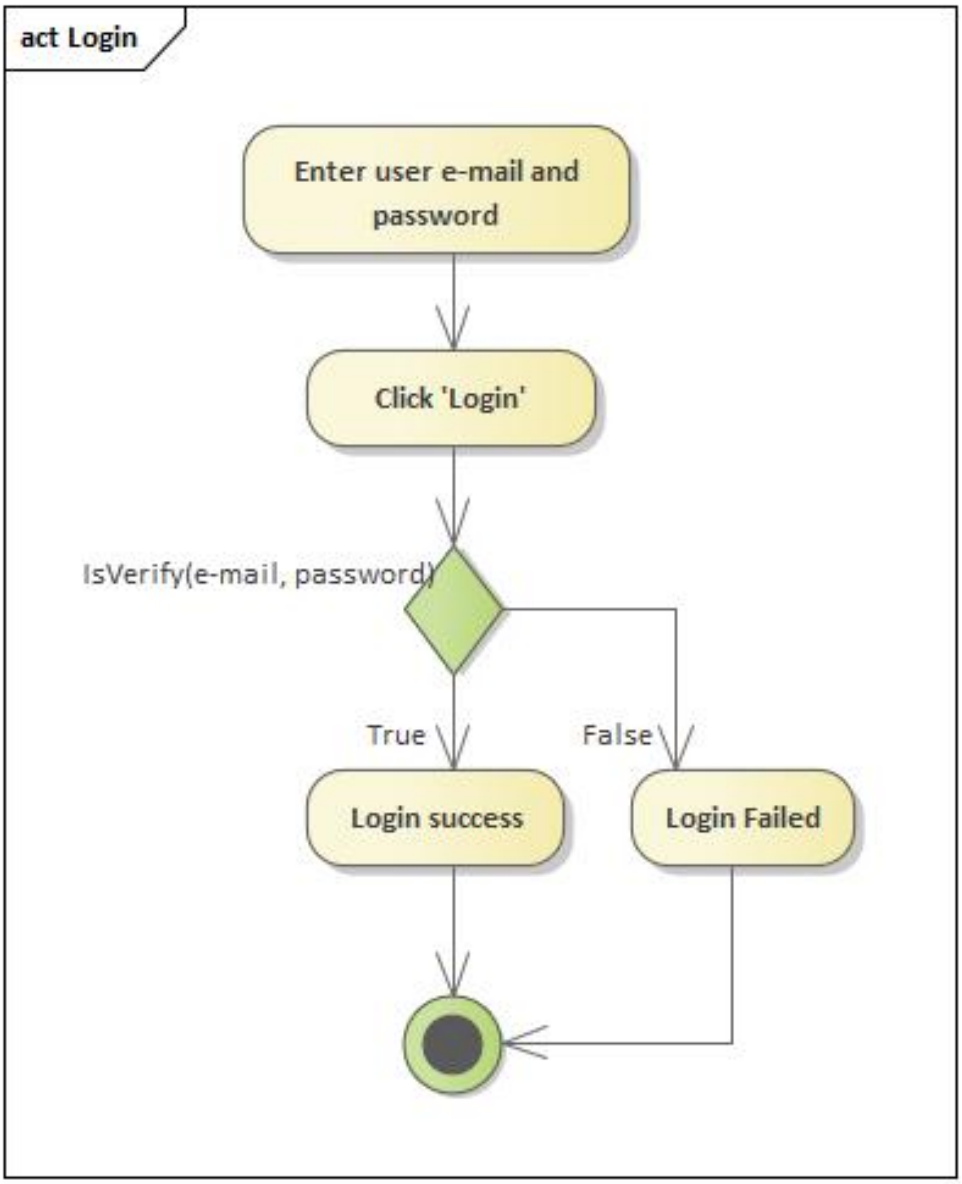

Figure 5 : Activity Diagram for Login

2.2.2 : UC002: Use Case Logout

Use case: Logout
ID: UC002
Actors: Admin Teachers Parents
Preconditions: Admin already logged into the system Teachers already logged into the system Parents already logged into the system
Flow of events: 1. The actor click the logout button 2. The use case pop out a confirm message 3. The actor confirm the logout message
Postconditions: The system is logout and back to the login page.
Alternative flow 1:
Postconditions:
Exception flow (if any): None

Table 2 : Use Case Description for Logout

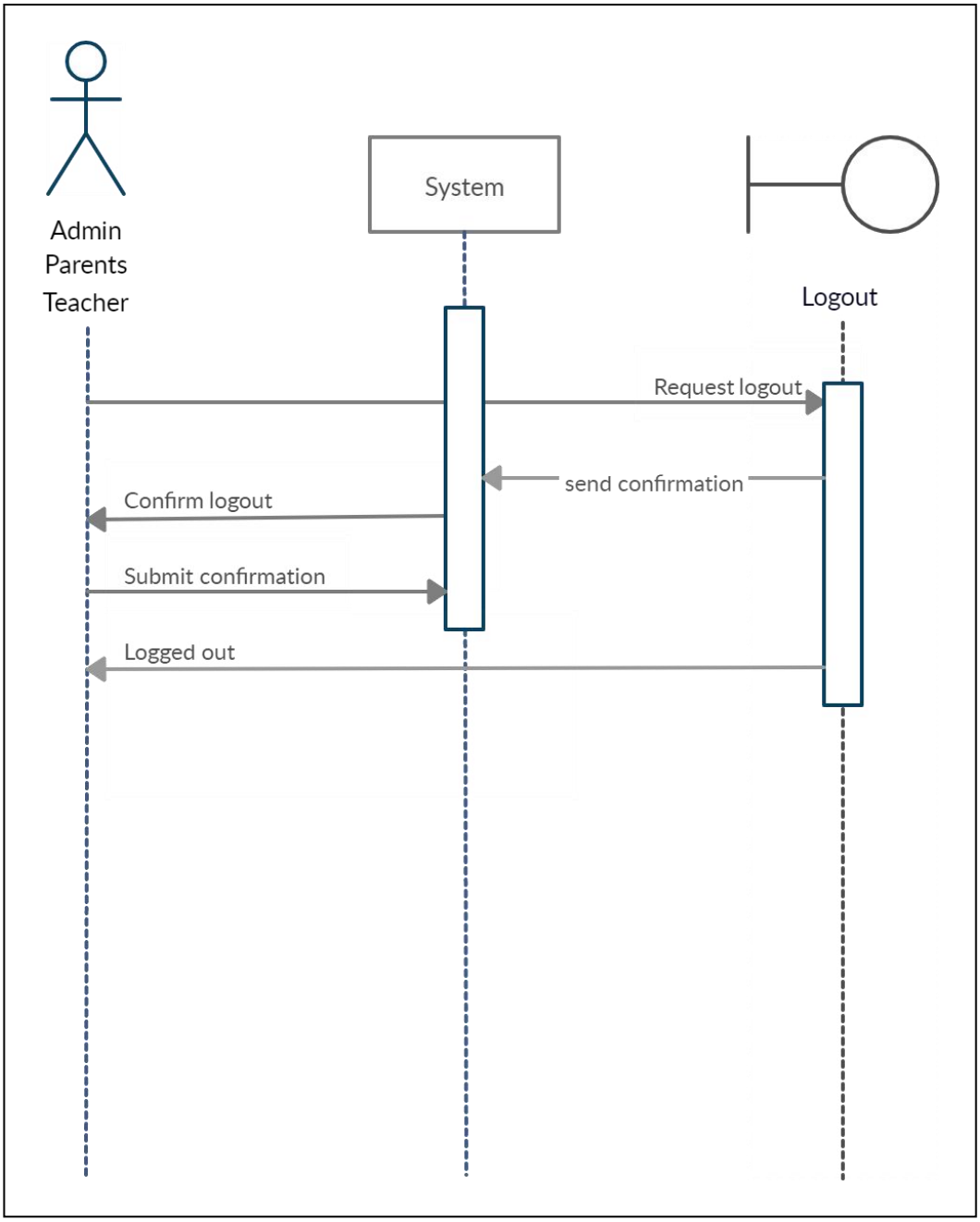

Figure 6 : Sequence Diagram for Logout

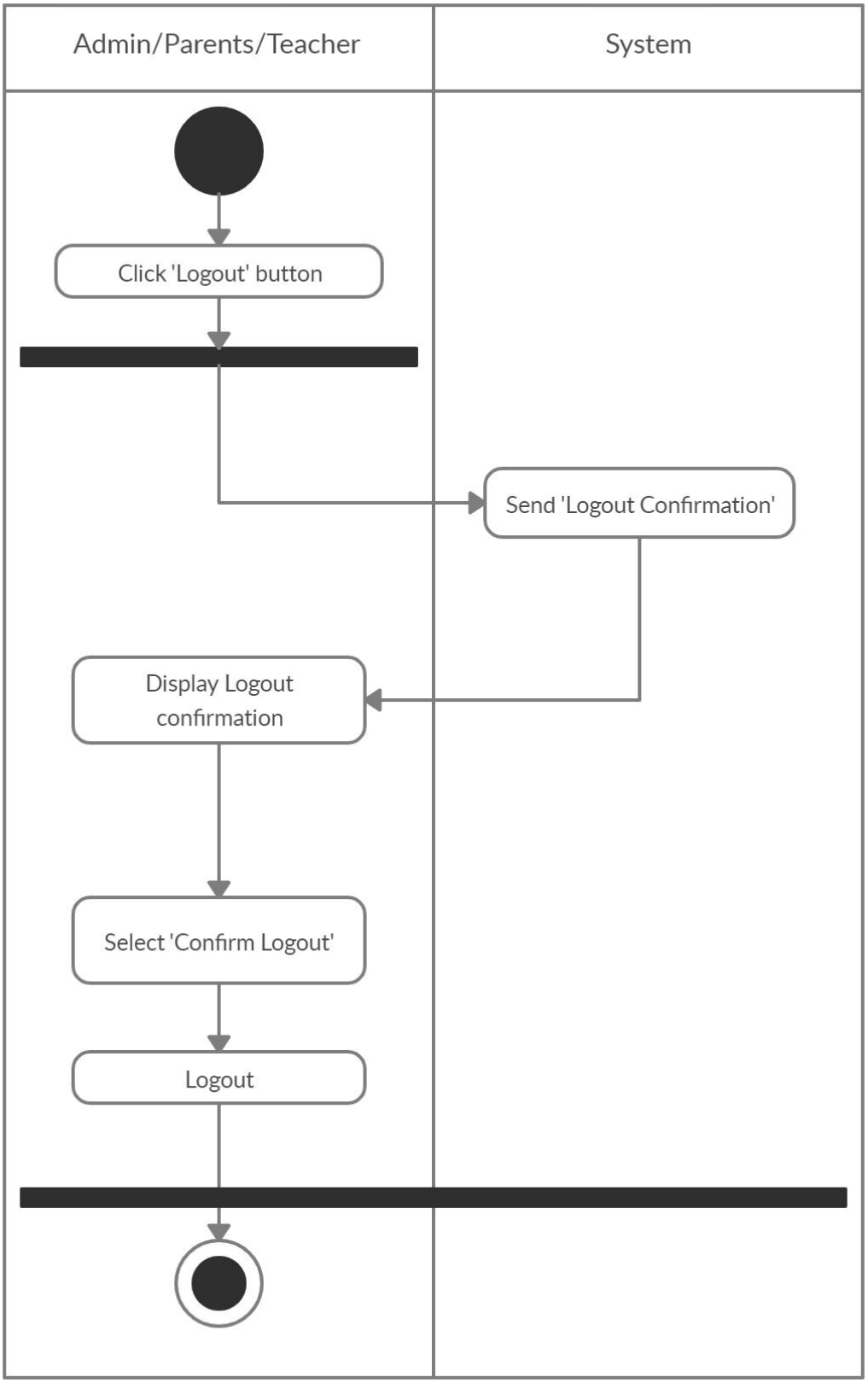

Figure 7 : Activity Diagram for Logout

2.2.3 : UC003: Use Case View Profile

Use case: View Profile
ID: UC003
Actors: Admin Teachers Parents
Preconditions: Admin already logged into the system Teachers already logged into the system Parents already logged into the system
Flow of events: 1. Actor must click profile button
Postconditions: The actor's profile will be loaded
Alternative flow 1:
Postconditions:
Exception flow (if any): None

Table 3 : Use Case Description for View Profile

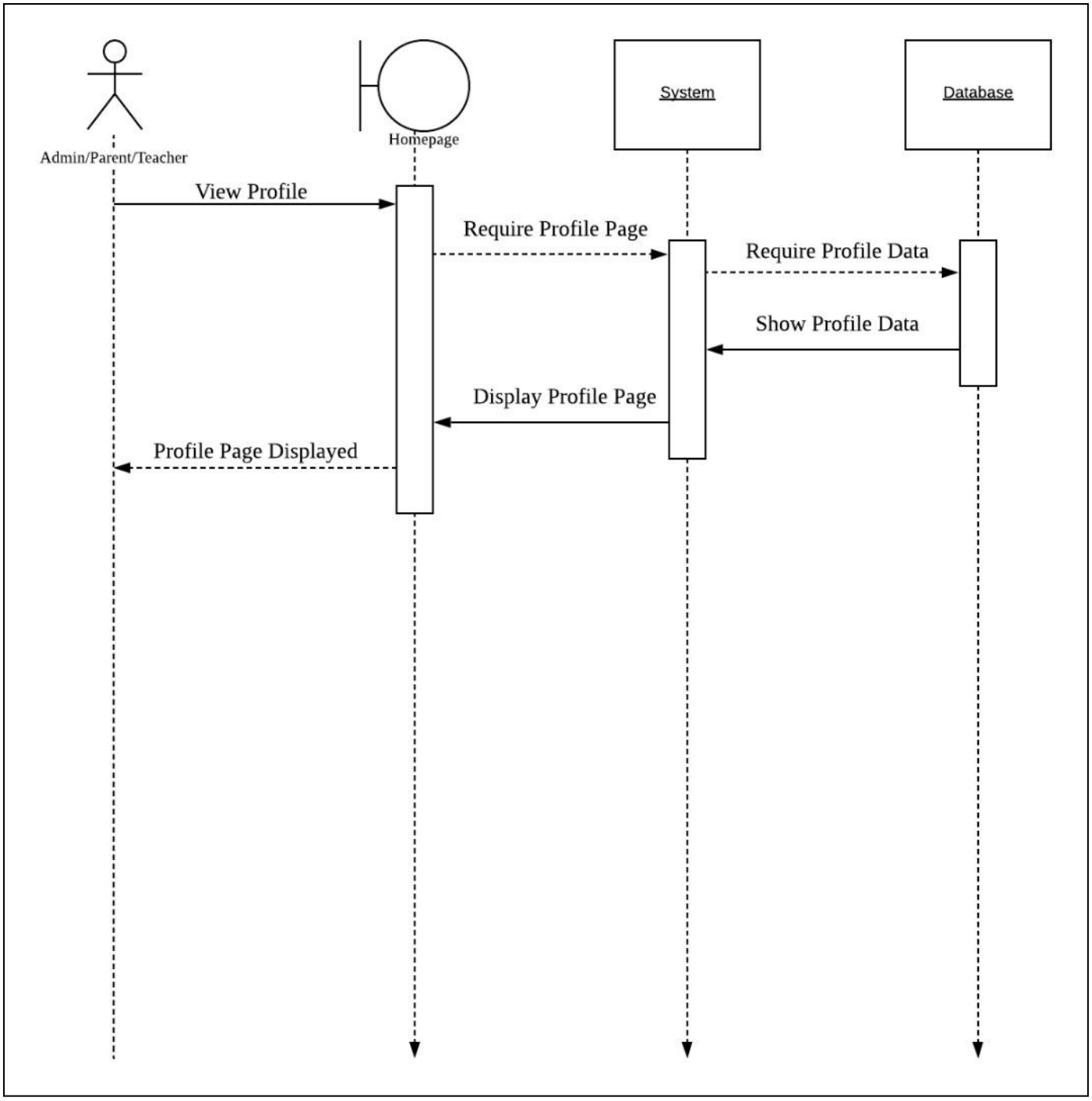

Figure 8 : Sequence Diagram for View Profile

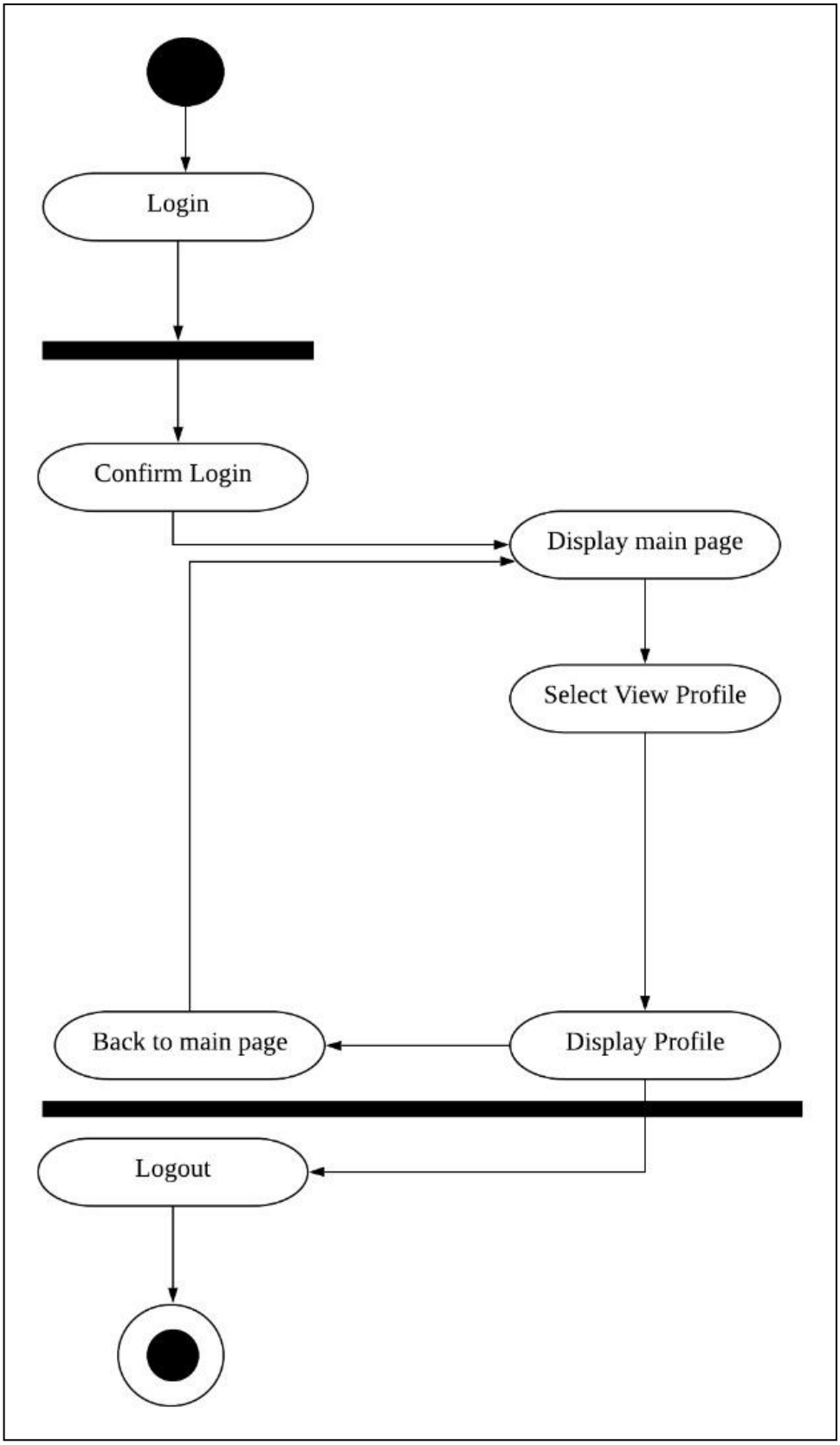

Figure 9 :Activity Diagram for View Profile

2.2.4 : UC004: Use Case View Children List

Use case: View Children List
ID: UC004
Actors: Admin Teachers Parents
Preconditions: Admin already logged into the system and have permission to use the feature. Teachers already logged into the system and have permission to use the feature. Parents already logged into the system and have permission to use the feature.
Flow of events: 1. Actor must click 'View Children List' button.
Postconditions: The system goes to children management webpage
Alternative flow 1:
Postconditions:
Exception flow (if any): None

Table 4 : Use Case Description for View Children List

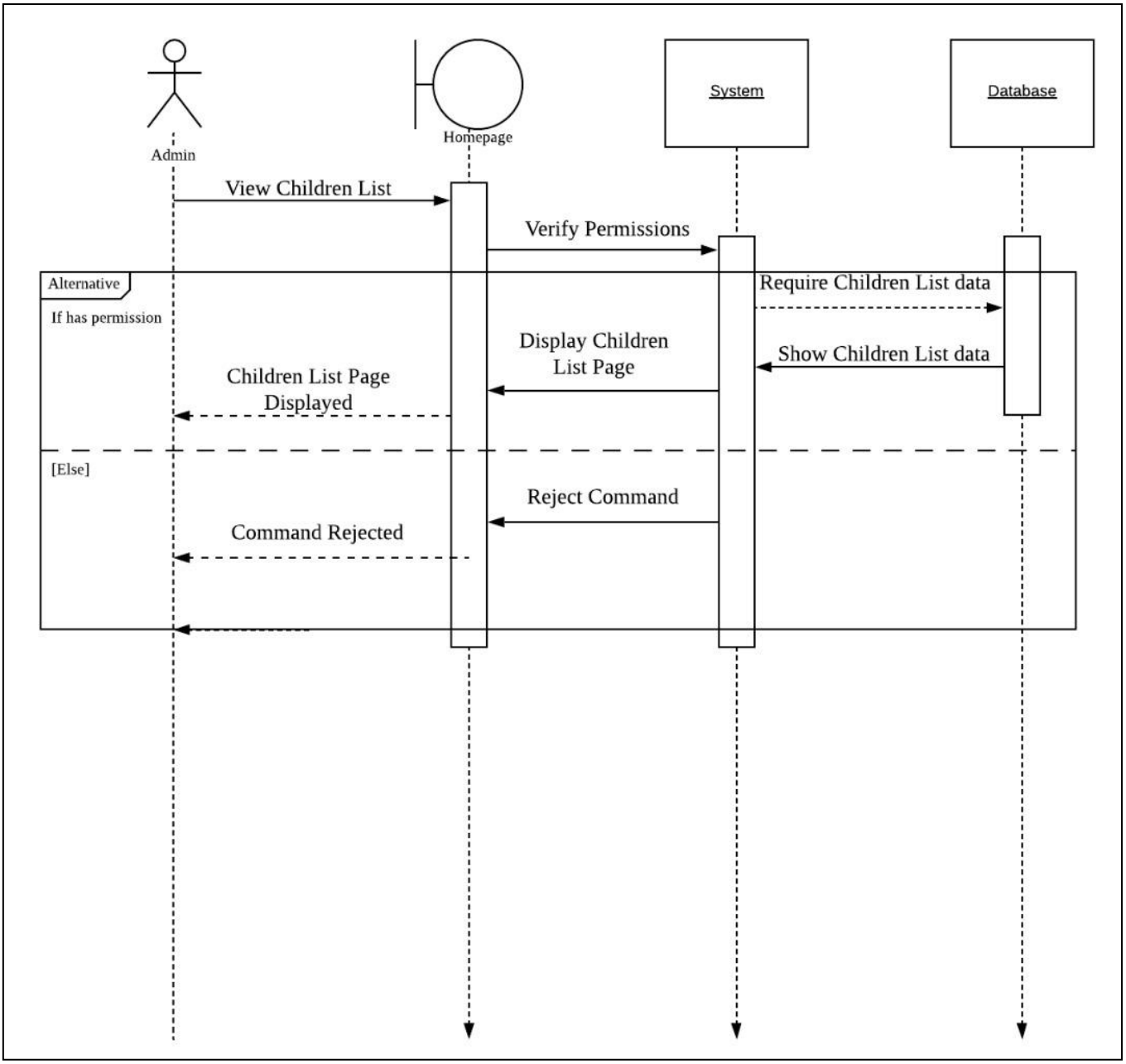

Figure 10 : Sequence Diagram for View Children List

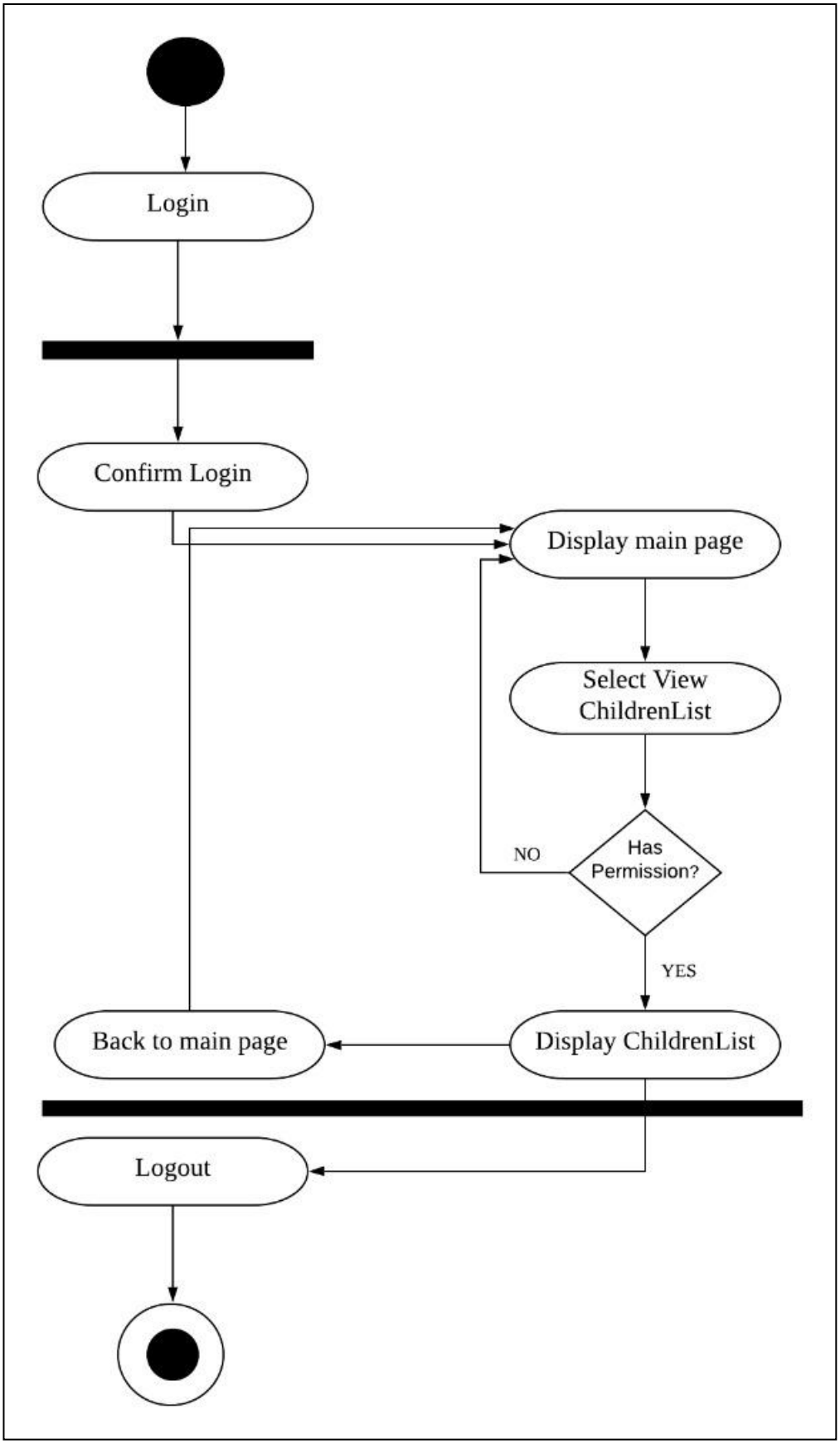

Figure 5 :Activity Diagram for View Children List

2.2.5 : UC005: Use Case Add New Child

Use case: Add New Child
ID: UC005
Actors: Admin
Preconditions: Admin must have the permission to use this feature, and the system is at the child information management page.
Flow of events: 1. Admin must login into the system 2. System will show form 3. Admin fill the child's information 4. System check for duplication 5. System save the information
Postconditions: Child's information is added in the system
Alternative flow 1: Actor selects "parent had already existed" 1. Use case provide a list of parents with a search field. 2. The actor enters the search key in the search field and click search button. 3. The use case refreshes the list with the parent according to the search key. 4. The actor selects the child's parent in the list and click confirm. 5. The use case pop-up a success message.
Postconditions: Child's information is added in the system.
Exception flow (if any): None

Table 5 : Use Case Description for Add New Child

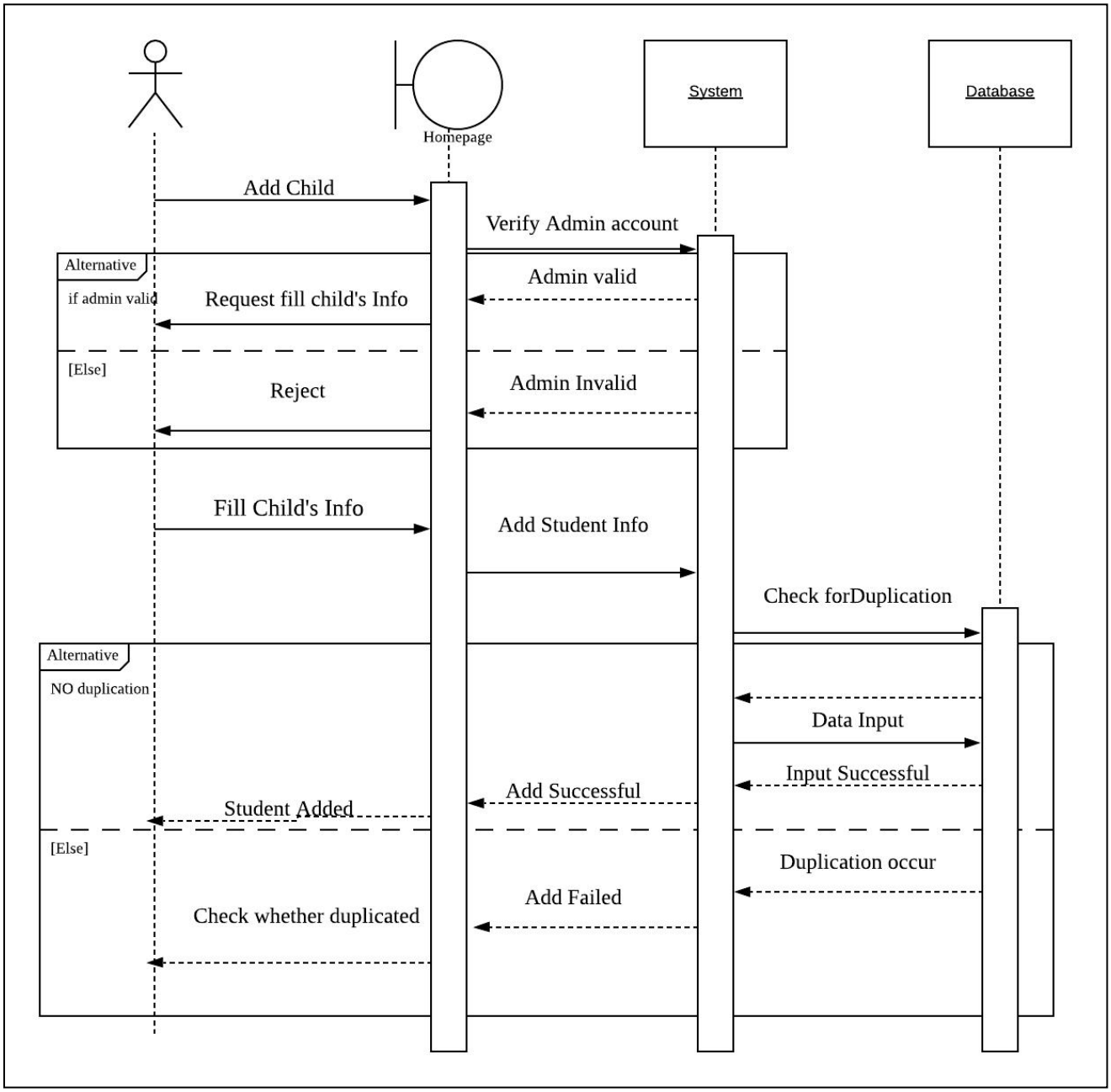

Figure 4: Sequence Diagram for Add New Children Information

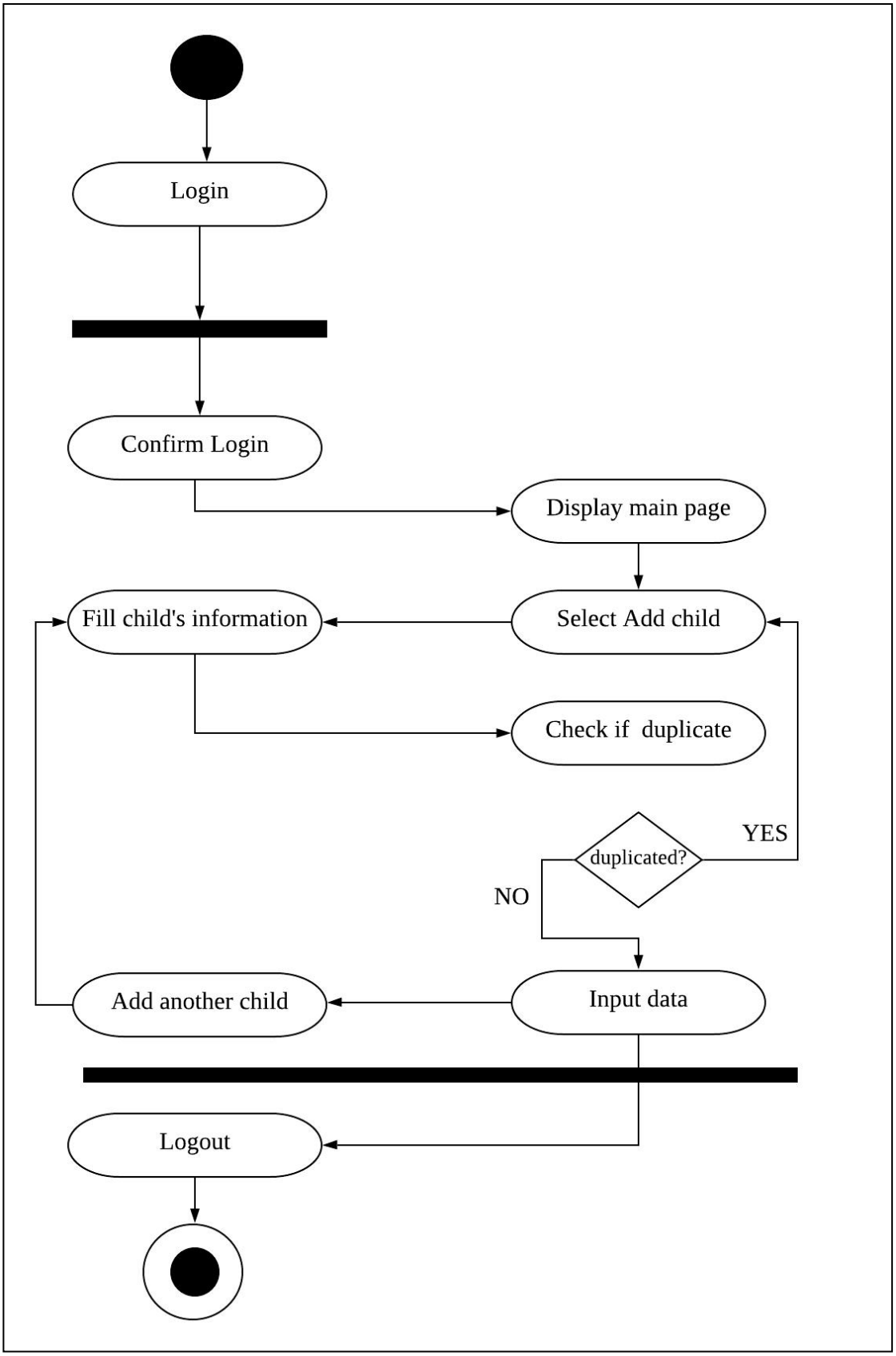

Figure 5 : Activity Diagram for Add New Children Information

2.2.6 : UC006: Use Case Delete Child

Use case : Delete Child
ID: UC006
Actors: Admin
Preconditions: Child's information must already be created in the system
Flow of events: 1. The actor selects a child in the children list 2. The actor clicks delete button 3. The use case will pop-up a confirmation message 4. The actor confirms the deletion.
Postconditions: Child's information is deleted in the system
Alternative flow 1:
Postconditions:
Exception flow (if any): None

Table 6 : Use Case Description for Delete Child

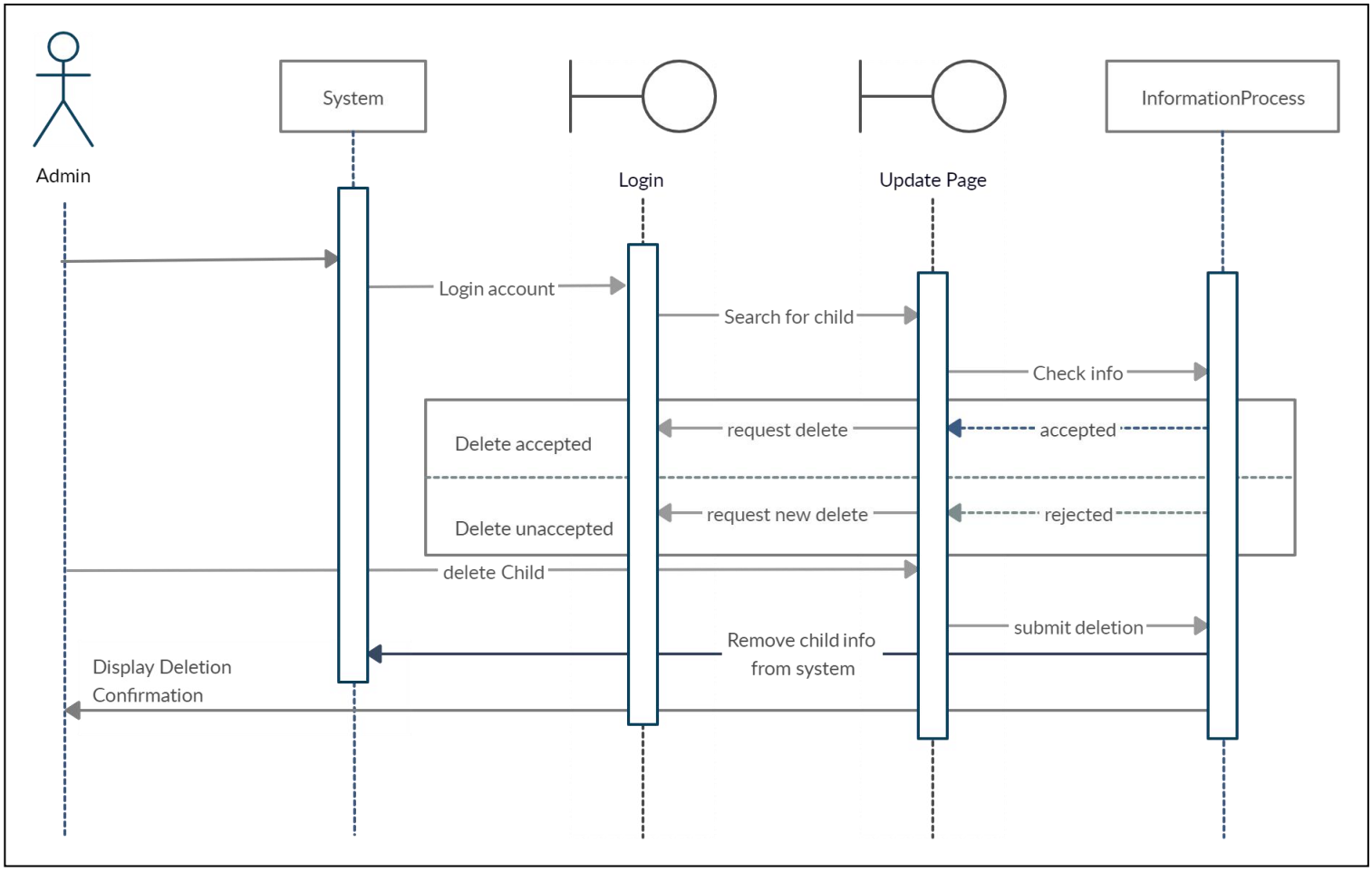

Figure 11 : Sequence Diagram for Delete Child

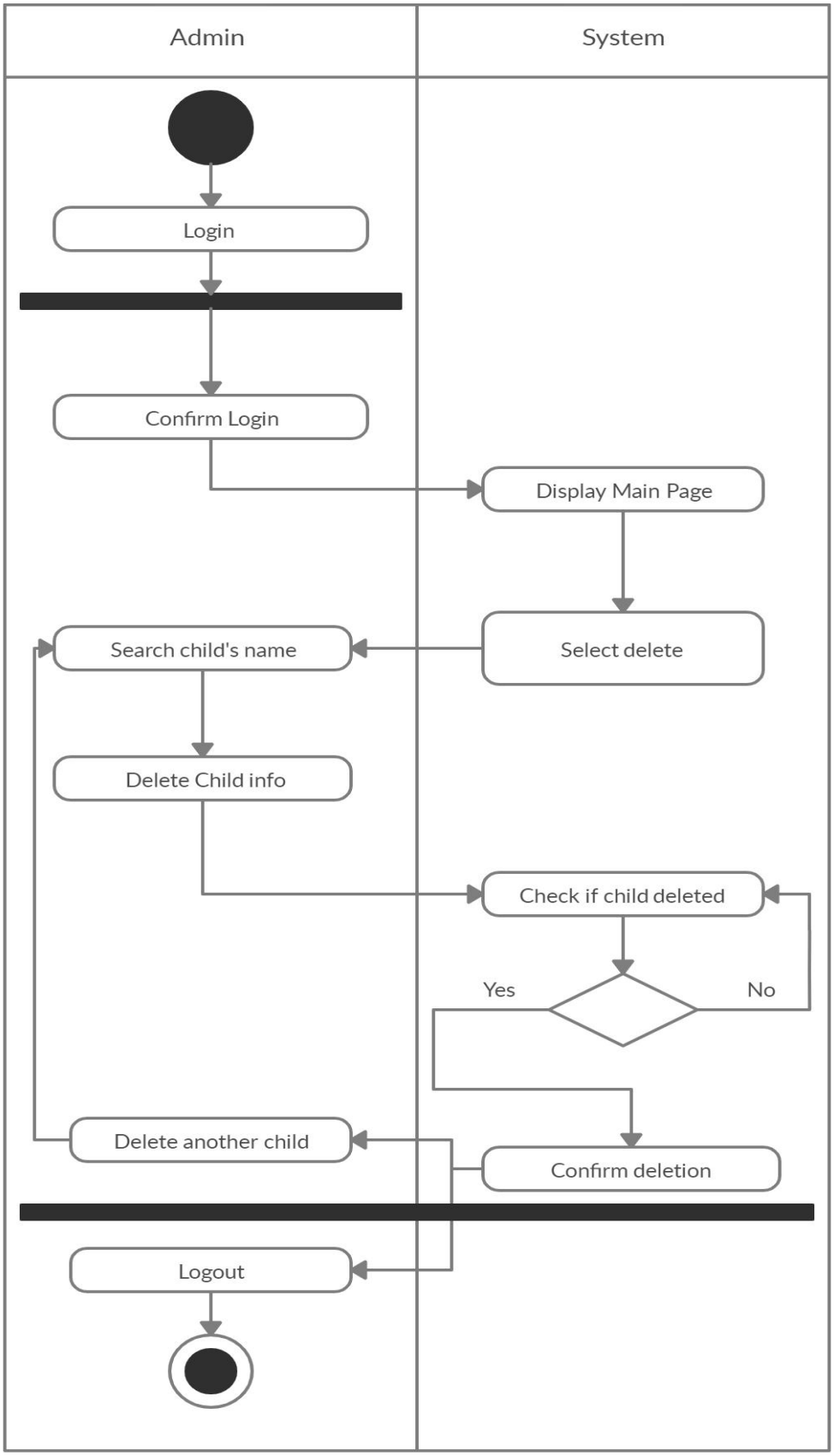

Figure 12 : Activity Diagram for Delete Child

2.2.7 : UC007: Use Case Update Children Information

Use case: Update Children Information
ID: UC007
Actors: Admin
Preconditions: Child's information must already be created in the system
Flow of events: 1. Admin selects a child in the child list. 2. Admin clicks update button. 3. The system provides the fields of the child information with the original value of the information 4. Admin clicks the confirm button. 5. The system pop-up a success message.
Postconditions: Child's information is updated in the system
Alternative flow 1:
Postconditions:
Exception flow (if any): Admin cancel the updating at step 4: The form is closed and remain at the child information management page.

Table 7 : Use Case Description for Update Child Information

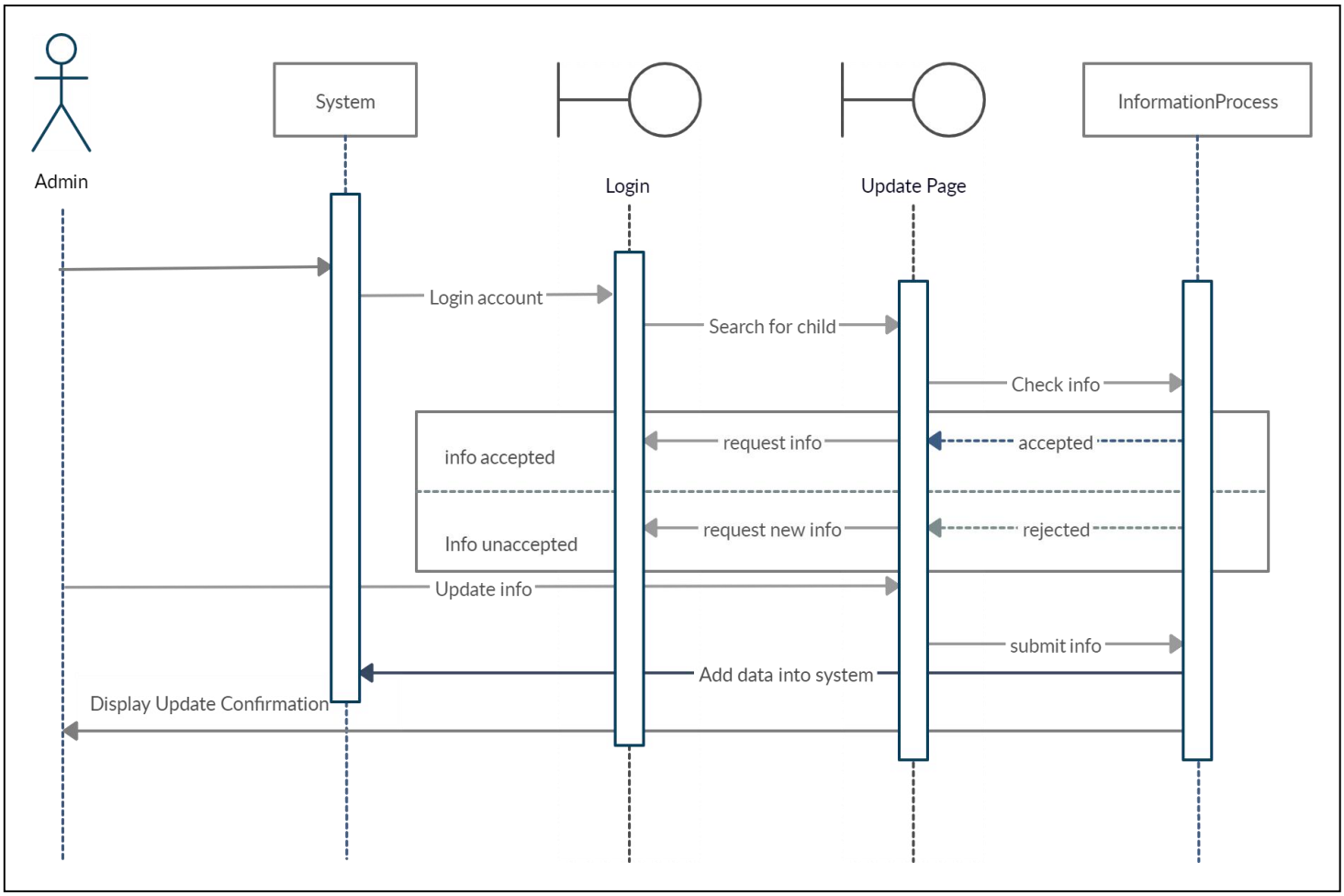

Figure 13 : Sequence Diagram for Update Children Information

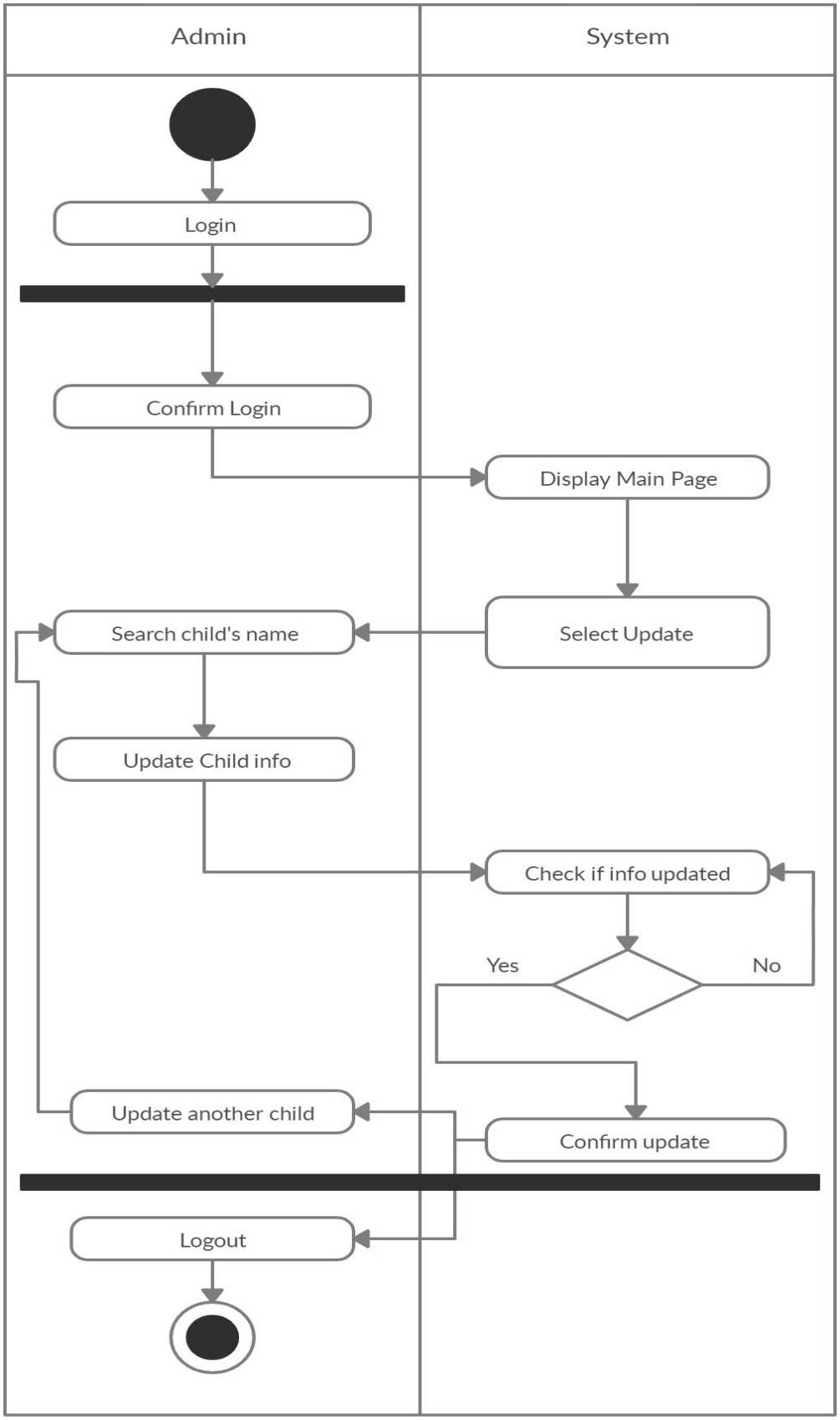

Figure 14 : Activity Diagram for Update Children Information

2.2.8 : UC008: Use Case View Child Progress

Use case: View Child Progress
ID: UC008
Actors : Admin Parents
Preconditions: Child's information must already be created in the system
Flow of events: 1. Admin or parent must login into the system 2. System will display first page 3. Admin or parent must search for child's name in the system 4. System will display all information and progress about the child 5. Admin or parent will be able to view all the progress
Postconditions: Child's information is available in the system
Alternative flow 1: Child's information was already viewed before
Postconditions: Child's information was not able to view
Exception flow (if any): None

Table 8 : Use Case Description for View Child Progress

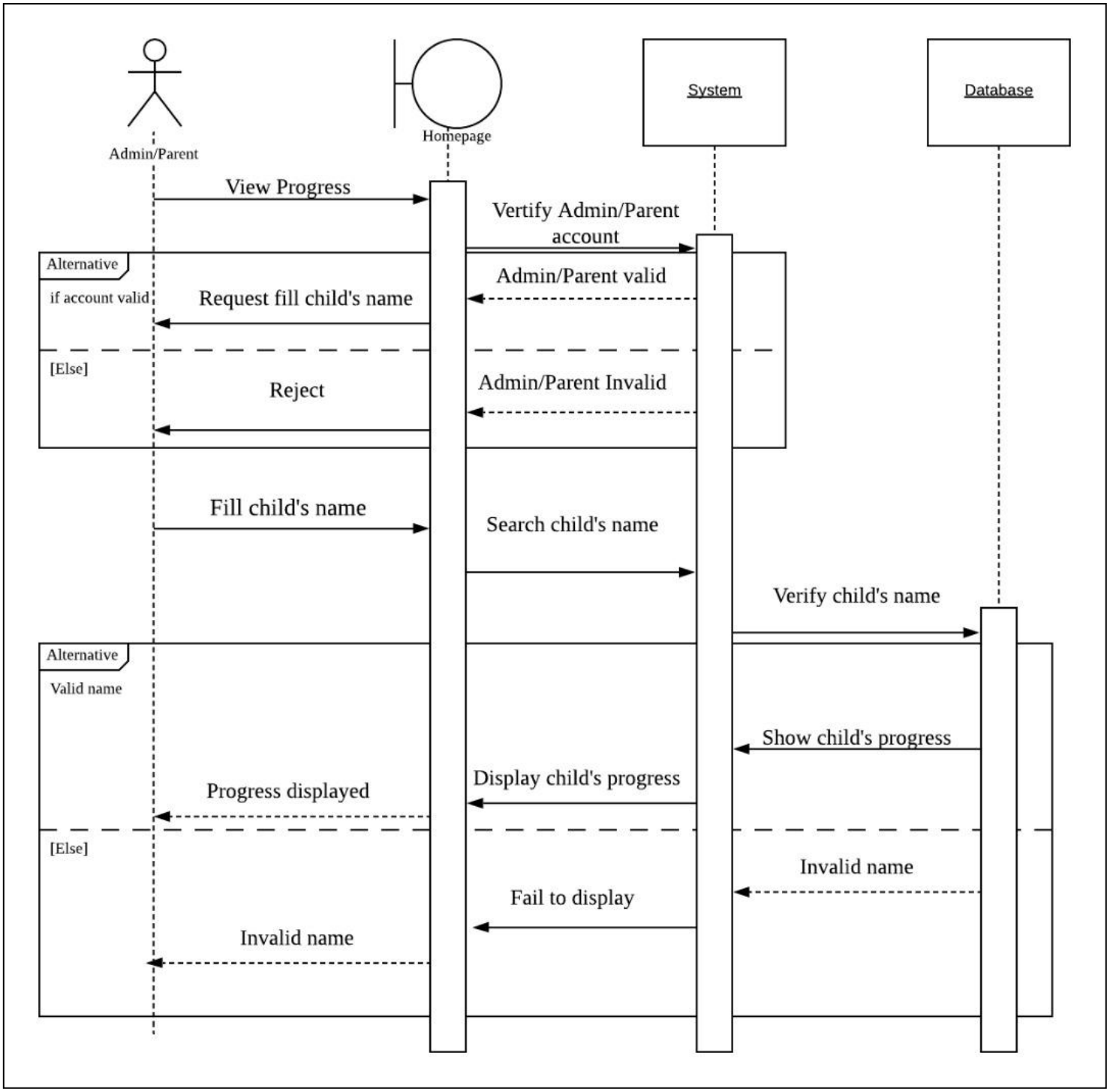

Figure 15 : Sequence Diagram for View the Child Progress

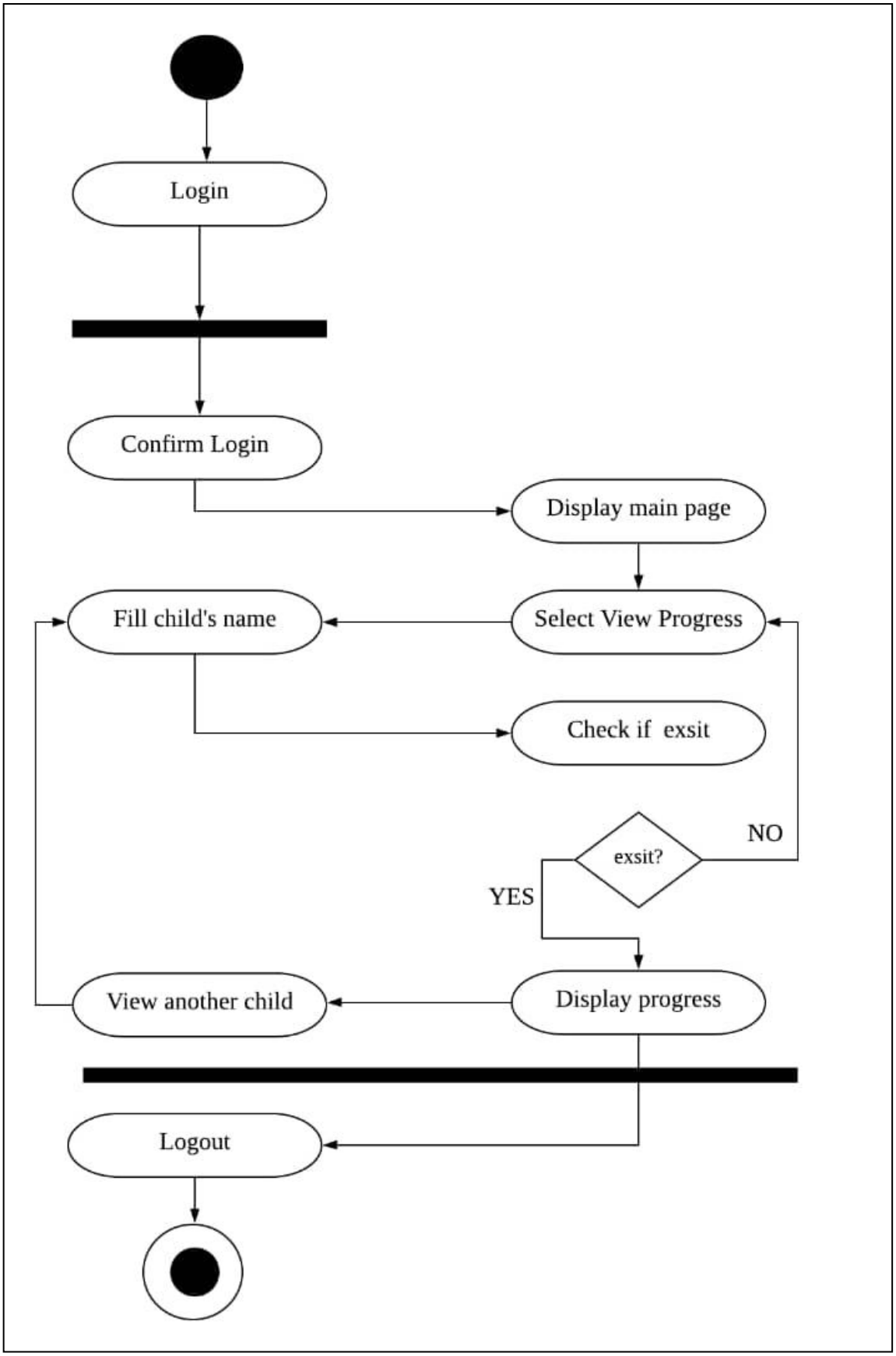

Figure 16 : Activity Diagram for View Child Progress

2.2.9 : UC009: Use Case Create Evaluation

Use case: Create Evaluation
ID: UC009
Actors : Teacher
Preconditions: Teacher is already logged in the system and have the permission to use this feature. The system is at the Evaluation page.
Flow of events: 1. The system provides the list of class subject of the teacher. 2. Teacher selects a class subject. 3. Teacher clicks create evaluation button. 4. The system provides the form for actor to input the information of the evaluation. 5. Teacher fills in all the fields in the form. 6. Teacher clicks create. 7. The system pop-up the success message.
Postconditions: Child's information is available in the system
Alternative flow 1:
Postconditions:
Exception flow (if any): Actor cancel the updating at step 4: The form is closed and remain at the child information management page.

Table 9 : Use Case Description for Create Evaluation

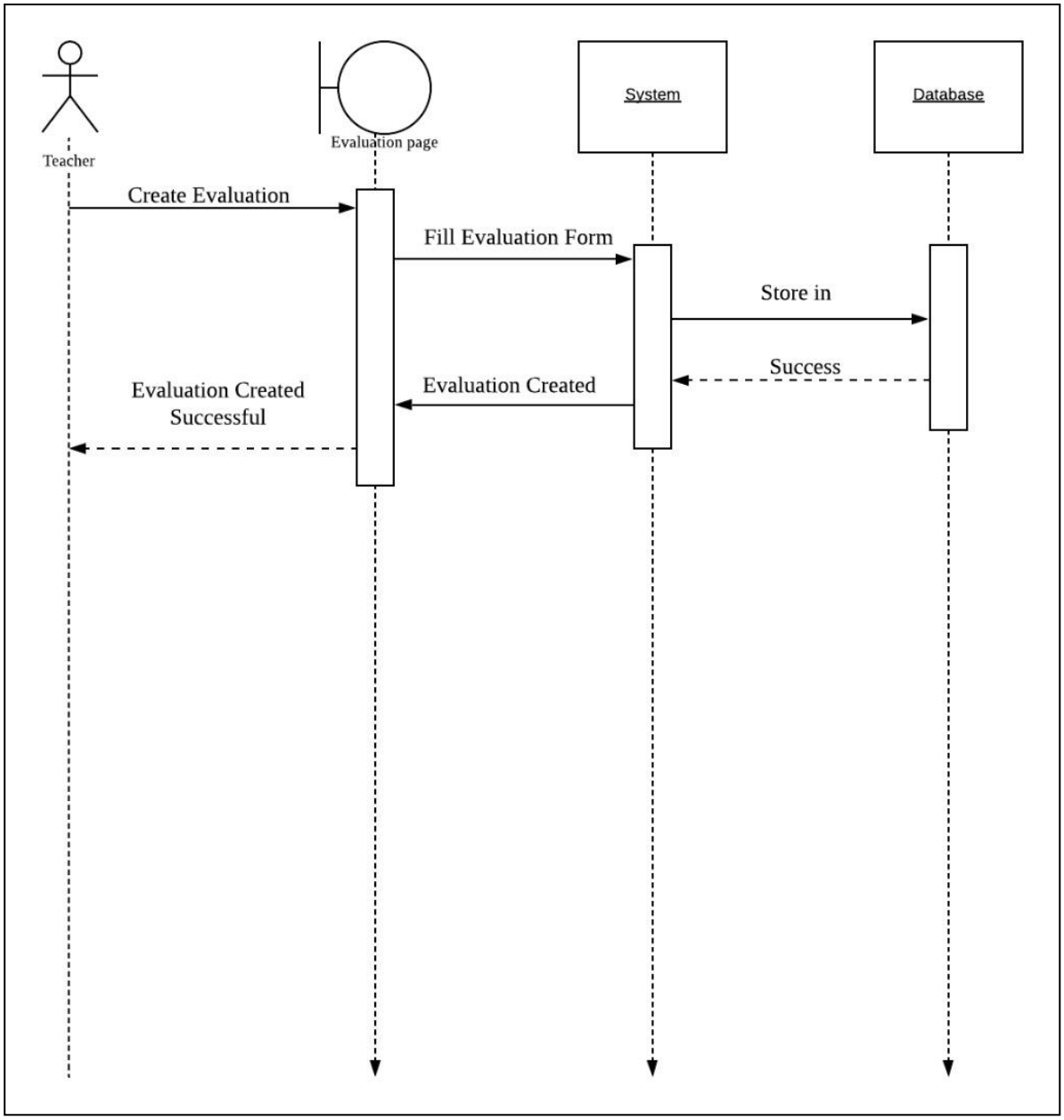

Figure 17 : Sequence Diagram for Create Evaluation

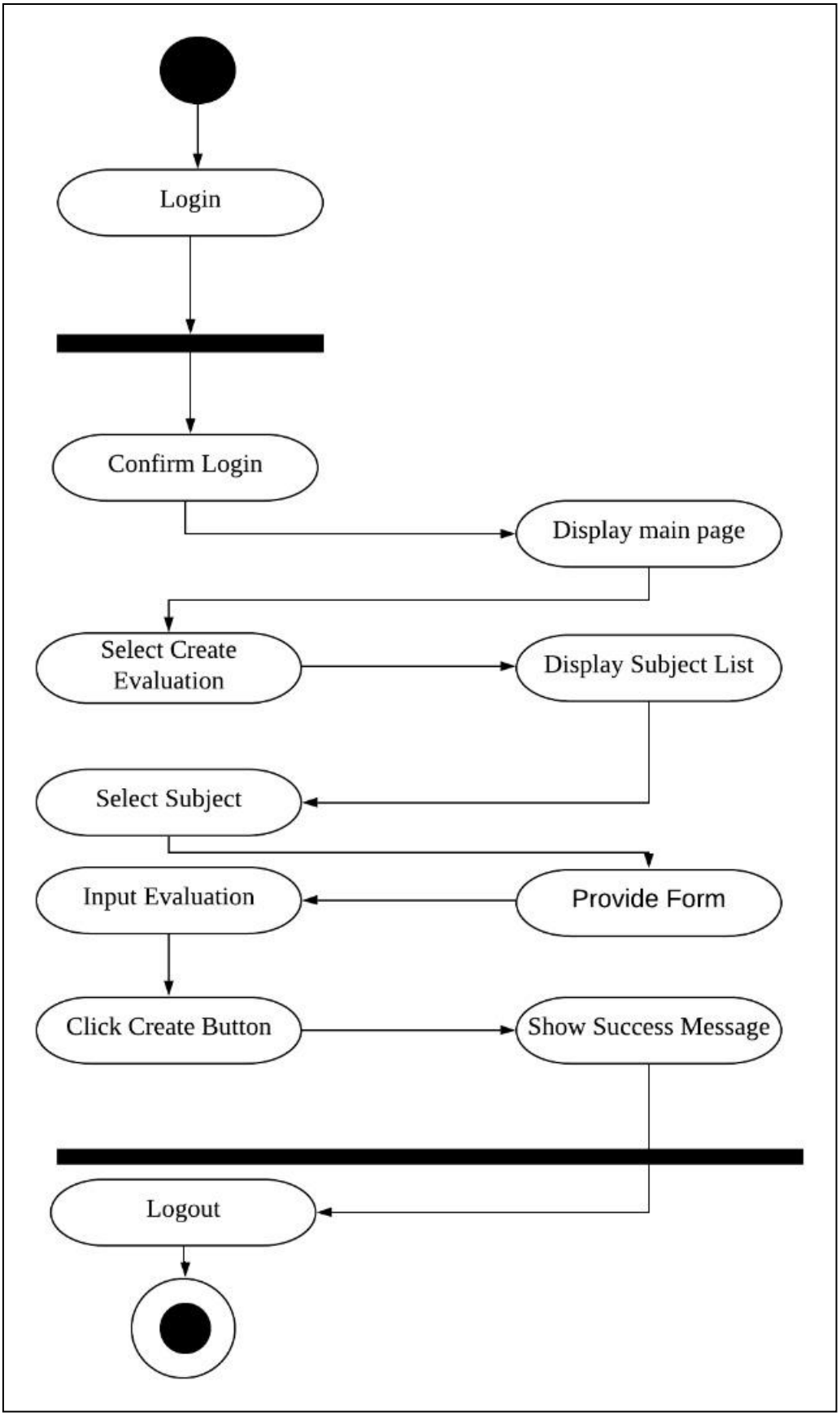

Figure 18 : Activity Diagram for Create Evaluation

2.2.10 : UC010: Use Case Grade Child Evaluation

Use case: Grade Child Evaluation
ID: UC010
Actors : Teacher
Preconditions: Teacher is already logged in the system and have the permission to use this feature. The system is at the Evaluation page.
Flow of events: 1. Teacher selects an evaluation from the evaluation list. 2. Teacher clicks 'Update grade'. 3. The system provides the list of children of the evaluation's subject and their grade. 4. Teacher selects a child. 5. Teacher clicks 'update grade' button. 6. The system provides the fields for teacher to Teacher fills up the fields and click 'done' 7. The system pop-up the success message.
Postconditions: The new evaluation is created
Alternative flow 1:
Postconditions:
Exception flow (if any): Actor cancel the updating at step 4: **1.** The form is closed and remain at the child information management page.

Table 10 : Use Case Description for Grade Child Evaluation

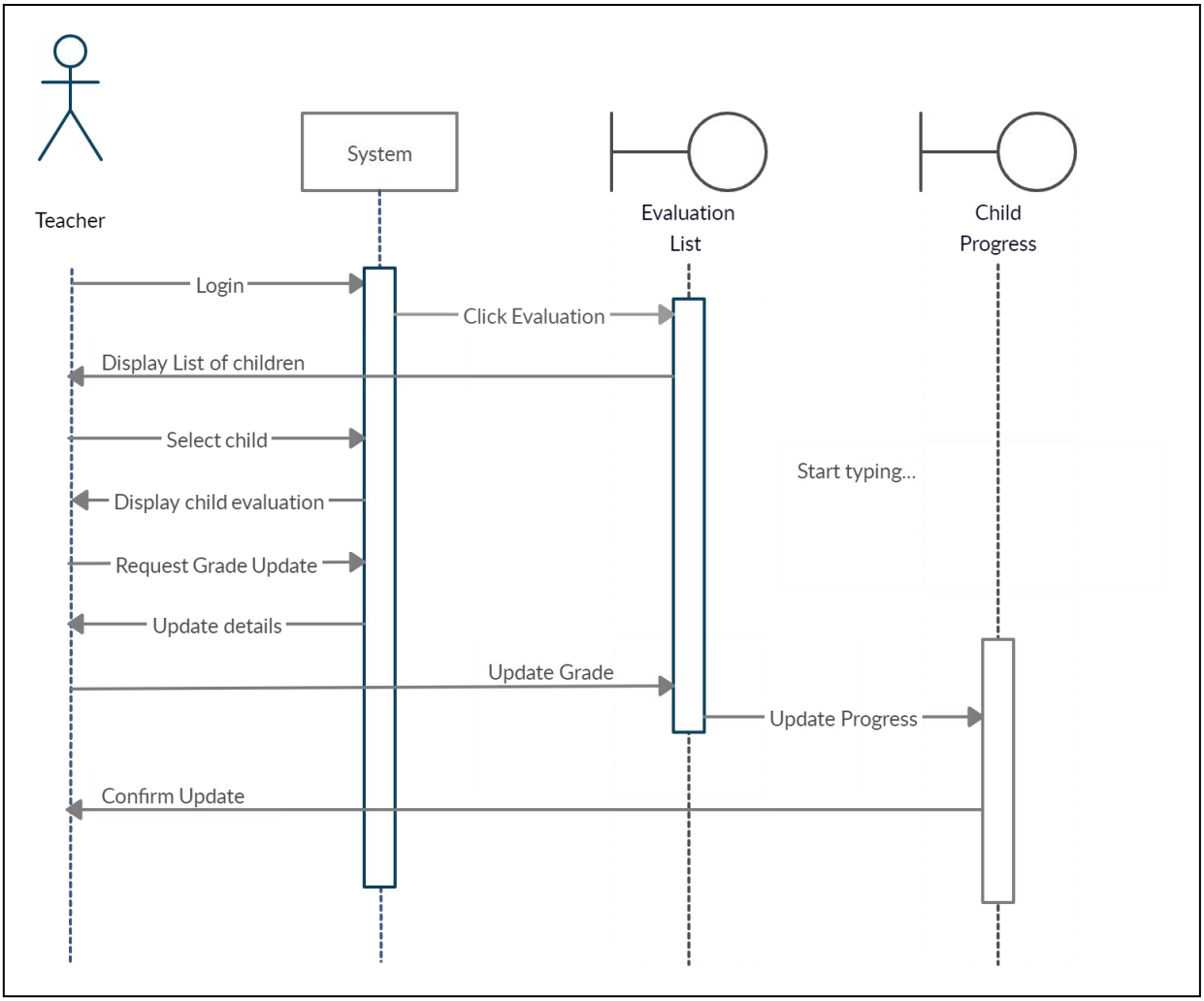

Figure 19 : Sequence Diagram for Grade Child Evaluation

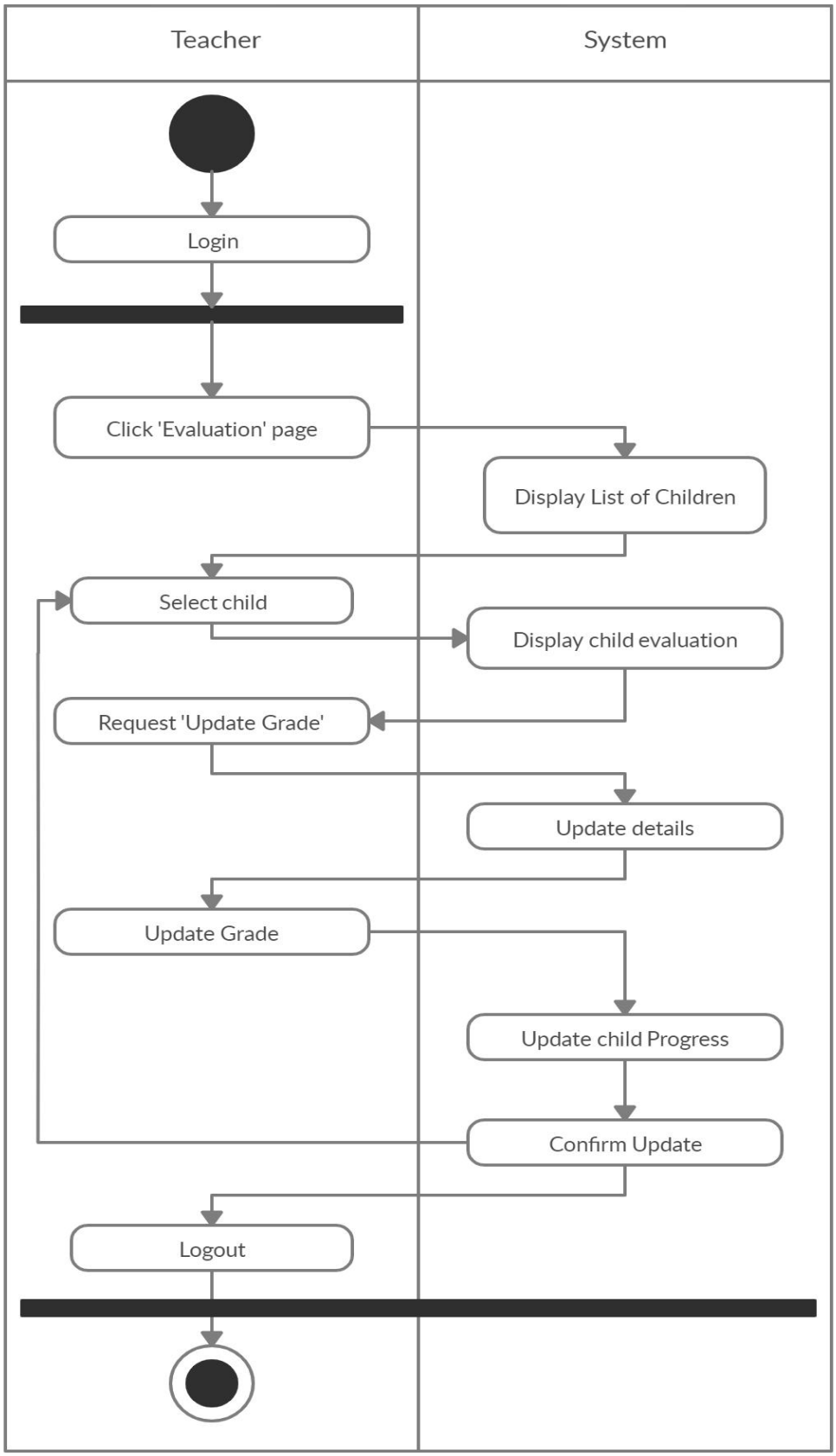

Figure 20 :Activity Diagram for Grade Child Evaluation

2.3 : Performance Requirements

The examples of performance requirements in the system are as below:

- The load time for user interface screens shall take no longer than 2 seconds.
- When a data is requested, it shall return the data with no more than 3 seconds.
- The system shall consume very little of primary memory.
- The login information shall be verified within 5 seconds.

2.4 : Design Constraints

Here are the constraints imposed.

- Should allow to be used by both the PC user and mobile user.
- Should be able to save at least 200 children and parents data in the system.

2.5 : Software System Attributes

- Adorable and creative user interface.
- User Friendly for beginner users.

3. Detailed Description of Components

3.1 : Complete Package Diagram

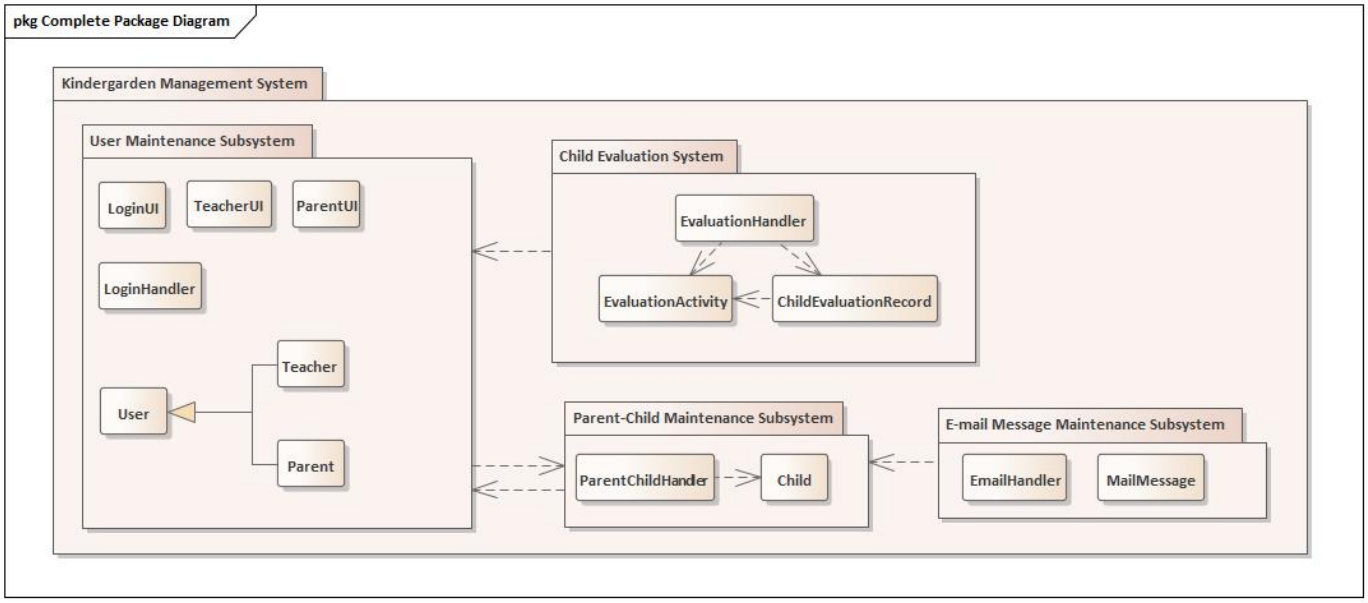

Figure 21 : Package Diagram for Kindergarten Management System

3.2 : Detailed Description

3.2.1 : P001: User Management Subsystem

3.2.1.1 : Package Diagram

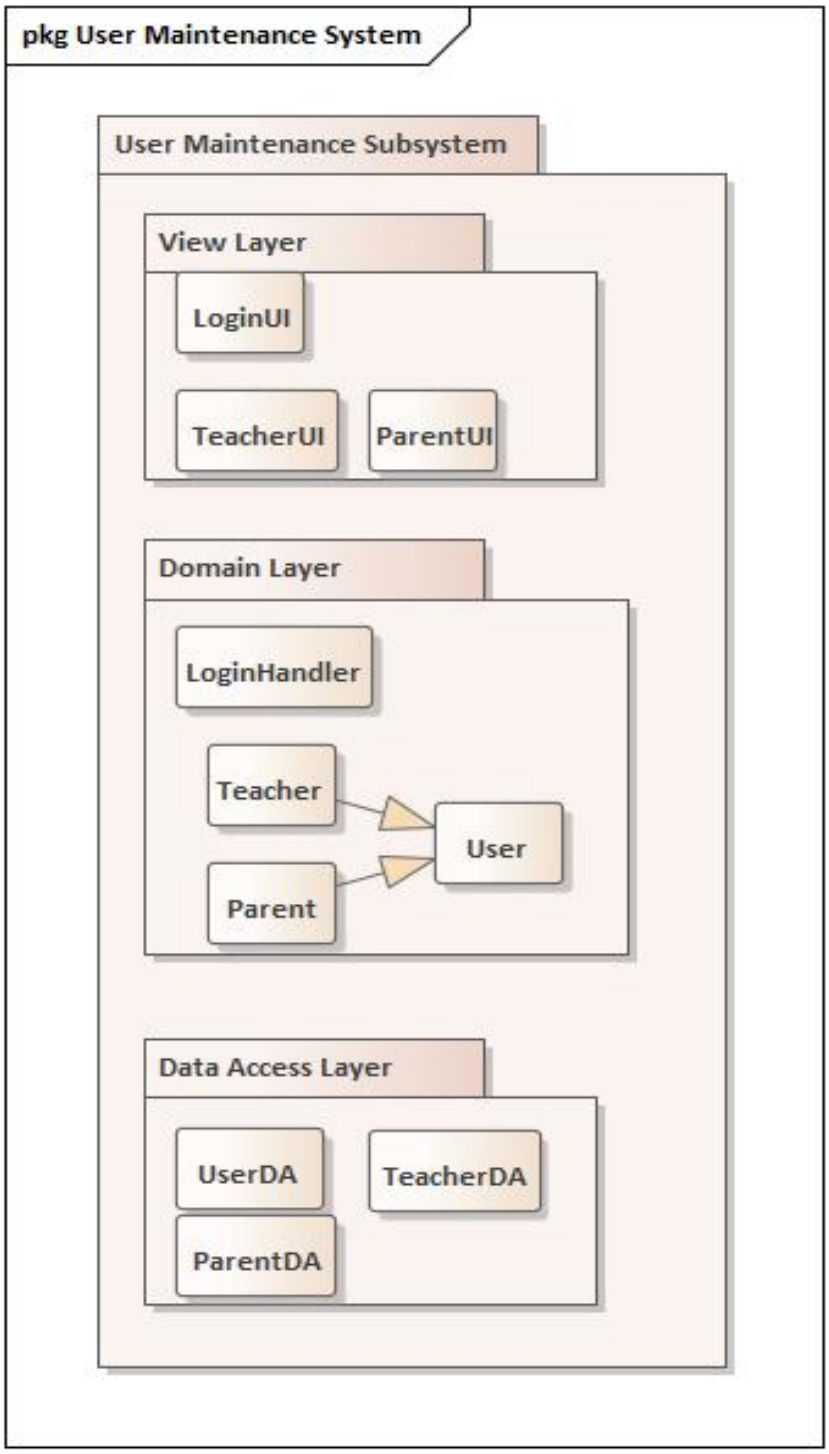

Figure 22 : Package diagram for User Management Subsystem

3.2.1.2 : Class Diagram

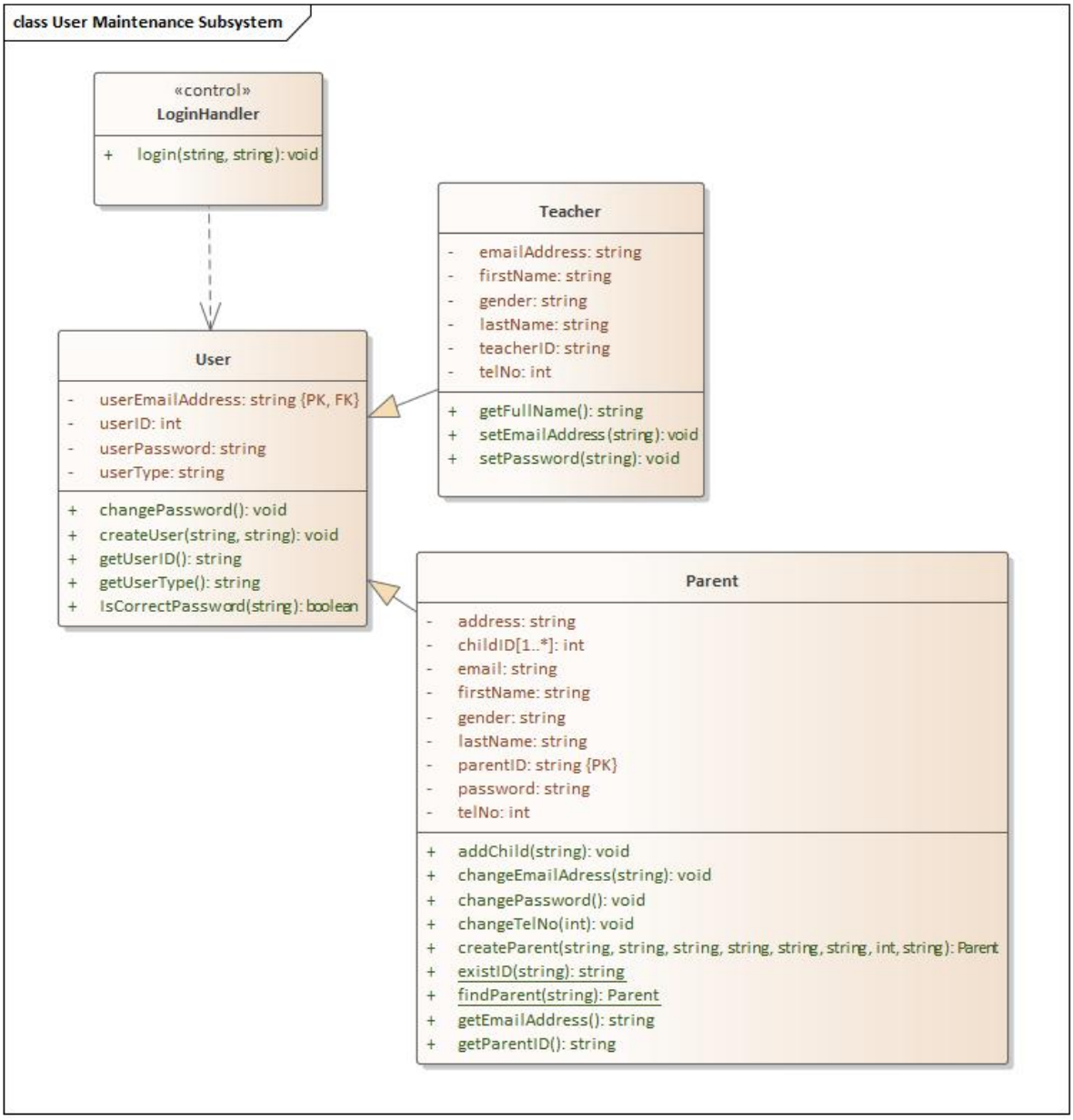

Figure 23 : Class diagram for User Management Subsystem

Entity Name	Parent
Method Name	existID
Input	Parent's IC Number
Output	Null if the parent is not exist, or the parentID if the parentExits
Algorithm	1. Start 2. For all parent 2.1. IF ICNo = getICNo() 2.1.1. Return getParentID() 3. Return Null

3.2.1.3 : Sequence Diagram

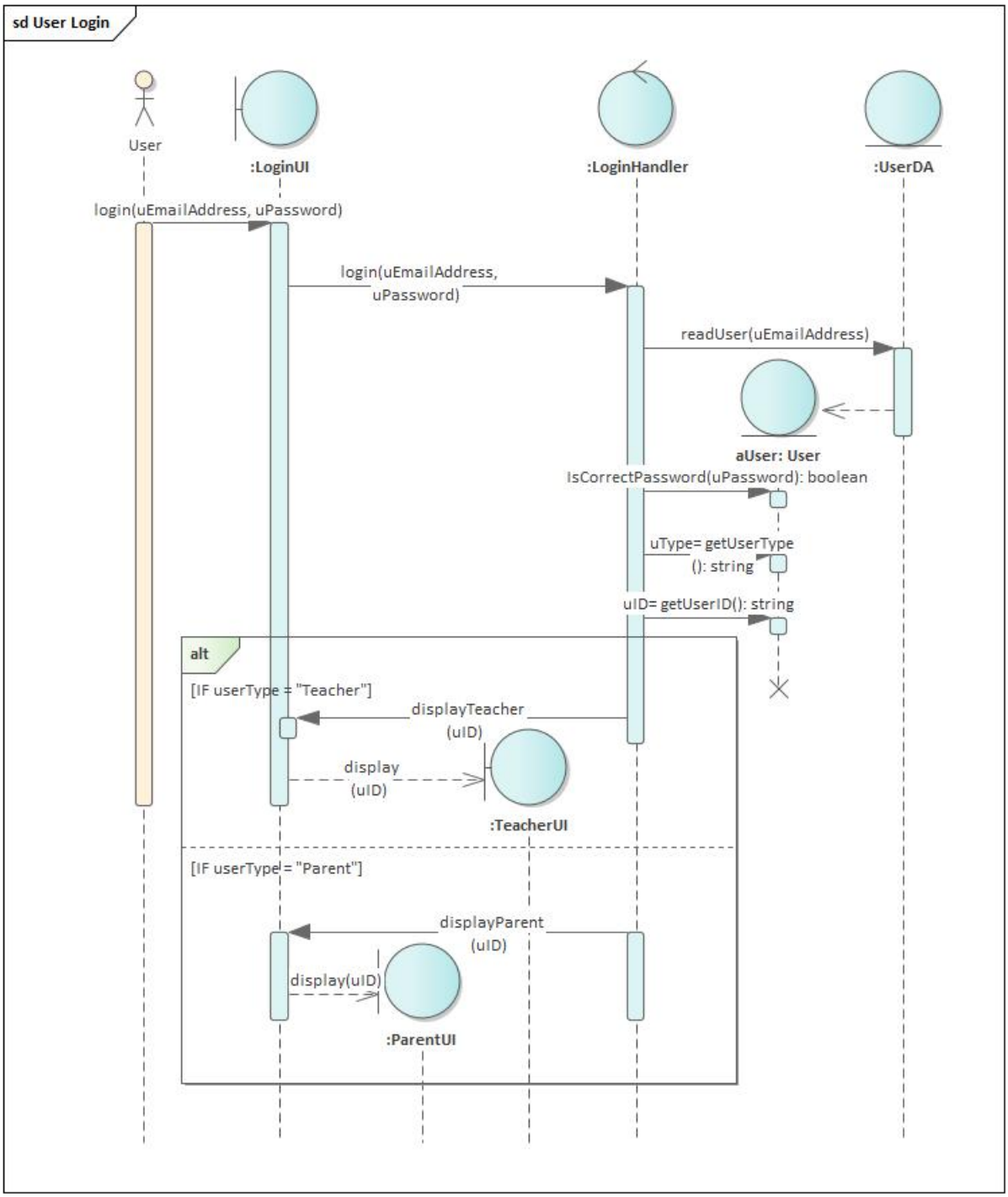

Figure 24 : Sequence Diagram for User Login Scenario

3.2.2 : P002: Child Information Maintenance Subsystem

3.2.2.1 : Package Diagram

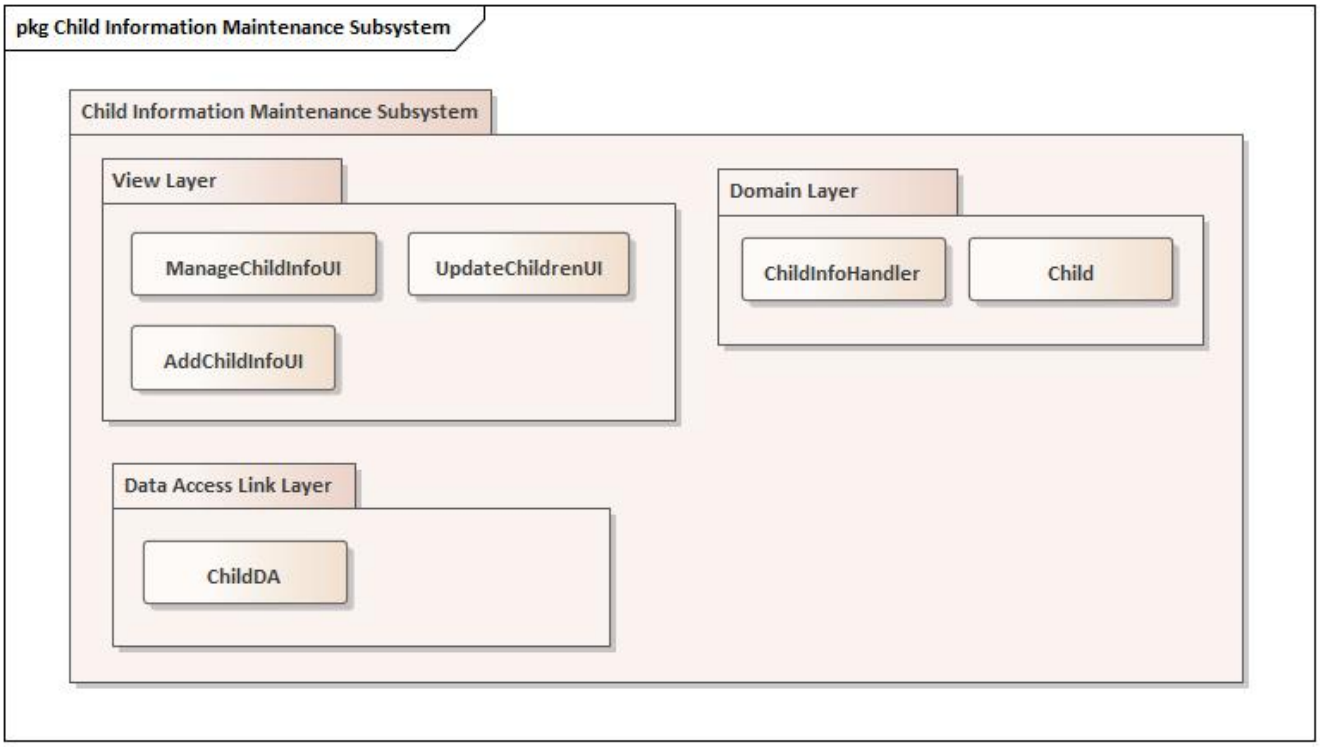

Figure 25 : Package diagram for Child Information Management Subsystem

3.2.2.2 : Class Diagram

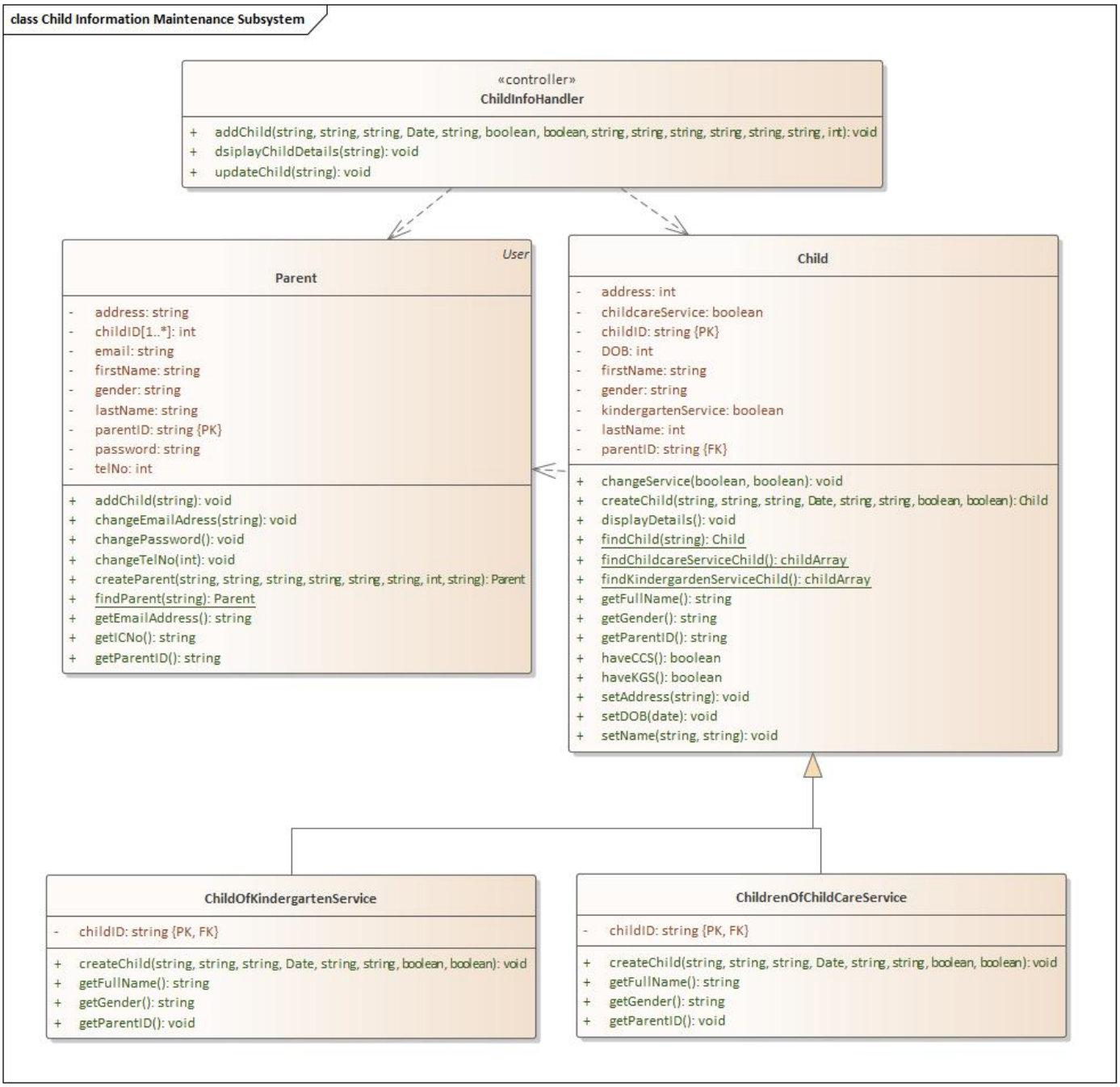

Figure 26 : Class Diagram for Child Information Maintenance Subsystem

3.2.2.3 : Sequence Diagram

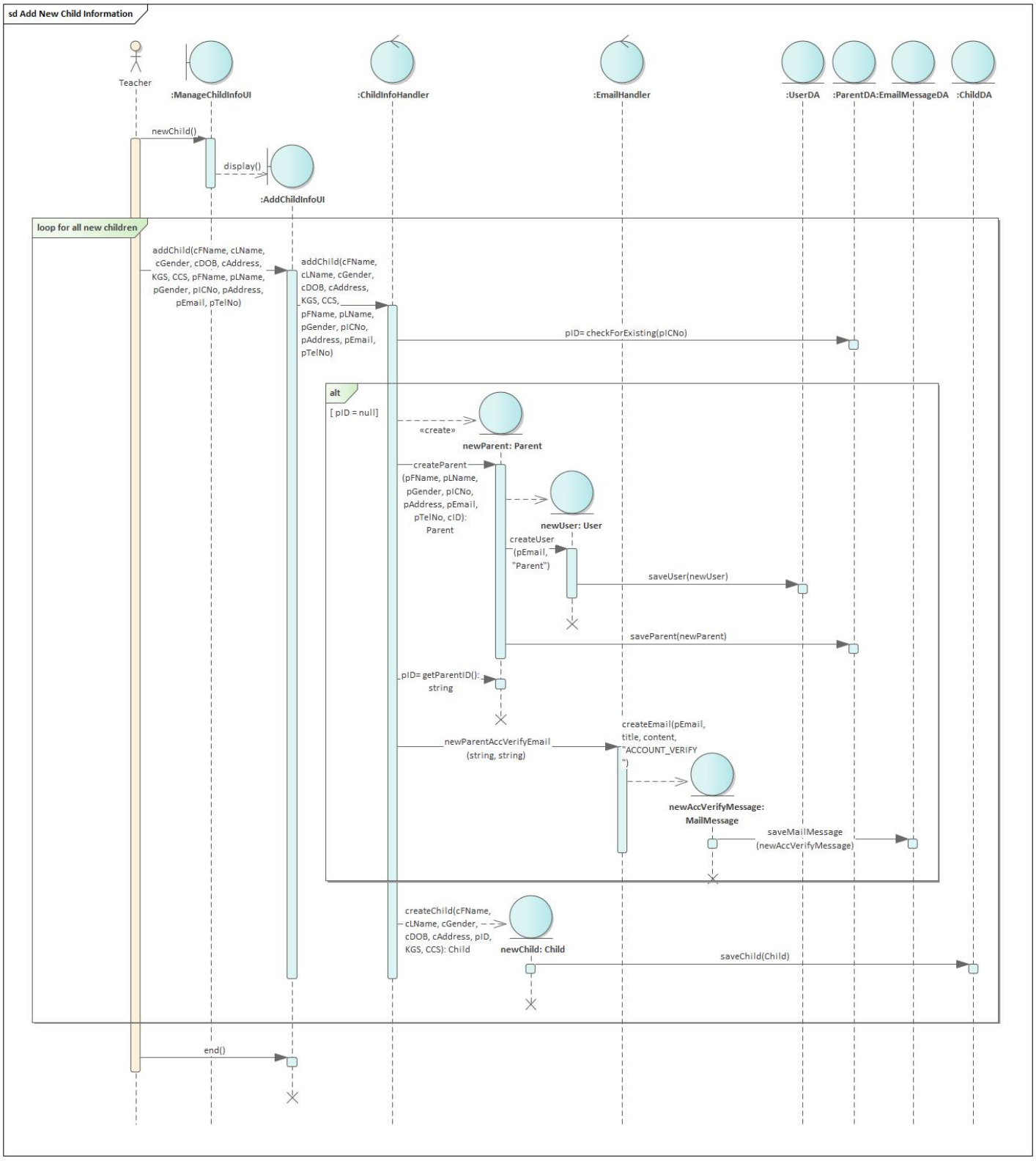

Figure 27 : Sequence Diagram for Add New Child Information scenario

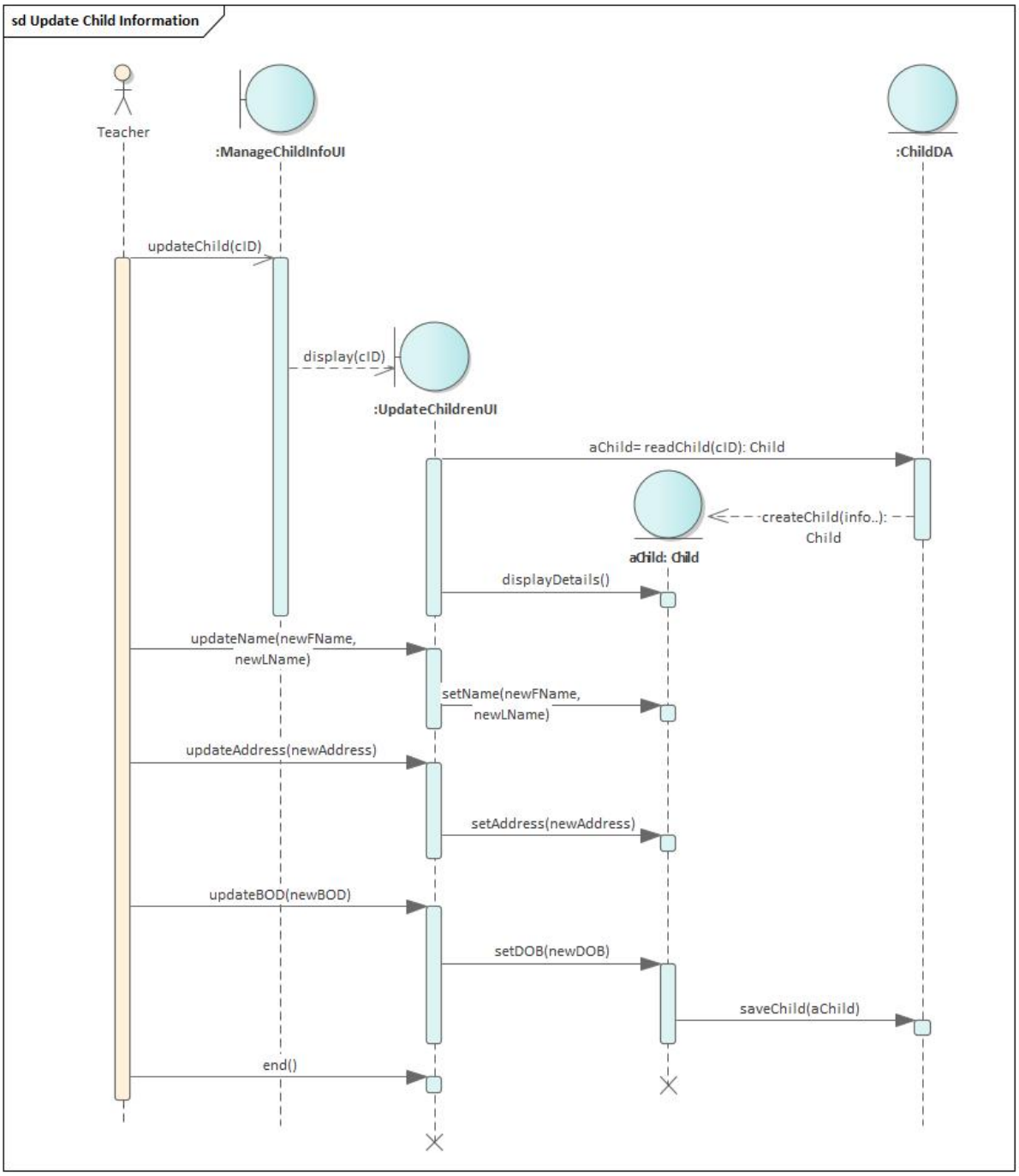

Figure 28 : Sequence Diagram for Update a Child Information scenario

3.2.3 : P003 : Child Evaluation Subsystem

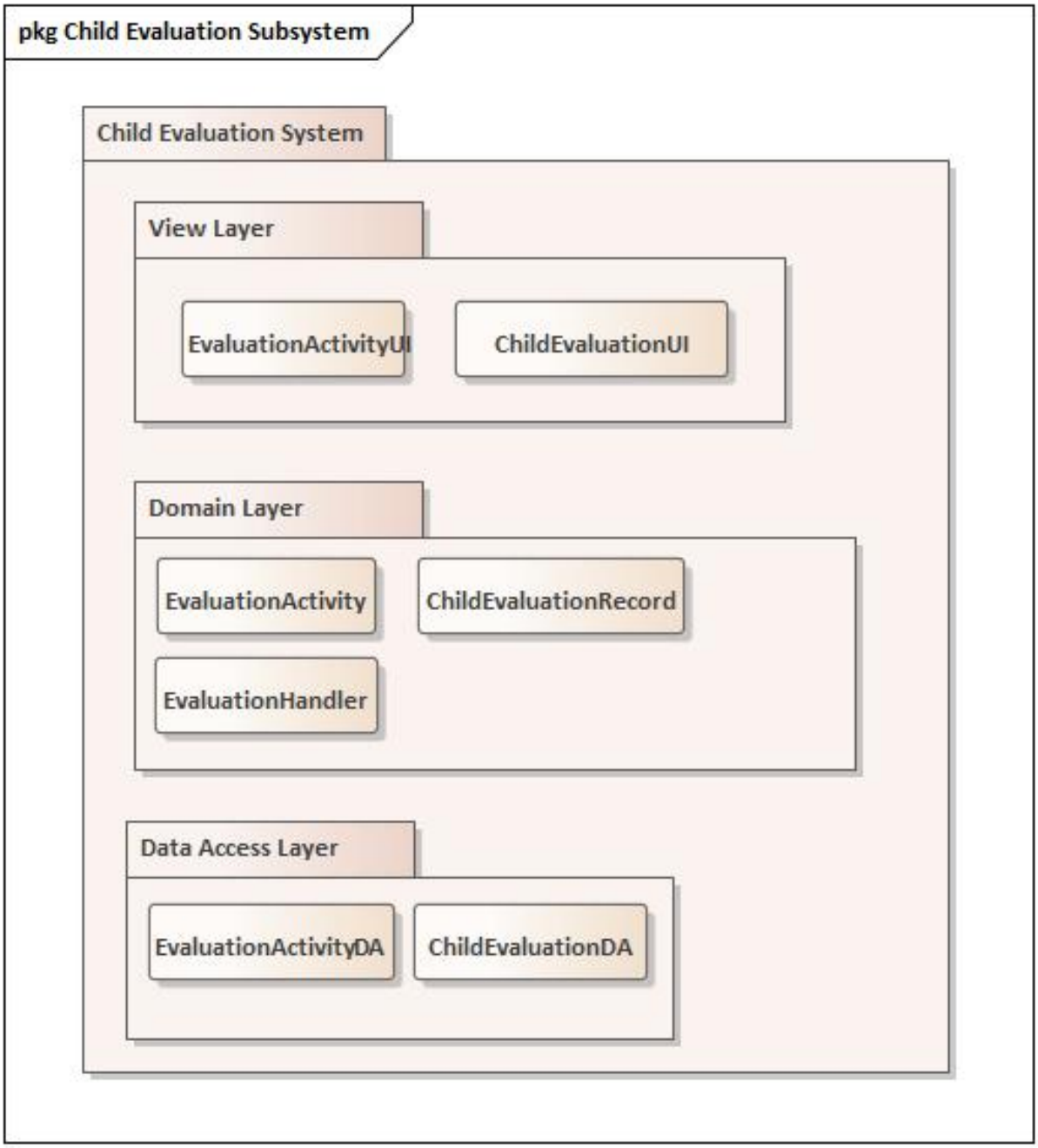

Figure 29 : Package diagram for Child Evaluation Subsystem

3.2.3.1 : Class Diagram

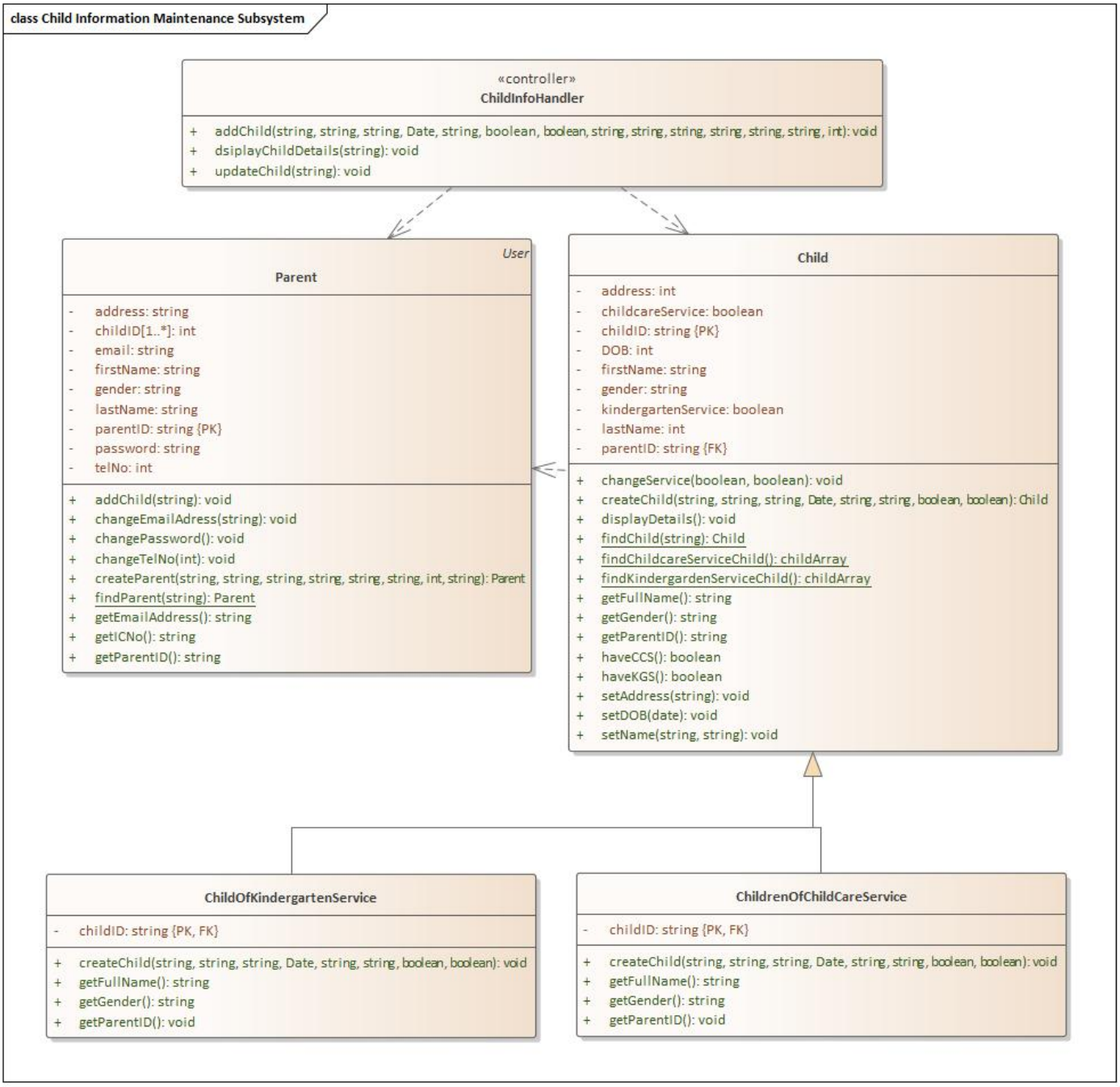

Figure 30 : Class Diagram for Child Evaluation Subsystem

3.2.3.2 : Sequence Diagram

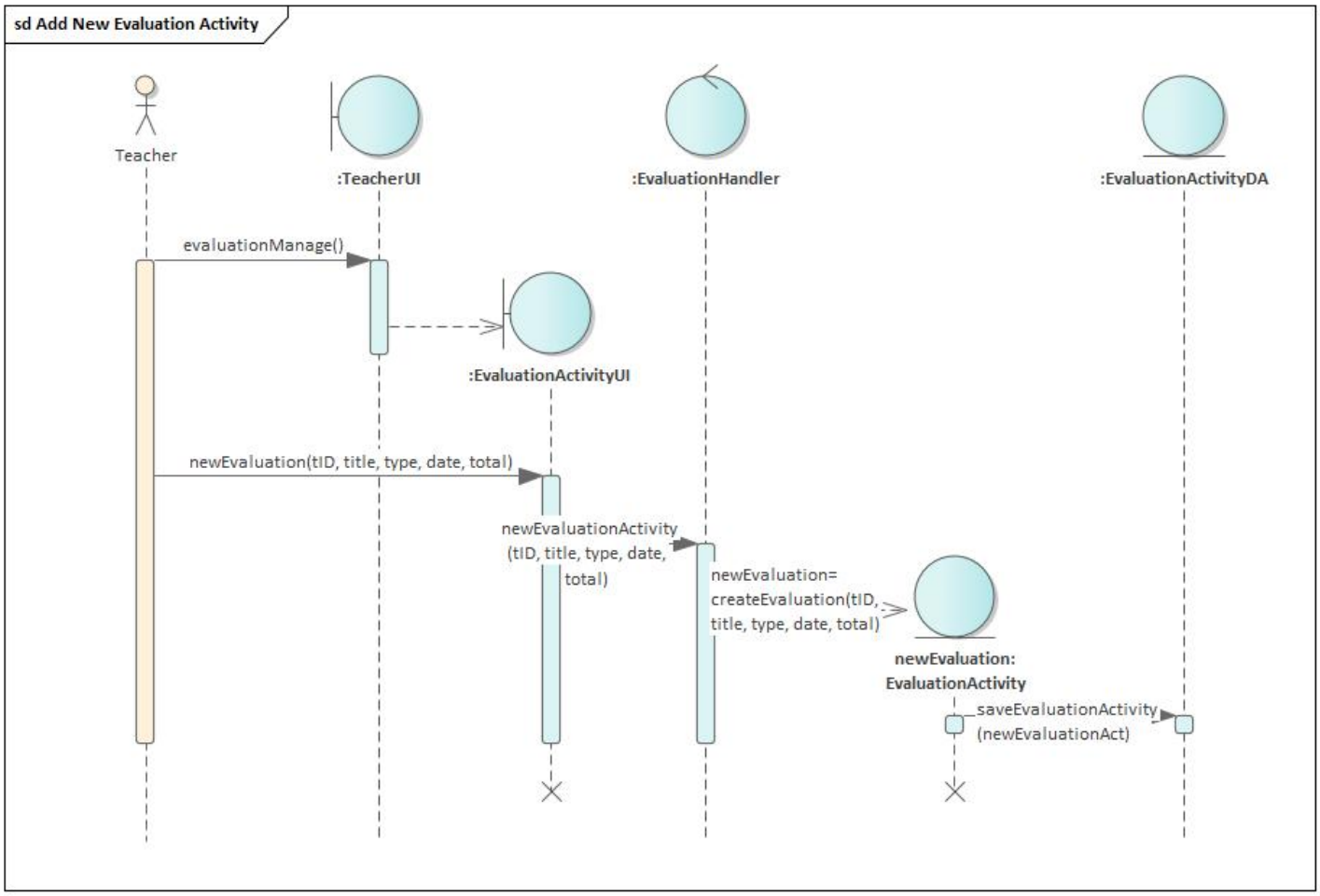

Figure 31 : Sequence Diagram for Add New Evaluation Activity scenario

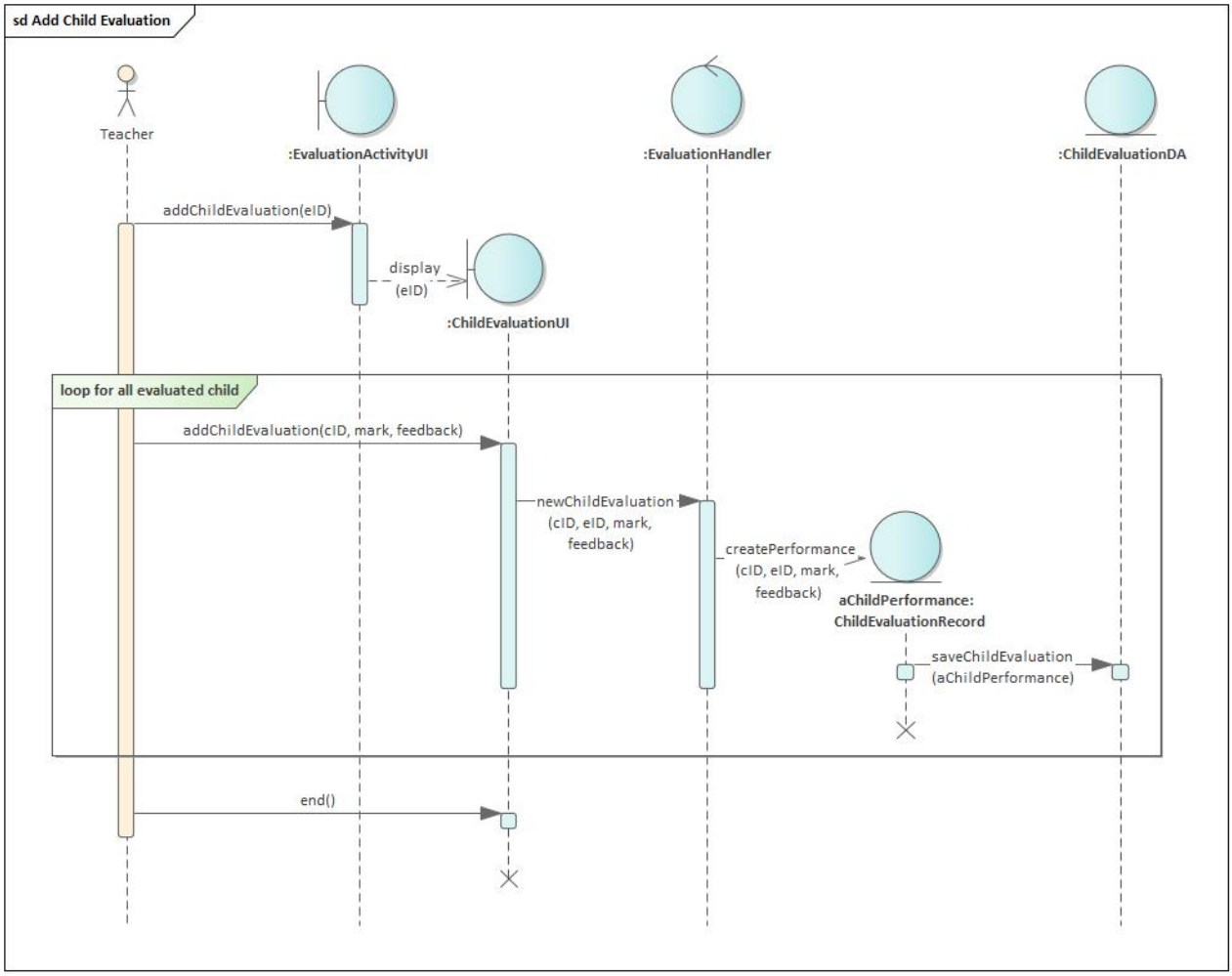

Figure 32 : Sequence Diagram for Add a Child Evaluation scenario

3.2.4 : P004: E-mail Message Management Subsystem

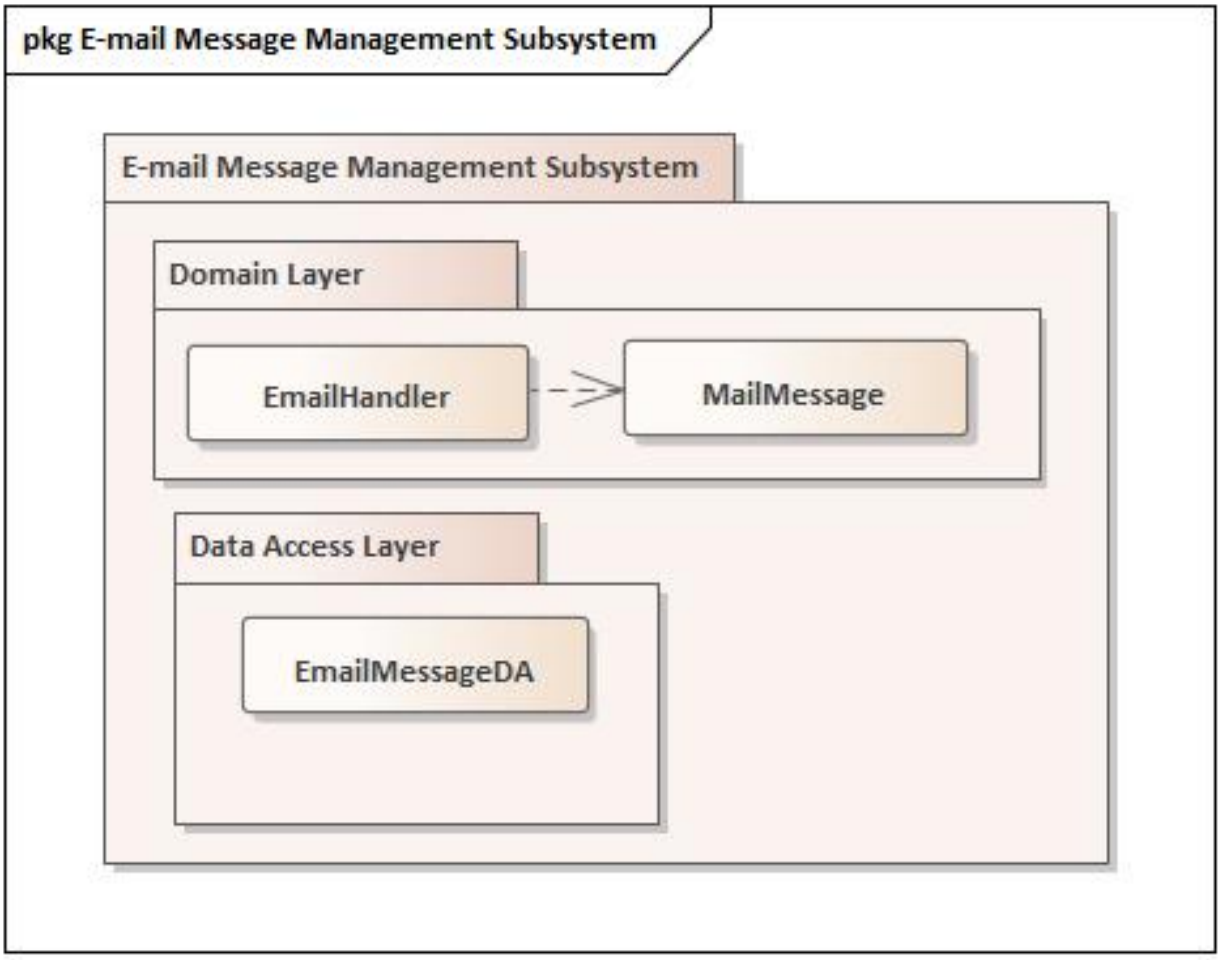

Figure 33 : Package diagram for Email Message Management Subsystem

3.2.4.2 : Class Diagram

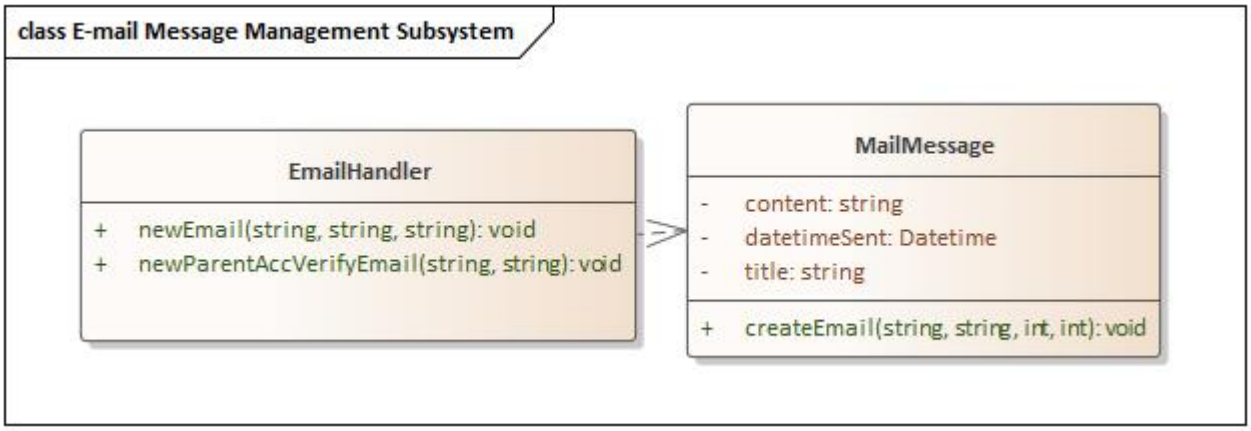

Figure 34 : Class Diagram for Child Information Maintenance Subsystem

4. Requirements Matrix

The sequence diagrams for each use case versus corresponding classes are as below.

Use Case \ Classes	User	Admin	Teacher	Parent	Child	Class	Subject	Evaluation	Grading	EmailMessage
P001, UC001, SD001 **LOGIN**	X	X	X	X						
P001, UC002, SD002 **LOGOUT**										
P001, UC003, SD003 **VIEW PROFILE**	X	X	X	X	X					
P002, UC004, SD004 **VIEW CHILDREN LIST**			X	X	X	X				
P002, UC005, SD005 **ADD CHILD**				X	X	X				X
P002, UC006, SD006 **DELETE CHILD**				X	X					
P002, UC007, SD007 **UPDATE CHILD**					X	X		X	X	
P002, UC008, SD008 **VIEW CLASS CHILDREN LIST**										

5. Appendix A: Traceability Matrix

Test Case ID	Use Case ID/ Sequence Diagram ID	Package ID
TC001 for <Name of Package 1> Subsystem • TC001_01 • TC001_02	UC001 • SD001 • SD002	P001
TC002 for <Name of Package 2> Subsystem • TC002_01 • TC002_02	UC002 • SD004 • SD005	P001
TC003 for <Name of Package 3> Subsystem • TC003_01 • TC003_02	UC003 • SD006 • SD007	P002
…		