Software Requirement and Design Specifications

Learning Forum

Mobile-Application

TEACHING & CAREER GUIDANCE FORUM

T A C G F

Course Code	
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Submission Date	18th Dec 20, 2021

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1. Introduction

1.1. Purpose of Document

The purpose of this SRS document is to provide a detailed overview of our software product, its parameters and goals. This document describes the project's target audience and its user interface and software requirements. It defines how our client, team and audience see the product and its functionality. Nonetheless, it helps any designer and developer to assist in software delivery lifecycle (SDLC) processes.

1.2. Intended Audience

Primarily, the scope pertains to the Education Sector for making. Developing a System to promote a greater count of students to splurge into the field of Education. which bridges the gap between them and is a relevant space to connect with each other. It will usher in the immense flexibility and sophistication in the existing learning platform structures, with the perfect blend of synchronous and asynchronous interaction. It provides a means of collaborative learning for the students.

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This SRS is also aimed at specifying requirements of software to be developed but it can also be applied to assist in the selection of tutors according to the preferences. The standard can be used to create software requirements specifications directly or can be used as a model for defining an organization or project specific standard.

There are basically 2 types of users:

- Student
- Teacher

1.3 Definition of Terms, Acronyms and Abbreviations

ASP	-
DD	-

1.4 Document Convention

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2. Overall System Description

2.1. Project Background

This document contains the problem statement that the current Education system is facing which is hampering the growth opportunities of the students and teachers.. It further contains a list of the stakeholders and users of the proposed solution. It also illustrates the needs and wants of the stakeholders that were identified in the brainstorming exercise as part of the requirements workshop. It further lists and briefly describes the major features and a brief description of each of the proposed systems.

2.2. Project Scope

The benefits of having this forum is that students and teachers can connect according to their expertise, subject preference and location.
Teachers can find their perfect job and students can find the type of teacher they wish to learn from.
The system will provide easy-to-access app based service which can give management an effective means of managing all resources

2.3. Not In Scope

- Online Recorded Lectures
- Attendance of enrolled students
- Fee Subscription
- Appear for exams
- View progress reports
- Participate in extracurricular activities online

2.4. Project Objectives

The benefits of having this forum is that student and teachers can connect according to their expertise, subject preference and location.

Teachers can find their perfect job and students can find the type of teacher they wish to learn from.
The system will provide easy-to-access app based service which can give management an effective means of managing all resources

2.5. Stakeholders

The document is intended for the people of following profession:-

- Project managers-Project managers are those who supervise the entire project.

- Implementers or coding expertise-This category of professionals implements the design stated by the developers using programming languages. They are responsible for all the application modules and graphical user interfaces.

- Tester- This class of people test the developed system with the help of certain test cases and determine the efficiency and estimates the performance of the system.

- Documentation writers-Documentation writers prepare the user manuals and other necessary documents for proper setting of the system in a certain operating environment.

- Users-The people who use the system. They are responsible for the quality of software requirement specification document through their valuable comments on the initial requirement documents.

2.6. Operating Environment

The user interface for the software shall be compatible to any android device by which the user can access the system.

Hardware Interfaces

Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable

Communication Interface

The client-server communication must be stateless. A uniform interface must separate the client roles from the server roles.
Client on Intranet will be using TCP/IP protocol.

Hardware Interface CLIENT SIDE

	PROCESSOR	**RAM**	**DISK SPACE**
INTERNET	DUAL CORE	256 MB	1 GB

SERVER SIDE

APPLICATION	M1 Chip	8 GB	10 MB
DB	M1 Chip	8 GB	75 MB

2.7. System Constraints

- For ensuring platform independence of the software the implementation will be JAVA so the end user system must have a JAVA runtime environment.
- Good internet connection speed for uninterrupted service.

2.8. Assumptions & Dependencies

- A student can only view the teachers according to his preferences.
- The Teacher can also be a student-same email_id can be used.

3. External Interface Requirements

3.1. Hardware Interfaces

- The additional hardware necessary for using this application is a minimum 56Kbps of bandwidth internet connection.

3.2. Software Interfaces

SqliteDb is used as the database server. All the user's data and system data will be stored in the SqliteDatabase. To access the database we have to implement software interfaces using java. It contains the server side database handling and the client implementation to view the xml and content. UI is produced by the execution of the codes deployed in the Xml from layout.

3.3. Communications Interfaces

4. Functional Requirements

4.1. Functional Hierarchy

- Students can input Subjects, Location, Board as their preferences.
- Teachers can input Subjects, Location, Board as their preferences.
- According to this data, it will look for the best tuition match.
- Asynchronous communication in the form of Emails, enable communication to occur at "convenient-times" that suit student schedules and are not accessed at simultaneous or prearranged times.
- There can be forums, blogs etc to discuss various queries and to put up suggestions posted both by students and teachers.
- Administrators can generate reports, log files, backup/recovery of data at any time.
- Shared documents and media library that can help in active learning of a student.
- One-to-many, many-to-one and many-to-many information sharing.

4.2. Use Cases

- Login
- SignUp
- Insert Student Details
- Insert Teacher Details
- Update Student Details
- Update Teacher Details
- Apply Tuition
- Update Tuition
- Seek Approval of Teacher
- Validate

Use Case Description:					
Use Case Name:	Login				
Use Case Description: In order to verify the user by their email and password					
Primary Actor:	Student/Teacher	Other actors:	System and Database		
Stakeholders:					
Relationships					
Includes					
Extends					
PreConditions:					
User type is chosen					
Flow of Events:					
User enters email/password in any sequence, clicks on the login button. System queries database for the record, if record found, directs to next page, else gives error message					
Alternative and Exceptional Flows					
User choose to sign up	Email not validated	User closes app			
Post Conditions:					
User is given error message or directed to next page					

Use Case Description:					
Use Case Name:	Signup				
Use Case Description: To get new user details					
Primary Actor:	Student/Teacher	Other actors:	System and Database		
Stakeholders:					
Relationships					
Includes					
Extends					
PreConditions:					
User type is chosen, login option provided					
Flow of Events:					
Users enter details required, the details are validated. The record is updated in database and user is directed to next page					
Alternative and Exceptional Flows					
User backs the page	Email not validated	User closes app			
Post Conditions:					
User is given error message or directed to next page					

Use Case Description:				
Use Case Name:	Apply tuition			
Use Case Description: Look for tutors for student's requirements				
Primary Actor:	Student	Other actors:	System and Database	
Stakeholders:				
Relationships				
Includes				
Extends				
PreConditions:				
User is logged in				
Flow of Events:				
Users enter details required, and register a tuition. User is directed back to the dashboard. Record is updated in the database and the search for tutor is executed.				
Alternative and Exceptional Flows				
User backs the page		User closes app		
Post Conditions:				
User goes back to dashboard				

Use Case Description:				
Use Case Name:	Find teacher			
Use Case Description: To get new user details				
Primary Actor:	System	Other actors:	Database	
Stakeholders:				
Relationships				
Includes				
Extends Seek teachers approval				
PreConditions:				
Student has applied for tuition				
Flow of Events:				
As students apply for tuition, the system searches for the perfect teacher based on location,subjects and expertise.				
Alternative and Exceptional Flows				
No available teachers		User closes app		
Post Conditions:				
User is not shown teachers notification or teacher is notified by system if student request for tuition.				

5. Non-functional Requirements

5.1. Performance Requirements

Number of users supported will mainly depend on the server load, server processing capacity and its memory. It should scale to the maximum number of users.

5.2. Safety Requirements

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5.3. Security Requirements

Android studio enables access to applications to secure access of confidential data (student information). Database Access There will be no external access to the database, except through the XML protocol. Administrators of the system will have full database administration rights and Teachers may have access to a copy of parts of the database, for editing purposes.

Data Storage

- The customer's app shall never display a customer's password. It shall always be echoed with special characters representing typed characters.

- The system's back-end servers shall never display a customer's password. The customer's password may be reset but never shown.

- The system's back-end servers shall only be accessible to authenticated administrators.

5.4. User Documentation

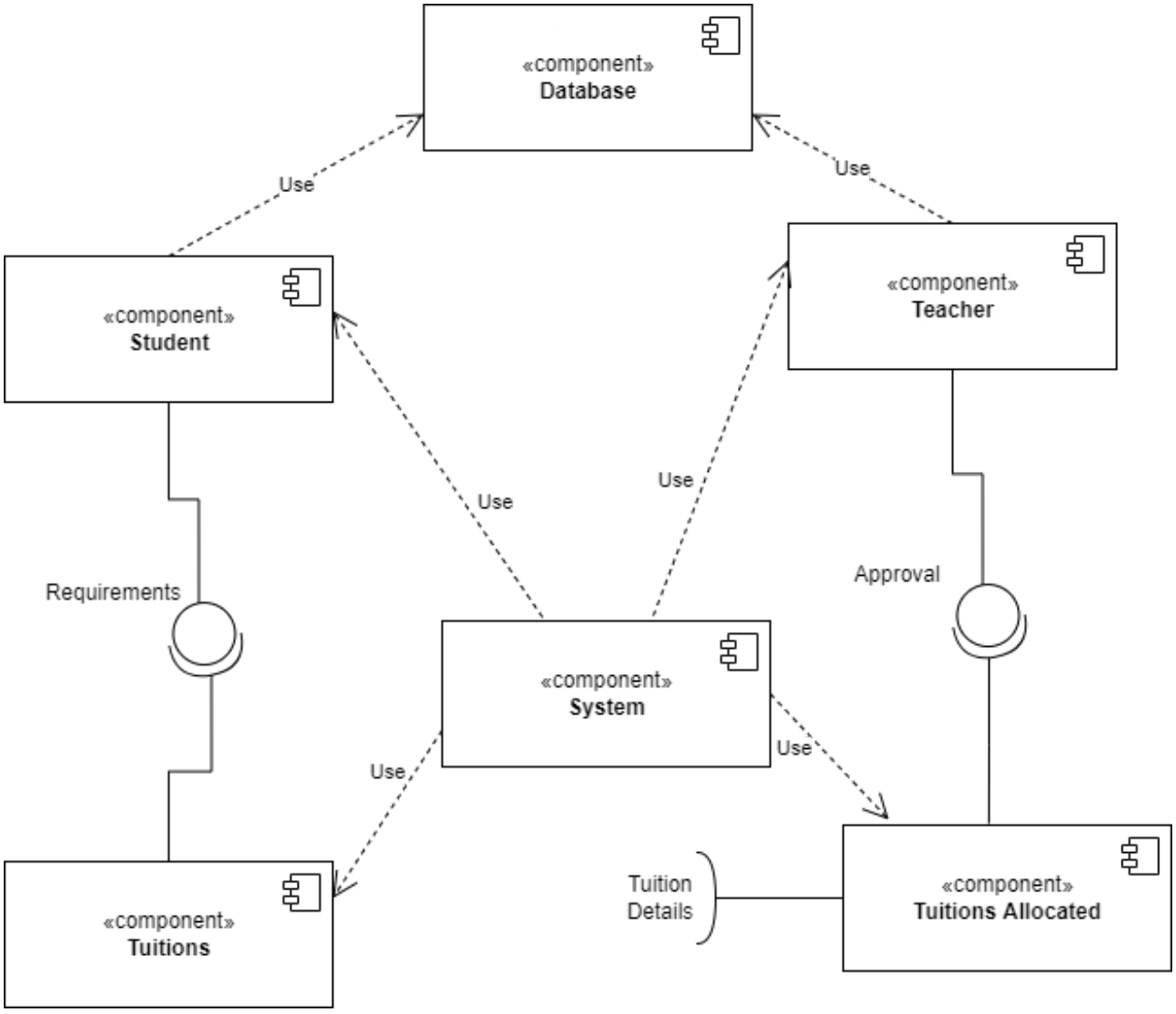
none

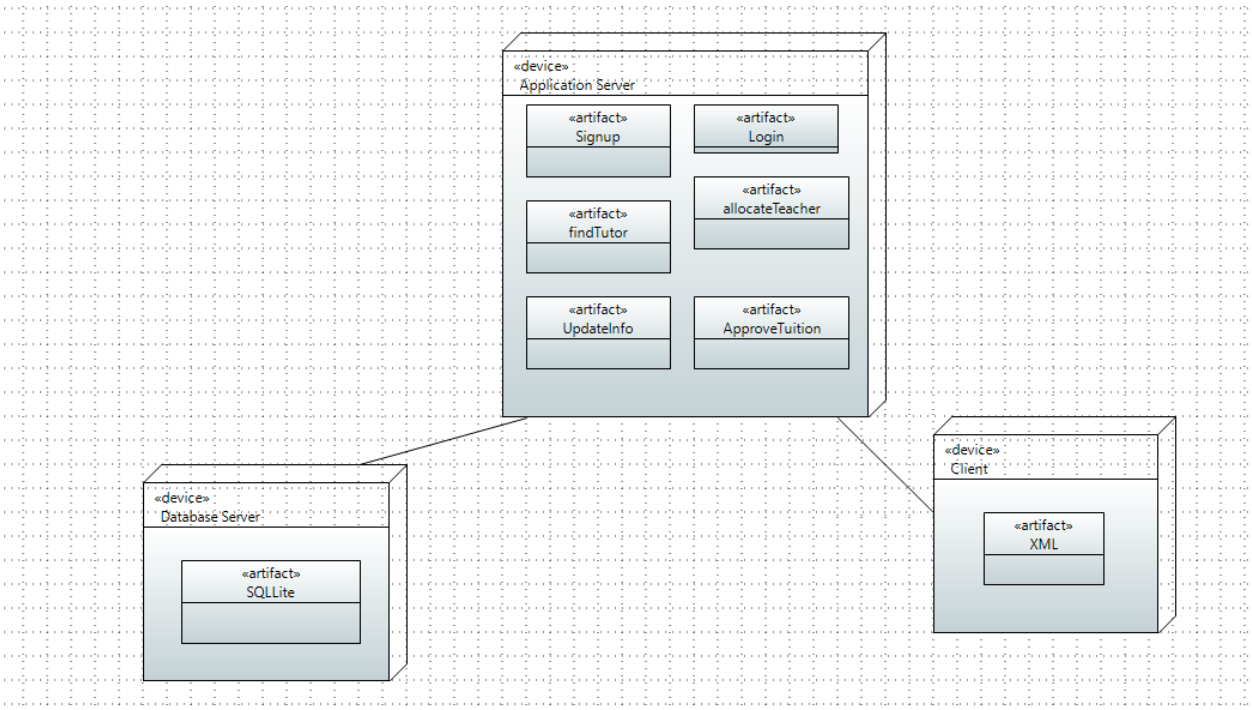
SDS

6. System Architecture

6.1. System Level Architecture

<<Deployment and Component diagrams>>




«device»
Application Server
«artifact»
Signup
«artifact»
Login
«artifact»
allocateTeacher
«artifact»
findTutor
«artifact»
UpdateInfo
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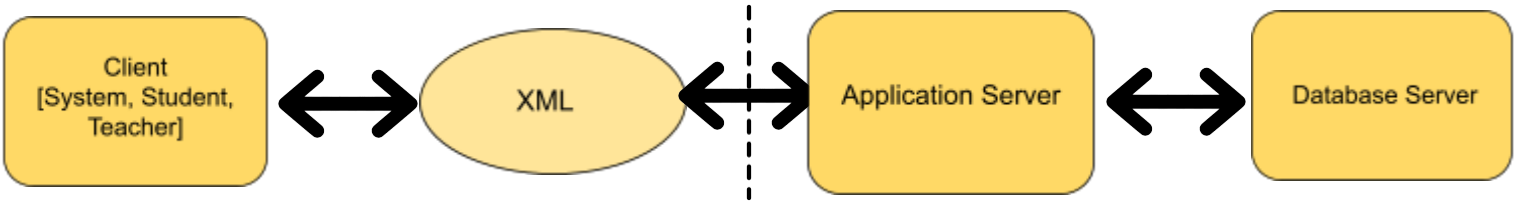
ApproveTuition
«device»
Database Server
«artifact»
SQLLite
«device»
Client
«artifact»
XML

6.2. Software Architecture



7. Design Strategy

Graphical User Interface

The system shall provide a uniform look and feel between all the app pages.
The system shall provide authentic details for each teacher.
The system shall provide use of icons and toolbars.
The CNIC will be validated.

Future Extension

- The Learning Forum can be extended to be used by WAP enabled devices. This service can be extended to be accessible through GPRS so that the registered users can share and access information and find teachers closest to their current location.

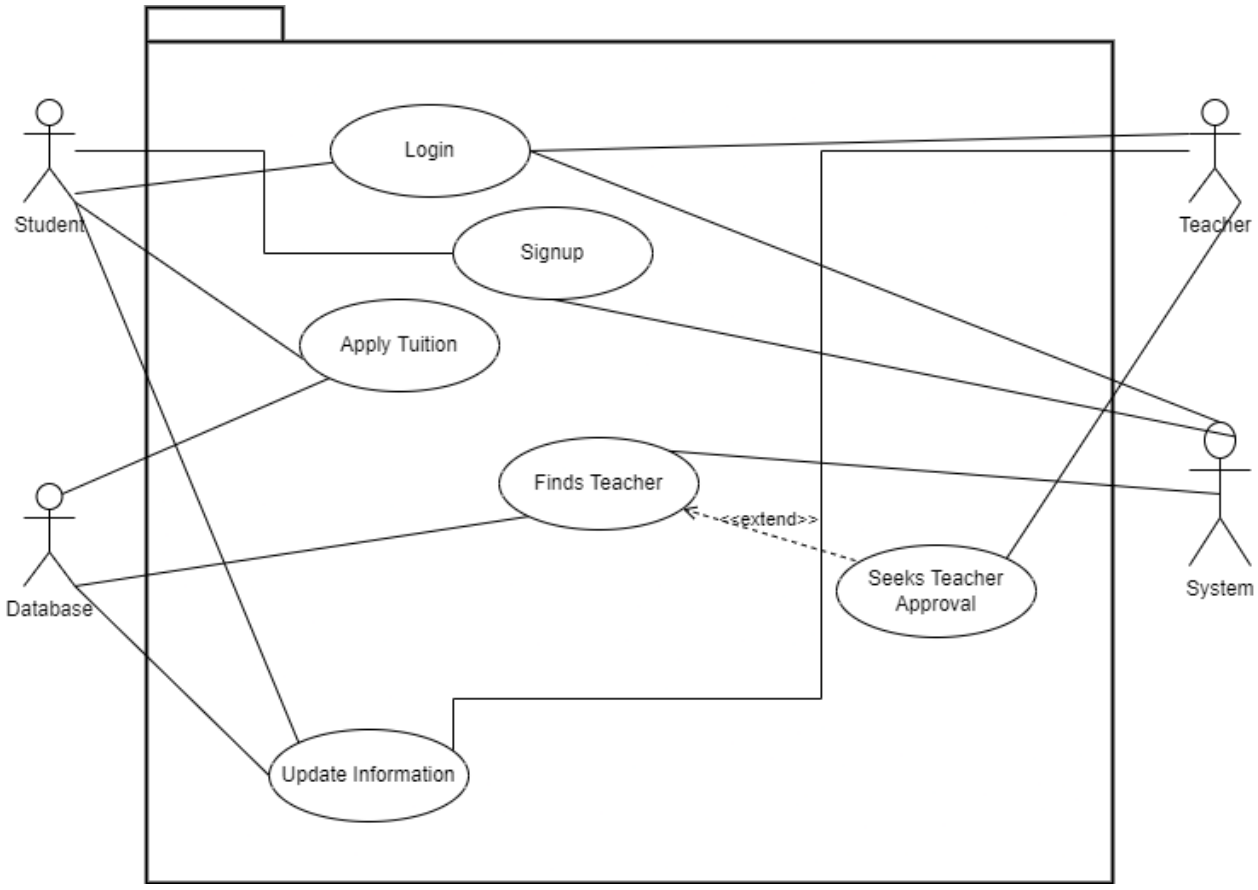
- The Learning Forum can be extended where teachers can put recorded lectures, take examinations, tally the marks, maintain attendance.

Accessibility

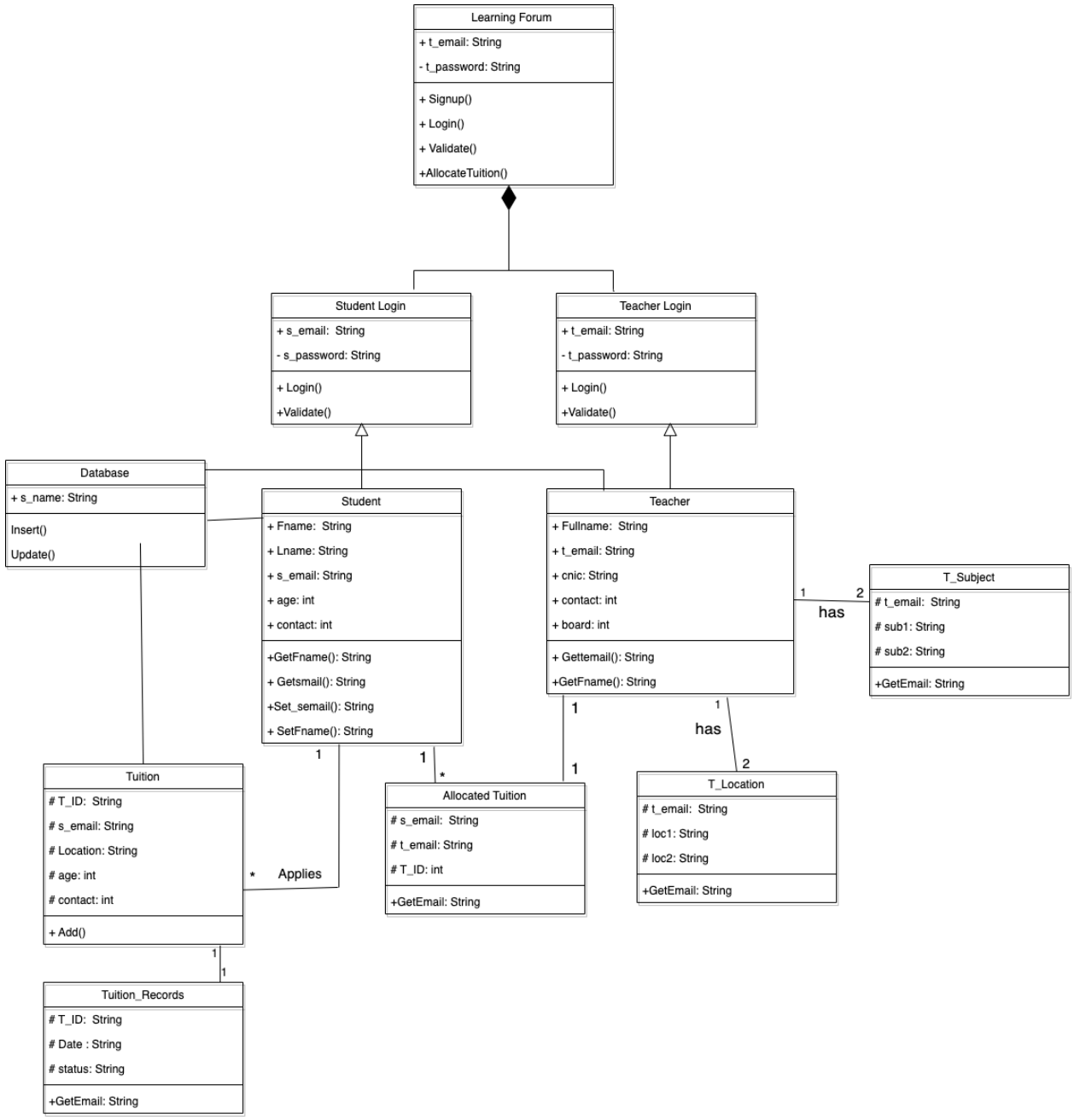
The system shall provide handicap access.

8. Detailed System Design

Design creates a representation or model, providing detail about software data structure, architecture, interfaces and components that are necessary to implement a system. This chapter discusses the design part of the project.

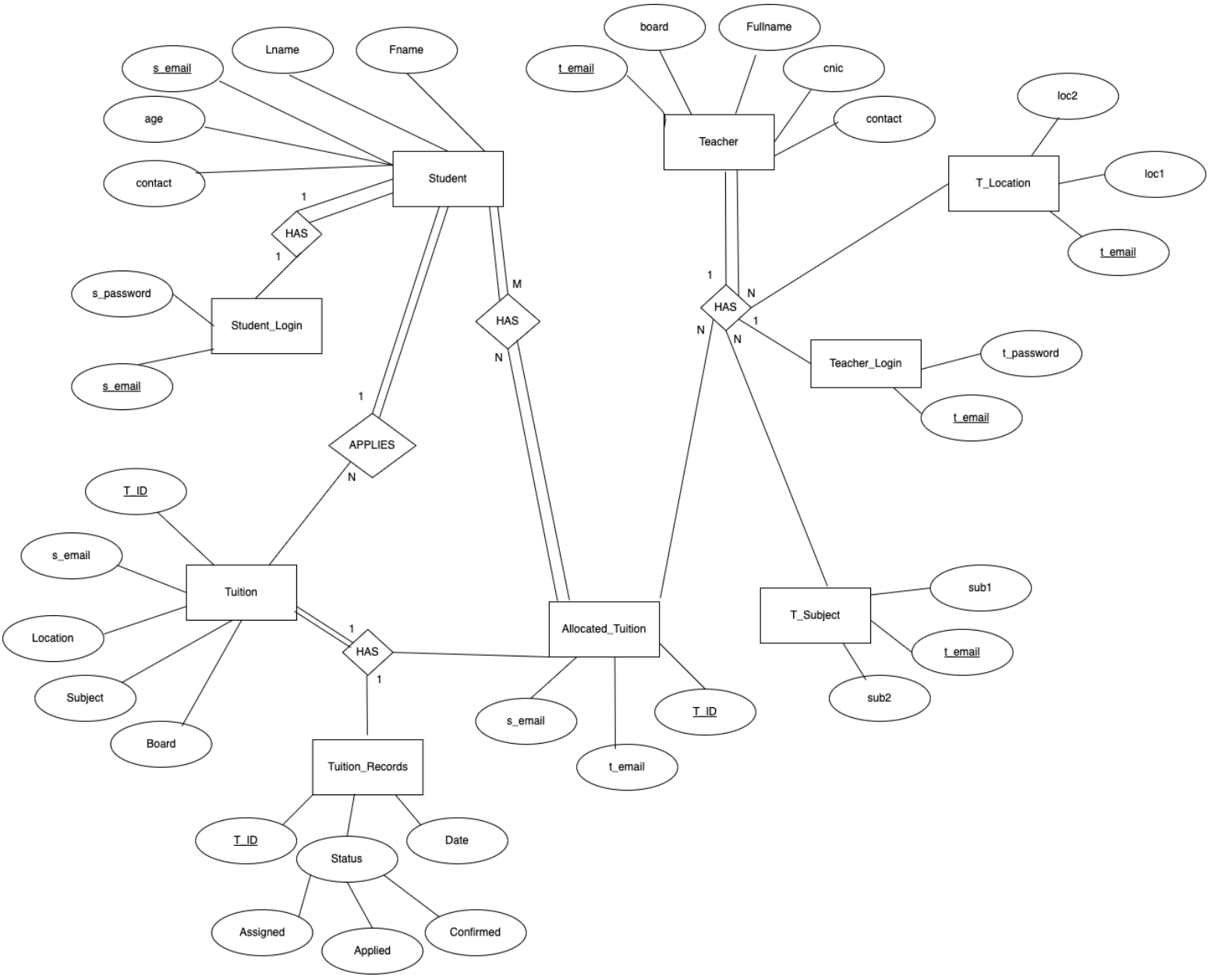


Class diagram



8.1. Database Design

8.1.1. ER Diagram



8.1.2. Data Dictionary

8.1.2.1 Student

Table						
Name:	Student					
Alias:	student_details					
Where used/how used:	Used in registration of students, and updation of Student Login Table. Further used in registering a tuition need.					
Content Description						
Column	**Description**	**Type**	**Length**	**Nullable**	**Default Key**	**Key Type**
Fname	First Name	TEXT		NO	-	
Lname	Last name	TEXT		NO	-	
Email	Email address	TEXT		NO	-	PRIMARY KEY
Age	Age of student	NUMBER	1-3	NO	-	
Contact	Contact Number	NUMBER	10	NO		

8.1.2.2. Teacher

Table						
Name:	Teacher					
Alias:	teacher_details					
Where used/how used:	Used in registration of Teacher. Further used in allocating tuition.					
Content Description						
Column	**Description**	**Type**	**Length**	**Nullable**	**Default Key**	**Key Type**
Fullname	Name of teacher	TEXT		NO		
t_email	Email address	TEXT		NO		PRIMARY KEY
CNIC	National ID number	NUMBER	13	NO		CANDIDATE KEY
Contact	Contact number	NUMBER	10	NO		
Board	Preferred board to teach					

8.1.2.3 Tuition Details

Table						
Name:	Tuition Details					
Alias:	Tuition					
Where used/how used:	Used to track tuition details and allocates every tuition a unique id.					
Content Description						
Column	**Description**	**Type**	**Length**	**Nullable**	**Default Key**	**Key Type**
T_ID	Tuition ID	TEXT		NO		PRIMARY KEY
STATUS	Status of Tuition	TEXT		NO		
Date	Date student applied	DATE		NO		

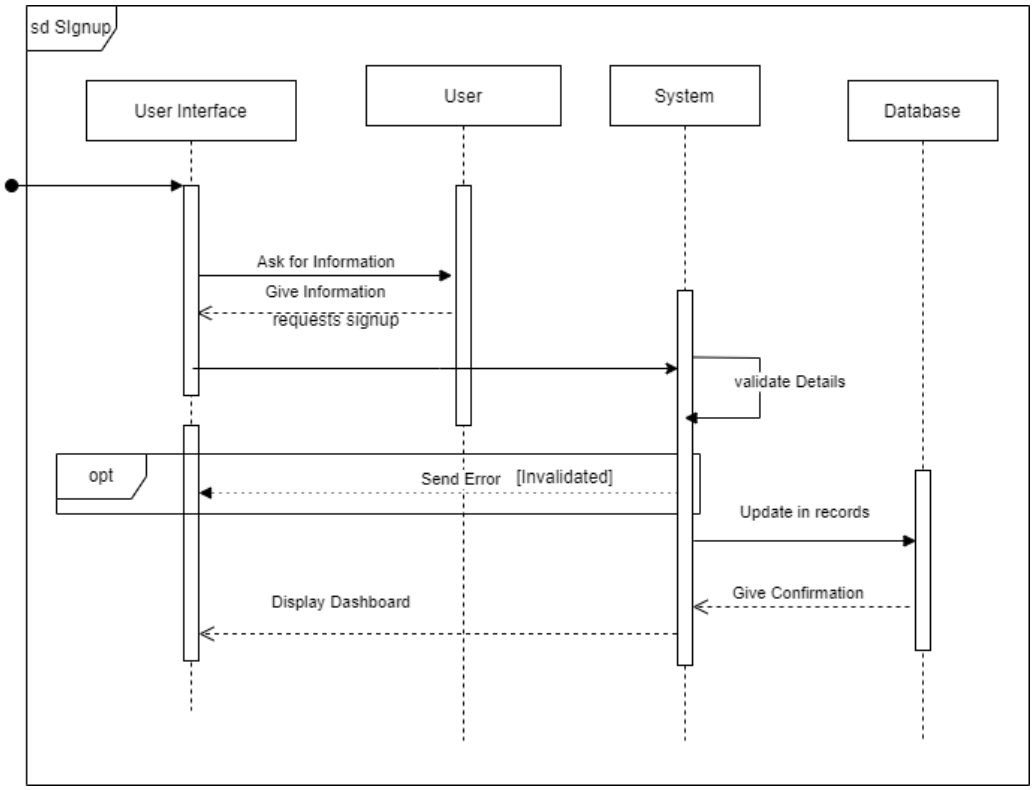
8.1.2.4 Allocated Tuition

Table						
Name:	Tuition Allocation					
Alias:	Allocated_Tuition					
Where used/how used:	Tuition_ID and the teacher allocated for specific student is mentioned					
Content Description						
Column	**Description**	**Type**	**Length**	**Nullable**	**Default Key**	**Key Type**
T_ID	Tuition ID	TEXT		NO		PRIMARY KEY
s_email	Email of Student	TEXT		NO		CANDIDATE KEY
t_email	Email of Teacher	TEXT		NO		CANDIDATE KEY

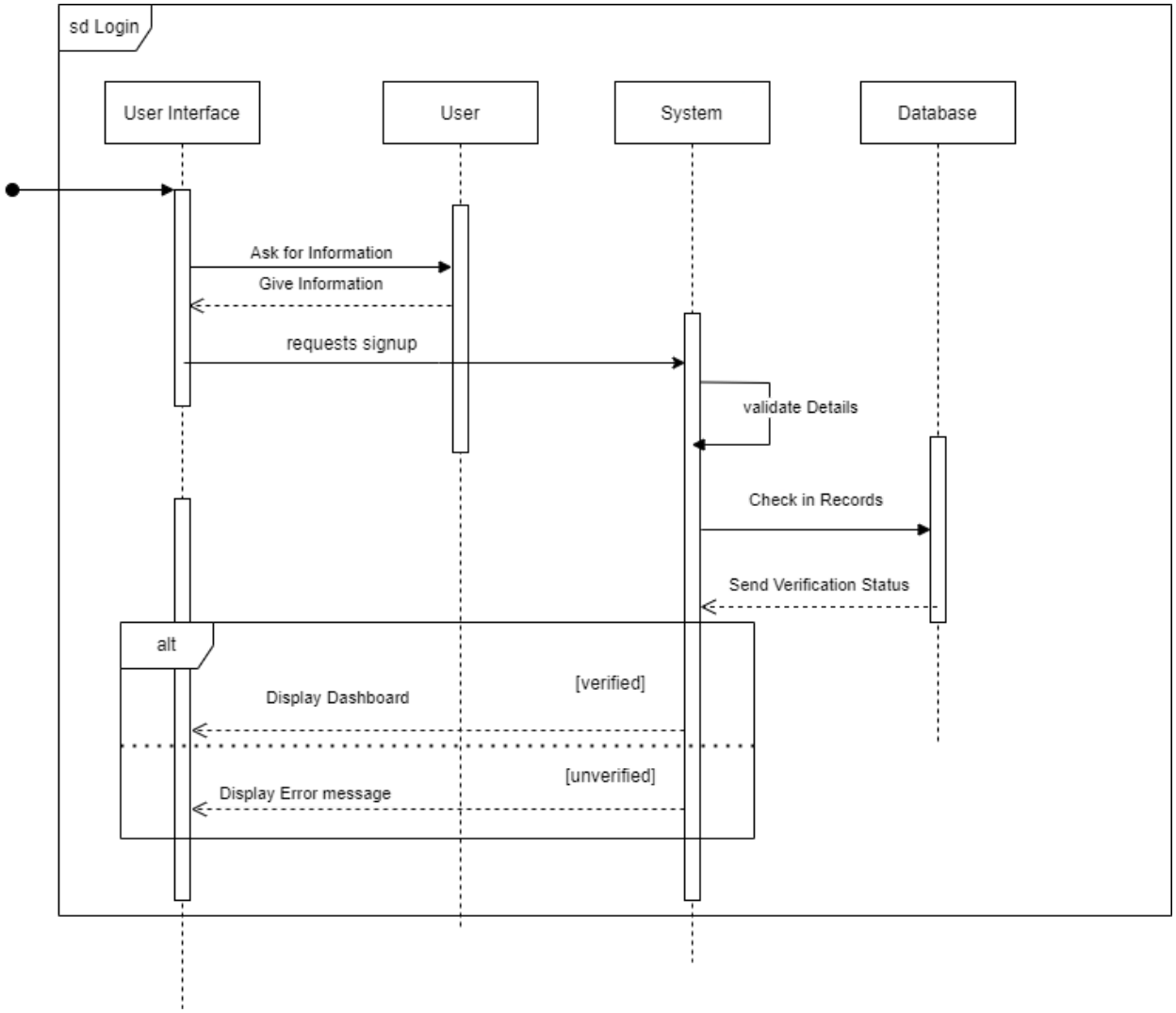
9. Application Design

9.1.2. Sequence Diagram

9.1.2.1 <Sequence Diagram 1>



9.1.2.2 <Sequence Diagram 2>



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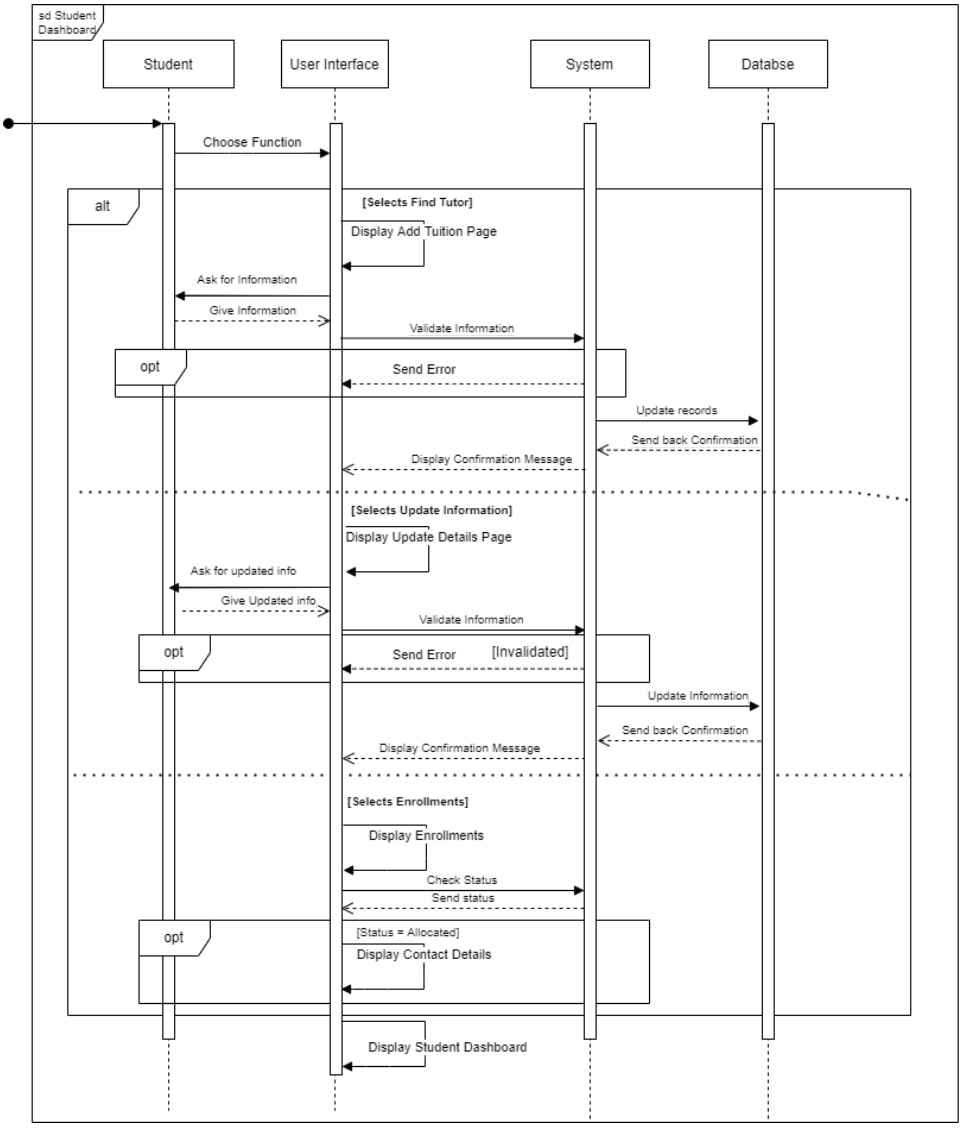

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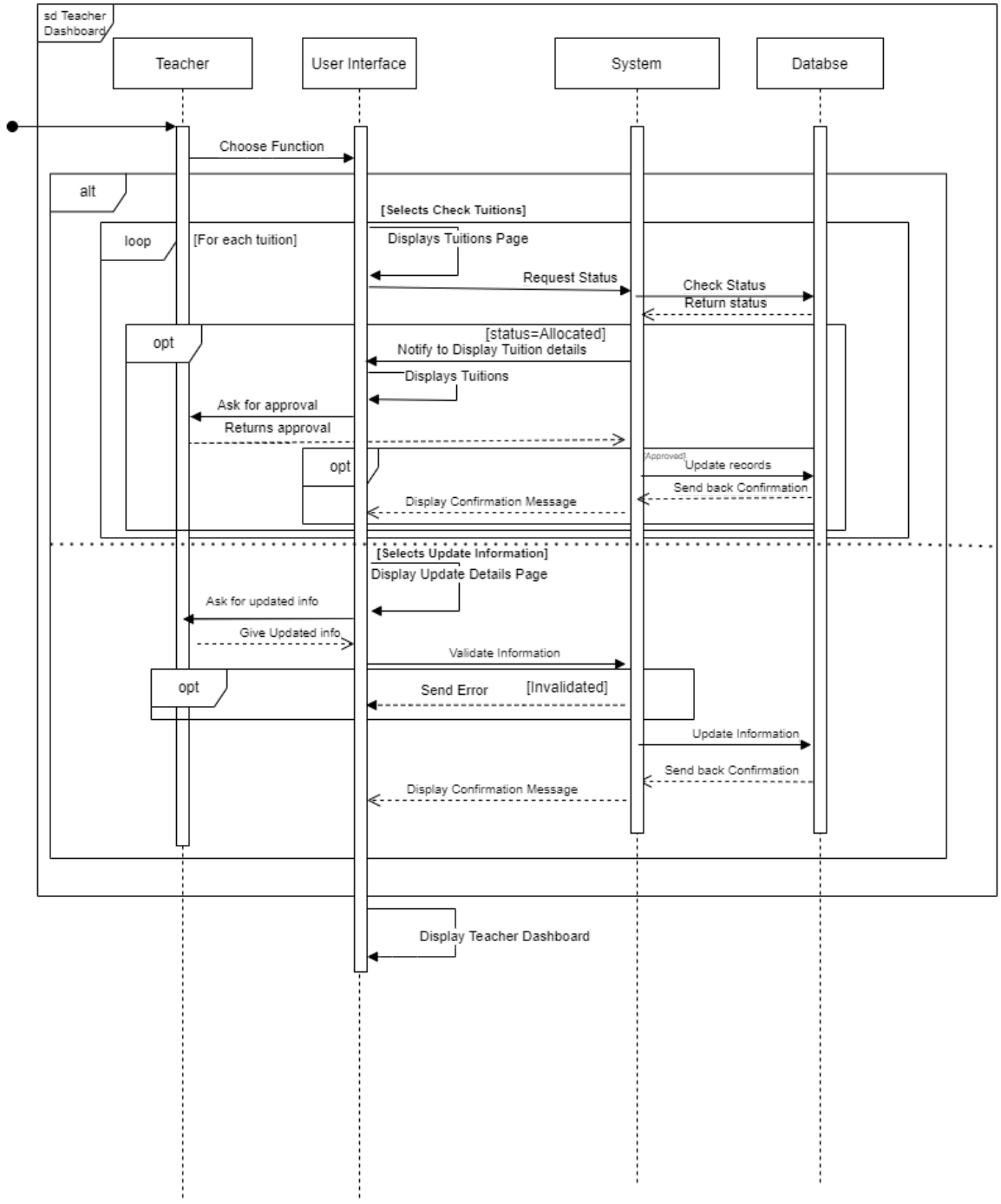
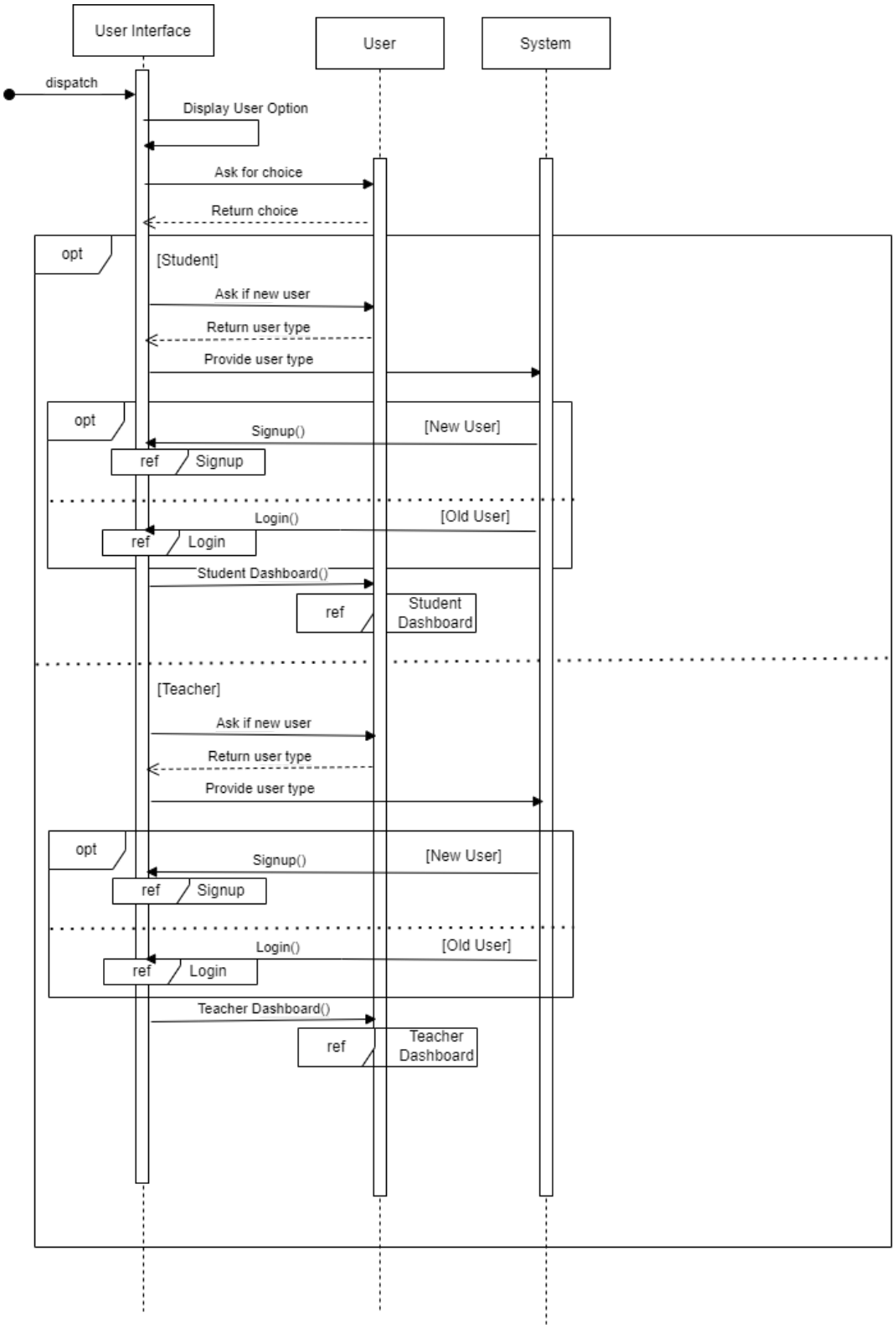
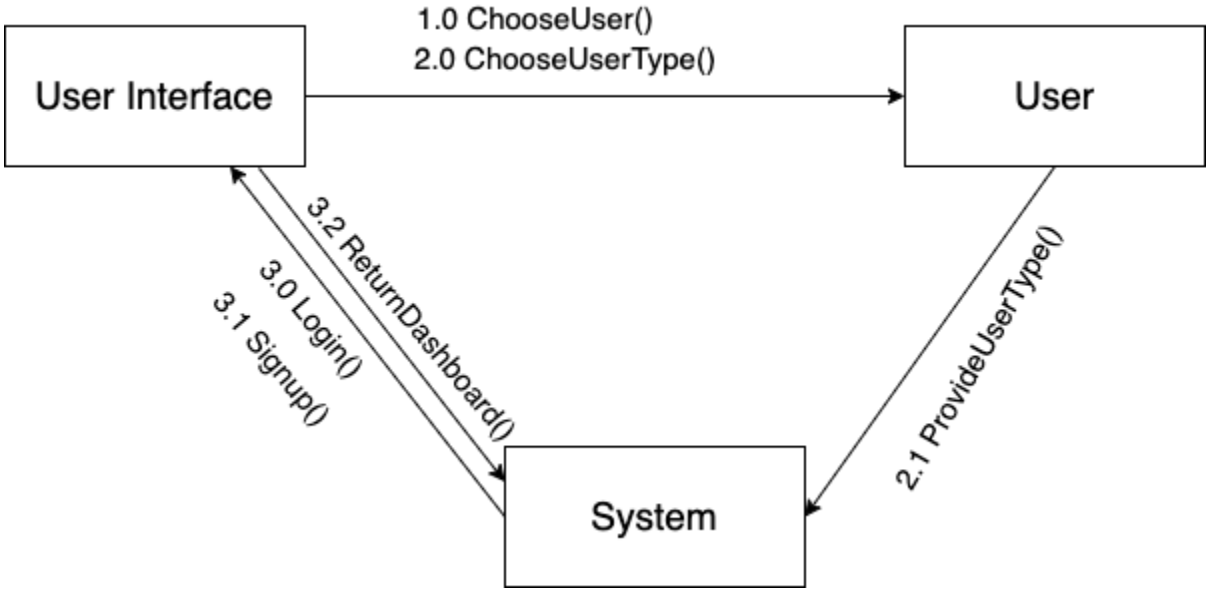


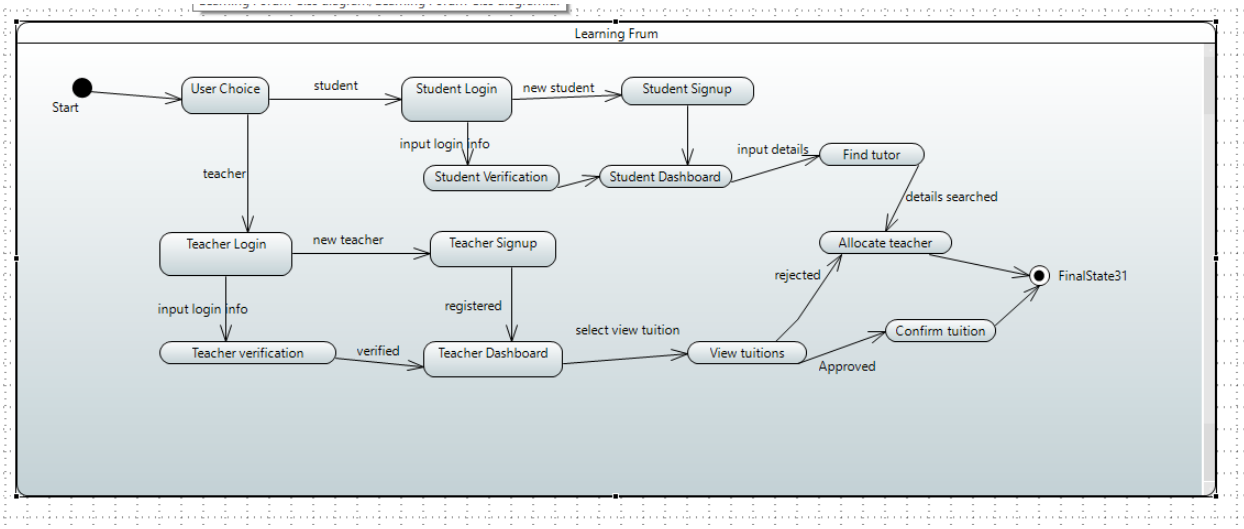
9.1.2.3 <Sequence Diagram 5>



Collaboration Diagram

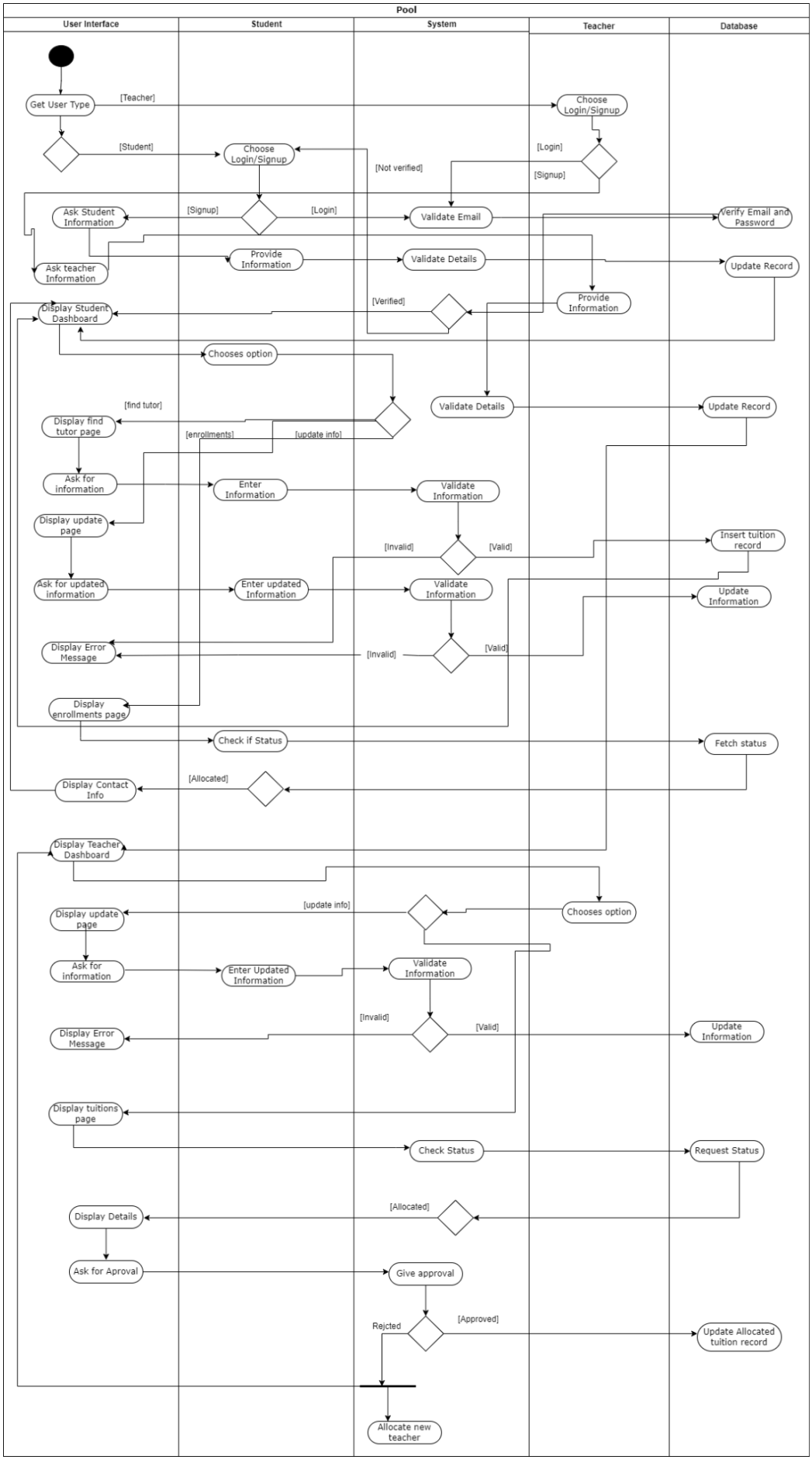


9.1.3. State Diagram



9.1.4. Activity Diagram

9.1.4.1 <Activity Diagram 1>


Pool
User Interface
Student
System
Teacher
Database
Get User Type
[Teacher]
[Student]
Choose Login/Signup
[Login]
[Signup]
[Not verified]
Ask Student Information
[Signup]
[Login]
Validate Email
Verify Email and Password
Provide Information
Validate Details
Update Record
Ask teacher Information
[Verified]
Provide Information
Display Student Dashboard
Chooses option
[find tutor]
Validate Details
Update Record
Display find tutor page
[enrollments]
[update info]
Ask for information
Enter Information
Validate Information
Display update page
[Invalid]
[Valid]
Insert tuition record
Ask for updated information
Enter updated Information
Validate Information
Update Information
Display Error Message
[Invalid]
[Valid]
Display enrollments page
Check if Status
Fetch status
[Allocated]
Display Contact Info
Display Teacher Dashboard
[update info]
Chooses option
Display update page
Ask for information
Enter Updated Information
Validate Information
[Invalid]
[Valid]
Display Error Message
Update Information
Display tuitions page
Check Status
Request Status
[Allocated]
Display Details
Ask for Aproval
Give approval
Rejcted
[Approved]
Update Allocated tuition record
Allocate new teacher

10. References

https://nvlpubs.nist.gov/nistpubs/ams/NIST.AMS.300-2.pdf

11. Appendices

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