THESIS

DESIGN AND IMPLEMENTATION OF STUDENT MANAGEMENT SYSTEM

(CASE STUDY: A.S PRIVATE HIGH SCHOOL)

As one of the Requirements for Obtaining a Computer Bachelor Degree

Faculty of Science and Technology

University of Islam Negeri Syarif Hidayatullah Jakarta

Supervisors,

A'ang Subiyakto, Ph.D

Evy Nurmiati, MMSI

PROGRAM STUDY INFORMATION SYSTEM

FACULTY OF SCIENCE AND TECHNOLOGY

UNIVERSITY OF ISLAM NEGERI SYARIF HIDAYATULLAH

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Thesis

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ABSTRACT

ABDUL SABOOR HAMEDI (11160930000120) Design and **Implementation of Student Management System (Case Study: A.S Private High School)** under the guidance of **A'ANG SUBIYAKTO, PH.D**. and **EVY NURMIATI, MMSI**.

This thesis shows how to replace the manual system with a computer system in a school. A.S Private High School is located in Afghanistan, it founded on January 1, 2010, the system of the school is still manual, the information about the student, teacher, family, and other staffs saving in a notebook, this system is insecure at the same time very expensive comparing to the student management system. With the manual system, there is no privacy for teachers as well as students, it is difficult for a student to note the schedule, it is not preferable to announce the grades in front of the class, it takes time to come to school and ask your grades. To solve this problem, the researcher used Rapid Application Development (RAD) agile software development, this method is recognized as an efficient method for the student management system, this method changes manual system to a computer system where a student, teacher can have their account, and a teacher can upload student's grades, share a file, and students can receive them at the same time no need to wait. Administration or management have full right on the system, the administration can add, update, delete new student as well as teacher, administration is responsible for creating class, schedule, and add full information about students. This system is running on the browser, chrome, Firefox, Microsoft Edge, and other browsers. We used Pure PHP to write the code, MySQL to save data, style cascade sheet 3 (CSS3) to design the system, Unified Modeling Language (UML) to visualize the system.

Keywords: Knowledge management system, A.S Private High School, tacit knowledge, explicit knowledge, Rapid Application Development, Unified Modeling Language, PHP, MySQL, HTML, CSS.

V Chapter + 207 Pages + 57 Images + 32 Tables + Table of content + References + Appendix

FOREWORD

In the name of Allah SWT The Most Beneficent and The Most Merciful. All praises are to Allah SWT for all blesses so that the writer can accomplish this thesis. Also, peace and blessing to prophet Muhammad (PBUH) who has taken all human beings from the darkness to the lightness.

Alhamdulillahirobbil'alamin, praise and gratitude only to Allah SWT, the glorious, the lord, and the all-mighty, the merciful and the compassionate, who has given bless and opportunity for the researcher to finish the paper titled *Design and Implementation of Student Management System.*

This thesis aims to develop a complete student management system, to enhance and standardize the school system, this system can register students and save the data inside the database and display it back in an electronic page.

In the process of writing this thesis writer got so many help, motivation, and guidance from people, furthermore, the write would like to express his genuine gratitude to:

1. Mrs. Prof. Dr. Lily Surraya Eka Putri, M. Eka. Stud. The deen of faculty of science and technology UIN Syarif Hidayatullah Jakarta.

2. Mr. A'ang Subiyakto, Ph.D. The head of science and technology UIN Syarif Hidayatullah Jakarta as well as my first supervisor, Mr. A'ang always courage us to study hard and finish your study on time, he has

a nice personality and always being kind to everyone in faculty of science and technology, especially with international students.

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4. Mrs. Evy Nurmiati, MMSI, lecturer of UIN Syarif Hidayatullah Jakarta. I strongly appreciate all of her efforts and hard-working, she always treated me like her son.

5. I would love to thanks my father, my mother, without their supports it would impossible to continue my study abroad, it's because of them I'm in this stage of my life.

6. I would like to thanks the International office of the University of Islam Negeri Syarif Hidayatullah Jakarta, they are kind to international students, I cannot forget what they have done to us to finish our study.

7. I would like to thanks my classmates for their tolerance, respect, and helps.

8. We were four international students in one class from the first semester until the end, I will never forget those beautiful moments, they have always inspired me to study hard and become what I want to be, thank you to all of them.

9. In the end, I apologize for any mistake I have done intentionally or unintentionally and I also want to forget everyone just for the sake of

Allah S.W.T anyone who did evil for me or made me disappointed I

forgive everyone, I hope Allah S.W.T forgive us all.

Thank you very much

Wassallamuallikum Warramtuallahi Wabarakatuh

Jakarta, August 2020

<u>Abdul Saboor Hamedi</u>

11160930000120

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TABLE OF FIGURE

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LIST OF SYMBOLS

Symbol	Name	Information
	Use Case	Use case diagrams show business use cases, actors, and the relationships between them. The relationships between actors and business use cases state that an actor can use certain functionality.
	Actor	Actors are the users of a system. When one system is the actor of another system, label the actor system with the actor stereotype.
	Association	An association is a relationship between an actor and a business use case. It indicates that an actor can use certain functionality of the business system in the business use case.
Extend	Extend	Extends is a direct relationship

Symbol	Name	Information
		That specifies how and when the behavior defined in usually supplementary optional extending use case can be inserted into the behavior defined in the extended use case.
Include - - - - - - - - - - ->	Include	Use case include is a directed relationship between two use cases that is used to show the behavior of the included in a use case.
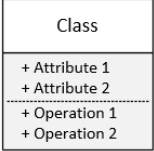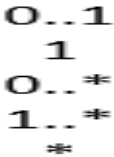
Activity diagram symbols
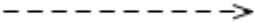
Symbol	Name	Information
●	Initial Status	Initial status shows the initial state of the workflow, meanwhile, the final state display the final state of a workflow.
⬭	Activity	Activity in unified modeling language (UML) is a major task

		that must take place to fulfill an operation contract.
	decision	Decision activity is introduced UML to support conditional in activities. A decision activity is modeled as a diamond on a UML activity diagram.
	Join	A join node joins multiple concurrent flows back into a single outgoing flow.
	Final state	Identify the initial state and the final terminating states.
	Swimlane	A swimlane diagram is a type of flowchart that delineates who does in a process.
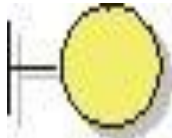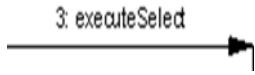
Symbol class diagram

Symbol	Name	Information
Class + Attribute 1 + Attribute 2 + Operation 1 + Operation 2	Class	Class is a type of static structure diagram.
———————	Association	Association is a relationship between classifiers which is used to show that instances of classifiers could be either linked to each other or combined logically or physically some aggregation.
——————▷	Generalization	Generalization is the process of extracting shared characters from two or more classes and combining them into a generalized superclass.
O..1 1 O..* 1..* *	Cardinality	In (UML) cardinality represent by the character "…1" meaning that the first entity class can be associated with an unlimited

		number of instances of a second class.
- - - - - - - - - ->	Dependency	A dependency diagram is a graphical display of all the tasks in a workflow that are required to complete a request.

Symbol sequence diagram

Symbol	Name	Information
	Actor	Actors are the users of a system. When one system is the actor of another system, label the actor system with the actor stereotype.
	Lifeline	A lifeline represents an individual participant in a sequence diagram.
	Boundary	A boundary class is a class to model interaction Between the system's surroundings and its inner working.

	Entity	An entity is a collection of fields and associated database operations.
3: executeSelect	Message	The argument of the message contains the information that is attached to the message.
1: Message2()	Self-Message	A self-massage reflects a new process or method invoked within the calling life-line's operation.
	Control	The Control class represents sequencing, transactions, and control of the other objects.

CHAPTER I

INTRODUCTION

1.1 Background

KM as a discipline has been a focal point of discussion over the past decades. In recent years, the importance of KM has been widely recognized as the foundations of industrialized economies shifted from natural resources to intellectual assets. Successful organizations now understand why they must manage knowledge, develop plans as to how to accomplish this objective and devote time and energy to these efforts. This is because KM has been described as a key driver of organizational performance (Venkitachalam, 2013), and one of the most important resources for the survival and prosperity of organizations (Kamhawi, 2012).

Knowledge sharing KS is part of knowledge management KM, but sometimes researchers use the terms interchangeably (Lee al. 2010). Knowledge sharing is means to an end, but not an end in itself. Knowledge is a critical organizational resource and knowledge sharing can raise the sustainable competitiveness of an organization. Among many means of knowledge-based resources, knowledge sharing can help members and teams to exploit knowledge-based resources, and capitalize on them, which will contribute to the competitiveness of an organization.

To enhance the competitiveness of an organization, competitors needs to have a good system, in this thesis researcher focusing on how to develop a system for student as mentioned earlier, based on the research requirements several similar paper has been reviewed, (Shamitha Reddy and R. Rathna, 2020), The goal is to extract useful information from an unstructured data using the concept of information gathering and secure random algorithms. To develop an enhanced student information management system which helps to solve the drawbacks of existing ERP system. The basic approach attempts to develop a smart phone based application using Android which can be used to make this process easier, secure.

Building an information system is a complex systematic project. The development of CSIMS involves a number of schools and functional departments in charge of student education, management, service and others, it also requires rebuilding the previous working process and designing a new one based on information technology (Anjiang Jin, 2015).

In case of educational institutions, the SMS is known as Student Management System which is capable of storing details of students, enables teachers to assign examinations and dates, checking, publish assessment scores, mark attendances and many other students related data (Tarek Ghomeed, Nawal Abu Abdallah, 2019).

A.S Private High School is located in Afghanistan, it founded on January 1, 2010, the system of the school is still manual, the information about the student, teacher, family, and other staffs saving in a notebook, this system is insecure at the same time very expensive compare to the student management system.

With the old system, the privacy is not safe, especially about the grades, the grades are one of the student's privacy, every student achieves their grades in front of the class by calling the student names, and everyone else can know the grade of each other.

The scheduling system is too hard and it takes a lot of time to note the schedule, every teacher is responsible to write down the schedule on the board, and every student should note it, some students cannot note it, and ask for help.

The main goal is to enhance the performance of A.S Private High School by implementing the student management system. This system has developed based on school requirements. With the student management system. A.S Private High School will have a fast and secure system, every student and teacher have their accounts, teachers and students can check the schedules, the teacher can add grades for students. The student management system handling by the management or (admin) of the school.

The student management system can handle all details about students, teachers, and staff, but in this thesis, researcher have been focused on the

student side, like student registration, make online class, schedule, upload grades for each student. The system has been built in pure PHP computer language, the data saved on MySQL database, researcher used cascade stylesheet (CSS3) which the latest version at the time.

1.2 Identification of Problem

The problem identification derived from the background, the problems are listed as follows:

1. A.S Private High School still uses the manual system, the data about students, teachers, and staff are saving in a notebook.

2. Students have no privacy based on the grading system, everyone knows each other's grades.

3. Teachers cannot share their knowledge properly, because of the less facility.

1.3 Problem formulation

Problem formulation is derived from problem identification, the problem formulation.

1. Nowadays technology is very advanced and useful, how to equip A.S Private High School to have a standard system?

2. How to reduce time consuming, and provide more facilities for students to make study more easy?

3. How to enable the teachers to share their knowledge in more efficient way?

1.4 Limitation of Study

This thesis is focusing on the core problems, for that reason, this research is limited which is as follows:

1. The scope of this study is conducted in A.S Private High School which is located in Afghanistan.

2. Rapid Application Development used to build the system

   Using Unified Modeling Language (UML) to demonstrate our design, the components like Class Diagram, Use Case, Activity Diagram, and Sequence Diagram.

3. The system was developed based on pure PHP, and cascade stylesheet 3 (CSS3) to design our system.

4. The database was created using MySQL.

1.5 Research Objectives

This objective is based on the problem formulation, A. S Private High School expect the student management system, to enhance the school performance.

To build the system first researcher needs to have enough information about the school, and a solid design to create the system based on the design,

and a computer language to write the code, researcher chooses PHP language

to write the code, and MySQL to save the data.

1.6 Benefits of Research

The very first benefit of this thesis to understand more about the student

management system, and how to replace the manual system with the computer

system. The second benefit of this thesis researcher has talk a lot about

knowledge management and management information system, this thesis

would enable you to understand knowledge management with more details.

1.9 Writing System

This Thesis is divided into some chapters. Those chapter are:

CHAPTER I: INTRODUCTION

This chapter contains background research, problem identification and problem statement, scope of work, objectives, thesis benefits, and systematic writing.

CHAPTER II: THEORETICAL FRAMEWORK

This chapter contains theory used in writing this research thesis, including fundamental of system development, information system, Rapid Application Development (RAD) methodology used in this research and a tools researcher used to develop the student management system to control application such as a tool to design the application and a tools to construct the application. In the last, a technique that will be used to test the application.

CHAPTER III: METHODOLOGY

This chapter will explain about the methodology used in the application. Including data collection and method of application development. It also explains the process for data collection and application development

CHAPTER IV: SYSTEM ANALYSIS AND DESIGN

This chapter contains result and discussion about this research. It describes processes in developing student management system at every stage starting from analyzing the current business process and propose a new system process.

After that, designing a propose system process using UML tools starting from use case, activity diagram, sequence diagram, class diagram, and database. Next, constructing the system based on the design that already created, pure PHP, MySQL, CSS3. In the last, testing each of functions within the system whether is it already running supposed to be or not.

CHAPTER V: CLOSING

The summary of the research is based on problem limitation and possibilities of future works in developing this application given in the last chapter.

CHAPTER II

THEORETICAL FRAMEWORK

2.1 Information Management System

The role of Management Information Systems is described and analyzed in light of its capability for decision making and basically refers to a system that uses information in order to ensure apt management of businesses.

Fundamentally, all the facets of MIS run concomitantly in order to ensure overall efficiency of the whole system. Management Information System (MIS) is basically concerned with the process of collecting,

Therefor the management information system helps the organizations to collect, save revise the information. This act would be effective in cost reductions obtaining more data, more discipline through coordination of concepts of each subset as well as quick access of managers to their necessary information (Hossein Hakimpoor1, M. Khairabadi2, 2018).

Start of by defining management, the practice of management has so many facets and variations that capturing its essential elements in a definition is a challenging quest. "Taking everything we have discussed thus far and turning it into a definition of management is a non-trivial task!" (Cole and Kelly 2015, p. 18).

When it comes to defining management, even the Academy of Management does not provide its own definition, but merely refers to an

external online dictionary on its website ("the act or manner of managing; handling, direction, or control"). Some authors even explicitly resign by saying: "management is too complex a concept for one definition to capture accurately" (Hitt et al. 2012).

2.2 Design concepts

A good design starts with a good design concept, trying to solve a problem and concept will lead you and give you the direction for your design.

Design is a primary function for innovation in business and increasingly in government and in other social organizational units including local communities (Thompson, 2015) has been engaged with different aspect of sustainability discourse and practice sporadically since mid-twentieth.

The concept you choose will lead you in color, font types the structure how to place elements, where the title should be, what should be to font size, every design decision you make will fall you back on your design concept.

The design you build will become a framework for all your design decision. There are vary ways to think of design, but the most efficient way to think the design concept would be these two ways, verbal and visual.

✓ Verbal: verbal is the part of your concept that describe the site

✓ Visual: visual is part your concept, this could be your real design, like image, schema, color.

2.3 Concept of Information System

2.3.1   Information

According to (Beaver, 2012), the term is indeed vague and still an important part of the modern linguistic landscape. We are live in the information age and we are in touch with information every day, we carry information with us nowadays, we are having more information than ten years back.

The expression: philosophy of information was coined in the 1990s by the abovementioned Luciano Floridi, who elaborated a unified and coherent, conceptual frame for the whole. (Floridi, 2010) identified five different kinds of information: *mathematical, semantic, physical, biological, and economic, but this list is not definitive.*

According to Floridi, four kinds of mutually compatible phenomena are commonly referred to as "information":

- Information about something (e.g. a train timetable)

- Information as something (e.g. DNA, or fingerprints)

- Information for something (e.g. algorithms or instructions)

- Information in something (e.g. a pattern or a constraint)

2.3.2 System

The word system is derived from the Greek word "system" which means the organized relationship among the functioning units. And SEBoK (2016) claims that *"any particular identification of a system is a human construct used to help make better sense of a set of things and to share that understanding with others if needed."*

2.3.3 Understanding of Information System

Information systems are among the foremost relevant components of the present business environment. they provide great opportunities for fulfillment for the companies; as long as they need the potential of collecting, processing, distributing and sharing data in an integrated and timely manner. Furthermore, they assist narrow geographical gaps, allowing employees to be more efficient, which is reflected in an improvement of the processes, administration, and therefore the management of data, thus leading to a positive impact on the productivity and competitiveness of the businesses (Ynzunza & Izar, 2011).

This investigation has the objective of determining the influence of the success of the IS on the organizational results (OR). For a company, the OR allow measuring its operational efficiency. To evaluate the success of the IS has proven to be a useful framework to deduce its success or effectiveness (Petter, DeLone, & McLean, 2013) by recognizing that the quality dimensions of the IS are a distinctive characteristic of the perception of the user in the use

of new technologies (Solano, García, & Bernal, 2014); thus, achieving a positive impact on the individual and organizational performance (DeLone & McLean, 2013).

On the other hand, the Information system contains information about significant people, places, and things within the organization or the environment surrounding it. By information, we mean data that are shaped into a form that's meaningful and useful to the citizenry. Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they need to be organized and arranged into a form that folks can understand and use.

2.3.4   Components of the information system

Information systems (IS) involve a variety of information technologies (IT) such as computers, software, databases, communication systems, the Internet, mobile devices and much more, to perform specific tasks, interact with and inform various actors in different organizational or social contexts (Sebastian K Boell, Dubravka Cecez-Kecmanovic, 2015). Information systems are composed of five components which is as follows:

2.3.4.1 Computer hardware

Computer hardware: Physical equipment used for input, output, and processing, what are hardware or physical components used it depends upon the type and size of the companies.

2.3.4.2 Computer software

Computer software: The software control and coordinate the hardware components, it is used for analyzing and processing data. These programs involved a set of instructions used for processing information.

Software divided into three types:

2.3.4.3 Database

Database: Dates are the facts and figures that are unorganized that are not later processed to generate information. We are using software for organizing and work for users, controlling the physical storage of media and virtual resources.

Network: Networks concern to telecommunication networks like the internet, extranet,

2.3.4.4 Network

Networks refer to the telecommunication networks like the intranet, extranet and the internet. These means facilitate the current of information in the organization.

2.3.4.5 Human Resources

Human Resources: It is related to the human-power required to launch the system, people are the end-user of the information system, end-user use information produced for their purpose.

a. System Software

b. Application Software

c. Procedures

These things brought so many facilities to the societies.

2.4 Concept of Knowledge management

2.4.1 Understanding of knowledge

Knowledge is not a simple idea to discuss, to know what knowledge is, it's significant to know how it relates to data and knowledge. generally, past literature has identified the distinctions between data, information, and knowledge.

All of us hear and use the word "knowledge", but do we actually "know" what "knowledge" is? Can you define "knowledge"? Are you thinking of a "statement" or a "sentence" to describe "knowledge"? However, did you know that According to (Abhishek Agarwal 2017)"a statement is the act of uttering, writing, or otherwise expressing a declarative sentence; a sentence is the form of words which is uttered or written when a statement is made"

Knowledge on the opposed hand may be a more difficult concept to define. defined it as information that's organized, synthesized, or summarized to reinforce comprehension, awareness, or understanding. Similarly, defined knowledge as information combined with experience, context, interpretation, reflection, intuition, and creativity. In short, knowledge far and away is more

comprehensive and more valuable compared to information and data. it's mainly attached to the individual who owns and uses it and manifests itself in many various ways. For example, we will see knowledge at work by the way people make decisions, by a particularly peculiar way people do their jobs, and through people's creativity in completing their work.

2.4.2 Types of knowledge

Knowledge in an organization is often classified into two types: explicit and tacit (Abhishek Agarwal 2017)

2.4.2.1 Explicit knowledge: The explicit knowledge about such regularities is what essentially enables us to adapt to an ever-changing environment. In human studies, sleep supported processes such as pattern detection, abstraction, generalization and the development of explicit knowledge about regularities in materials learnt before sleep (Lewis and Durrant, 2011; Stickgold and Walker, 2013; Landmann et al., 2014).

As we are living in an advanced world explicit knowledge can be captured and written down in documents or databases. A good example could be proper instruction, making good procedures.

2.4.2.2 Tacit knowledge: Tacit is the knowledge that people carry in their heads. It is much less concrete than explicit knowledge. It is more of an unspoken understanding about something, a knowledge that is more difficult

to write down in a document or a database (Lewis and Durrant, 2011; Stickgold and Walker, 2013; Landmann et al., 2014).

2.4.3   Difference of tacit and explicit

Knowledge could also be explicit or tacit. Explicit knowledge is stored in documents and other storage systems. It is often shared and expressed. Tacit knowledge on the opposite hand is stored within the human mind and includes intellect, experience, thoughts, intuitions, for more see **table 1.1**

It enhances experience and efforts. it's hard to formalize, communicate, record, and share such knowledge. The tacit knowledge helps a corporation to capitalize and attain an advantage over the others. the specific and therefore the tacit knowledge complement one another and add value to the organization's performance (Haradhan Kumar Mohajan, 2017).

Table 1.1 Explicit and Tacit

Use of the explicit and tacit knowledge	
Explicit	Tacit
Objective, rational, technical	Subjective, cognitive, experiential learning
Structured	Personal
Fixed content	Context sensitive/specific
Context independent	Dynamically created
Easy to share	Has high value
Exists in high volumes	Hard to transfer/teach/learn

2.4.4   Knowledge conversion

A mechanism through which the information is converted into knowledge is the learning process; therefore, higher education institutions play an important role in the education of undergraduate students (Eid and Nuhu 2011).

To make your employee or student competitive as a professional, it is important to provide the same industry while training like university, school, or a place where employee can train well. Knowledge management has been considered improve professionalism in the areas or departments of software engineering used as a strategy that provides a simple way to learn in depth about organizations of software

They showed that tacit knowledge is explicated or codified based on the result of the knowledge conversion spiral, which is derived from the interactions between explicit and tacit knowledge.

The four key modes of knowledge conversion are as follows:

1. Socialization is the process of converting tacit knowledge into new tacit knowledge.

2. Externalization is the process of articulating tacit knowledge into explicit knowledge.

3. The combination is the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge.

4. Internalization is the process of embodying explicit knowledge into tacit knowledge.
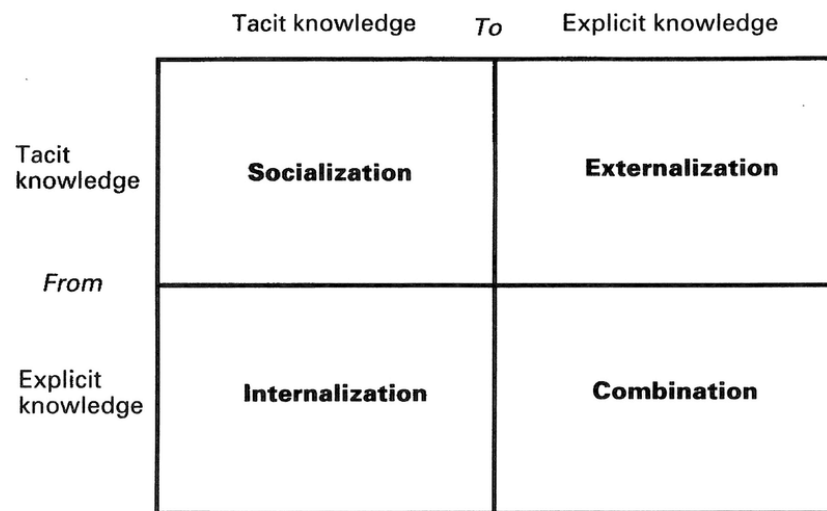
Figure: 2. 1 Knowledge conversion (Eid and Nuhu 2011)

2.4.4.1   Form tacit to tacit (socialization)

Organizational knowledge conversion is initially triggered through socialization. Socialization is the originating shared space that converts individuals' tacit knowledge gained through formal or informal observation, imitation, and work-based experiences to collective tacit knowledge, emerging as shared mental models of work norms and culture (Ani Wahyu Rachmawati, 2017).

This initial knowledge creation supports that the primary root of organizational knowledge is always individual employees. According to the SECI model, which was created by *Nonaka* (socialization, externalization,

combination, and internalization), tacit to tacit knowledge is best shared through the socialization process. Although he mentions the process of socialization, he fails to explain the process in detail or the environment conducive for socialization.

2.4.4.2 Form explicit to explicit (Internalization)

Explicit knowledge is codified information and data that are written down and may be easily understood and decoded by the recipient. explicit knowledge which is knowledge that is normally developed from various sources of information like books, journals, internet (Marvel & Droege, 2010). Explicit knowledge is typically documented as words, numbers, and codes; and it is often printed, transferred, or stored as media. Different sorts of explicit knowledge include; manuals, copyrights, patents, scientific formulas, musical notes, and mathematical expressions.

2.4.4.3 Form Tacit to explicit (Combination)

Tacit knowledge is difficult to write down, visualize or transfer from one person to another (Magnier-Watanabe et al. 2011). people use different views to have faith in issues and devise solutions. They share information and cluster physical and intellectual assets in new and artistic ways. Comparing tacit and explicit types of knowledge is a way to think, not to point out differences.

2.4.5   Understand of Knowledge Management

KM is concerning creating proper knowledge and provide for the right people. It's concerning making sure that a corporation will learn, which it'll be able to retrieve and use its data assets in current applications as they're required.

KM is seen as a strategy that creates, acquires, transfers, consolidates, shares and enhances the use of knowledge in order to improve organizational performance and survival in a business environment.

Serenko & Dumay (2015) categorized knowledge management discipline "as at the pre-science stage with progression towards normal science". Moreover, they produced a list of scientific documents on the topic of knowledge management. They called the list as citation classics since they used citations count and consequently a cut-off citation cut as the inclusive criteria. In their opinion, citation classics compose "the core of the knowledge management body of knowledge" (Serenko & Dumay, 2015).

According to Heisig (2015), there is absolutely no doubt that the knowledge management has multidisciplinary character. As a research field, it includes many topics and disciplines. Today's environment for organizations is intensively competitive and therefore innovation has become indispensable counterpart of knowledge management (Jiao et al., 2014, Babnik, Trunk Sirca & Dermol, 2014, Natek & Lesjak, 2011; Arzensek, Kosmrlj & Trunk Sirca, 2014).

The role of sharing knowledge a tacit knowledge as a resources for innovation is among the most important (Babnik & Trunk Sirca, 2014, Natek & Lesjak, 2013), and knowledge management describes both a business practice and developing theoretical field of study, the wish to share knowledge is something so natural that it seems odd that knowledge management has emerged as something newly designed by corporation.

2.4.6   Knowledge management activities

Many kinds of literature have identified knowledge identification, knowledge acquisition, knowledge application, knowledge sharing, knowledge development, knowledge creation, knowledge preservation, and knowledge measurement as knowledge management activities in an organization (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

2.4.6.1 Knowledge Identification

An enterprise should public its business strategies and objective. The knowledge needs to be identified to meet theses all the above goals. The distinction between what the enterprise requires and what it currently has is what is called is the knowledge gap (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

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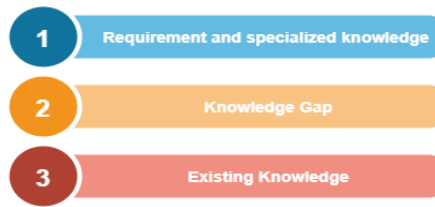
Figure: 2. 2 Schema of Individual Knowledge Needs

The above figure identifies the knowledge gap of individual employees.

2.4.6.2 Knowledge Acquisition

After recognizing the knowledge gap the next action is to close the knowledge gap by applying knowledge acquisition or knowledge import. Organization import a solid part of their knowledge from outside sources. A good relationship with clients, suppliers, and other partners, it's significant to provide knowledge for your company through other people (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

Knowledge acquisition is simply the process of achieving knowledge that is available somewhere, for an organization this could be very easy to achieve the knowledge through an existing document.

2.4.6.3 Knowledge Application

After achieving knowledge, knowledge should be applied in a company or organization, knowledge application means making knowledge profoundly active and relevant for an organization in creating values. Knowledge application deals with the employees continually apply their knowledge to their

working situation (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din 2013).

2.4.6.4 Knowledge sharing

After applying the knowledge in an organization, the next step is knowledge sharing. The sharing and distribution of knowledge within a corporation are an important precondition for turning isolated information or experiences into something which the entire organization can use. the foremost important step is to research the transition of data from the individual to a group or organization. In a knowledge-based economy, knowledge itself isn't power, when knowledge is shared, it becomes power (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

2.4.6.5 Knowledge Development

Knowledge development is a structure that complements knowledge acquisition. It concentrates on generating new skills, new technologies, better ideas, and effective process. Knowledge development covers all management efforts and aimed at generating capabilities that are not yet implemented in the organization (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

2.4.6.6 Knowledge Creation

Knowledge creation is the key focus on creating new knowledge and new technology or innovating the current knowledge of the companies, suggested

a knowledge management model in terms of knowledge creation perspectives based on four types of process knowledge conversions (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013). The spiral type conversions between explicit knowledge and tacit knowledge, for instance, the SECI model are as follows:

➢ from tacit knowledge to tacit knowledge (Socialization)

➢ from tacit knowledge to explicit knowledge (Externalization)

➢ from explicit knowledge to explicit knowledge (Combination)

➢ from explicit knowledge to tacit knowledge (Internalization)

2.4.6.7 Knowledge preservation

Preservation is the activity of keeping something from loss or danger. The selective of maintaining information, document, and experience require management, the process of selecting, storing, and regularly updating knowledge of potential future value must be carefully structured (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

2.4.6.8 Knowledge Measurement

The next stage of knowledge management is the activity, this is to measure the impact and effect after implementing knowledge management in an organization such as customer satisfaction, efficiency productivity, quality, and other activity. These form the backbone of knowledge management

processes as they outline all aspects involved in the actual management of knowledge (Mum Wai Yip, a, Alex Hou Hong Ng, Sabariyah binti Din, 2013).

2.4.7 Benefits of knowledge management

Knowledge is considered as the organizational power (Skyrme, 2011) and it is the real asset of organizations when it comes to surviving in this competitive business environment. The power and benefits of knowledge and its management can be understood through individual and organizational learning processes.

On the other hand, knowledge management is an efficient method of capturing and using business collective information to make value. The potential blessings of effective understanding control are full-size as with most processes, there are certain challenges to consider. Some of the benefits of knowledge management are:

- Improved organizational agility

- Better and faster decision making

- Quicker problem solving

- Increased rate of innovation

- Supported employee growth and development

- Sharing of specialist expertise

- Better communication

- Improved business process

Indeed, there are lots of other benefits to knowledge management but these are the core benefits which we achieve in the very first stage, and a good knowledge management system will make it very easy to find and reuse relevant information and resources around our business. By implementing the following our business would be improved:

- create better products and services

- develop better strategies

- improve profitability

- reuse existing skills and expertise

- increase operational efficiency and staff productivity

- recognize market trends early and gain an advantage over your rivals

- benchmark against your competitors

- make the most of your collective intellectual capital

The resourceful collaboration will bring greater views, numerous reviews, and sundry stories to the procedure of decision-making, helping your enterprise to make decisions based on collective knowledge and expertise.

2.4.8   Understanding knowledge management system

Organizational management main objective is to ensure effective and efficient use of its diverse resources such as labor, capital, materials, energy and information in their quest to achieve competitiveness as well as to increase productivity (Fatemeh Torabia, Jamal El-Denb, 2017). In a nutshell knowledge

management system would not have differences from other information systems, instead of content and activities by users. The knowledge management system would consist of hardware, software, people, and organization environment around it.

For a better understanding of the knowledge management system first, we should understand the characteristics of KMS, **table 1.2**

Knowledge management system comprised of goal, processes, large platform, advanced knowledge, knowledge services, knowledge instrument, specific knowledge, and participants.

Table 1.2 Characteristics of KMS

KMS Characteristics Component	Explanation of Component
Goal	• Bring knowledge from the past to bear on present activities, thus resulting in increasing levels of organizational effectiveness • As the technological part of the KM initiative that also comprises person-oriented and organizational instruments targeted at improving the productivity of knowledge work.
Processes	• Developed to support and improve knowledge-intensive task, processes, or projects. • Supported knowledge processes such as knowledge creation, organization,

	storage, retrieval, transfer, refinement, and packaging, (re) use, revision, and feedback, also called the knowledge life cycle, ultimately to support knowledge work.
Comprehensive Platform	• KMS is not an application system targeted at a single KM initiative, but a platform that can be used either as IT to support knowledge processes or integrating base system and repository in which KM application systems are built. • There are two platform categories, the first user-centric approach with a focus on processes, and IT centric approach which focuses on the base system to capture and distribute knowledge.
Advanced Knowledge Services	• KMS are ICT platform consist of several integrated services • Basic services such as collaboration, workflow management, document and content management, visualization, search and retrieval.

Knowledge Instruments	• KMS are applied in a large number application area • KMS especially support KM instruments • KMS offers targeted combination and integration of knowledge services that together foster one or more KM instruments
Specifics of Knowledge	• KMS helps to assimilate access to sources of knowledge, and with the help of shared context, increase the breadth of knowledge sharing between persons rather than storing knowledge itself
Participants	• Users play roles of active, involved participants in the knowledge network forested by KMS

2.5 Human Resources Management (HRM)

For more than a hundred years now human resources as a discipline and preparation in the management of human beings in an organization have evolved and developed into exceptional areas. In other hand the Human Resource plays a very energetic role in attaining the organization's goals and keep a competitive advantage (Imran et al., 2014, Koser et al., 2018).

The success of a company depends on several elements, but the important element is employee, which influence the company performance. The

employee plays as human resources of the organizations and integral role in gaining innovation and high-quality products and services.

Human resource management is defined as a strategic and clear approach to the management of the organization's most valued assets, the people working there who individually and collectively contribute to the achievement of its goal. With this definition, we can understand that human resources management or basically human resources is a function in organizations designed to maximize employee activities, performance in service of their organization's strategic goal on policies and systems.

Human resources departments and units in organizations are responsible for the various number of activities, including employee hiring, training and development, performance, assessment, and rewarding like managing pay and benefits systems.

2.6 Method of data collecting

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes (Syed Muhammad Sajjad Kabir, 2016).

2.6.1 Observation

Observation is a method of data collection in which researchers observe within specific research. These observations are made by looking at A.S

Private High School, which is located in Afghanistan / Kabul / Darul Aman / postcode 1004. On another hand, it provides a chance to learn things that students and student families may unwilling to discuss in an interview. This observation took place from January 2020 to August 2020.

2.7 Rapid application development method (RAD)

Rapid application development (RAD) looks to become the first topical with the publication for a text by James Martin with the same title as Martin.

The rapid application development method uses a deep iterative method where the system is constructed at the beginning of the development stage with goal of defining user requirements. Rapid application development is used during the development, testing, maintenance, integration phase and gap analysis is conducted to determine the feasibility of the project. (Sandy Kosasi, 2015).

2.7.1 Key benefits of RAD

The RAD methodology presents many benefits when used in the right situation. Projects implemented using RAD benefit from faster speed and higher quality because users are involved throughout the process (Kividi Kikama Jr, Lewis University, 2010). Here are the key benefits of RAD:

1. Improve flexibility and adaptability as developers can make adjustments quickly during the development process.

2. Fast iteration, decrease development time and speeds up delivery.

3. Encouragement of code reuse, which means less manual coding, less room for error, and shorter testing times.

4. Enhance client satisfaction due to high-level collection and coordination between stakeholders (developers, clients, and end-users).

5. Fewer surprises as, unlike the Waterfall method, RAD includes integrations early on in the software development process.

2.7.2   Phase of RAD

The RAD model has the following phase (Kividi Kikama Jr, Lewis University, 2010):

2.7.2.1 Requirement Planning Phase

This is the stage where the objectives, functionality, and scope are established. In this step the development team meets to develop a high level list of initial requirements as well as determine the project scope. At the conclusion of this step the development team will have a clearer picture of what information is generated, who generates it, and who process

2.7.2.2 Stage User Design

In this step the development team which is comprised of the main stakeholders meets to plan how the essential parts of the system should work. The end result of this step is a design document depicting layouts of the system as well as business rules, test plans.

2.7.2.3 Construction Phase

In this step the prototype is converted into a functional application. At this stage actual coding occurs, the application developers add the functionalities to the prototype. This is done in an iterative cycles of development, testing, requirements refining, and development again, until the application is complete

2.7.2.4 Cutover Phase

In this stage the final user testing and training is done and decisions are made on the publication of the application system. This step involves a review of the constructed system by the stakeholders to determine whether it meets their expectations. Features that meet expectations are sent for publication whereas for features that fall short of expectations are reentered into an iterative design loop.

2.7.3   Strengths and weakness of RAD

RAD has advantages and disadvantages as a methodology application development. Some advantages of using the method RAD is as follows (Shalahuddin and Rosa, 2011):

1. The delivery process is easier this is because of the process of making more uses script pieces

2. Easy to observe because it uses a prototype model, so users understand more about the system being developed.

3. More flexible because developers can do the design process repeat at the same time

4. User involvement is increasing because it is apart from the team as a whole.

5. Speed up overall system development time because it tends to ignore quality.

6. A more standard and comfortable appearance with help *supporting software.*

2.8 SDLC (System Development Life Cycle)

2.8.1 Definition SDLC

The systems development life cycle is an academic model used in project organization that explains the phases involved in an information system development project, from an initial possibility study over maintenance of the completed application. Software development life cycle could be a technique by that the computer code is developed during a systematic manner and which will increase the likelihood of finishing the computer code project inside the time point in time and maintaining the standard of the wares as per the quality.

System development life cycle (SDLC) is a type of model that could play a critical role in the development of complex systems Building an appropriate SDLC is difficult for a specific type of information system (IS) design since it involves and requires careful preparation and administration to guarantee the standard and the quality of an end design that delivers a robust, effective, and efficient system that ensures what it is supposed to do (Mustaquim, M., Nyström, T. 2015).

2.8.2 SDLC Phases Model

Software Development Life Cycle provides sequence of operations for software developers to develop the software in a manner such that it is completed within deadlines and quality of the product of software is maintained as per the standards laid down by the developers (K. Sunil Manohar Reddy, and V. Vinay Kumar, 2019)

There are five common phase in SDLC:

1. Understanding the problem (through requirements gathering)

2. Deciding a plan for a solution (Design)

3. Coding the planned solution

4. Testing the actual program

5. Deployment & maintenance of the product
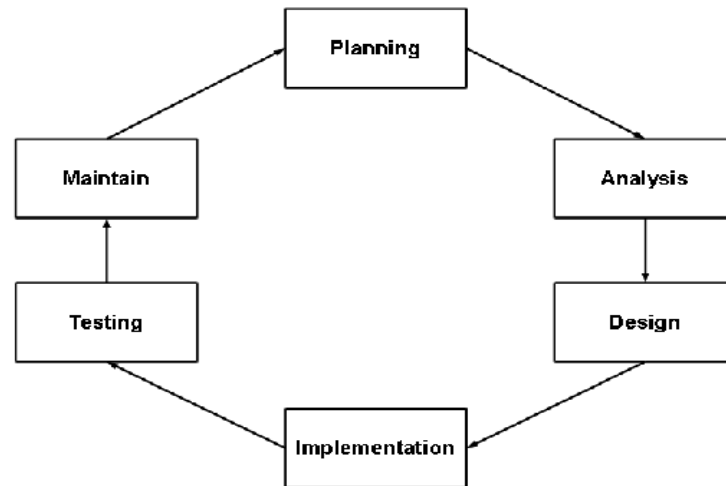
Figure: 2. 3 SDLC Phases Model

On the other hand, activities performed during software development, some activities are performed after the main development is done, sometime there will be an installation stage which is connecting with actually installing the system on the client's computer systems and then testing it.

2.9 Prototyping

2.9.1 Understanding of Prototyping

Rapid Application Development (RAD) was started by using the concepts of rapid prototyping approach that gather the essential features of a developed system by using prototype approach. Intentionally incomplete; to be modified, supplemented or supplanted is the most appropriate definition of a prototype (Fakeeha Fatima, Maryam Javed, Fatima Amjad, Usman Ghanni Khan, 2018).

The goal is to build a feature light version of the finished product as of concept for the client, but more importantly, severs as a talking point a tool for clarifying requirements.
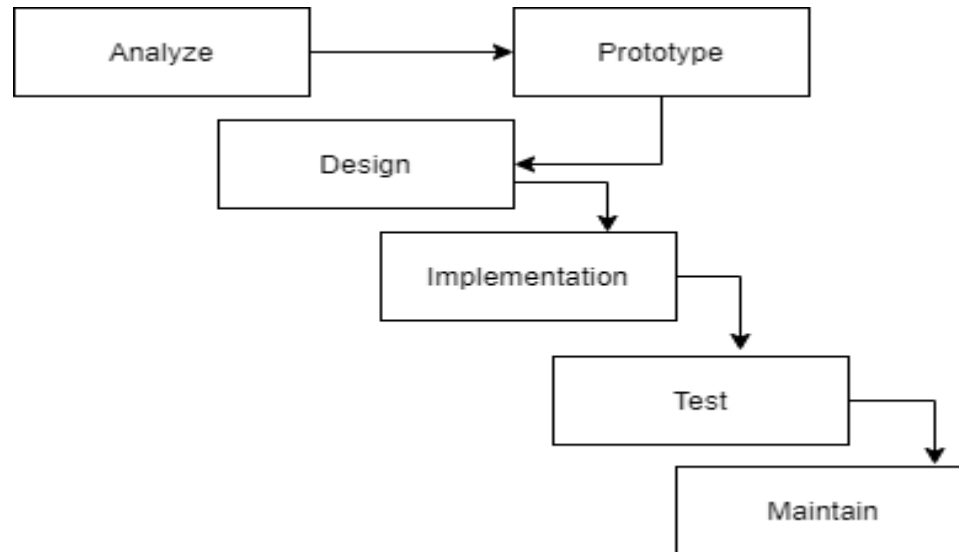
Figure: 2. 4 Prototype model process

On the other hand, the prototyping model is a technique for quickly building a function but a complete model of the information system. There is various type of prototypes all of them intend to decrease the risk by building a quick and dirty replacement of a mockup of the intended system.

2.9.2   Advantages of prototype

The advantages of prototyping are (Azhar Susanto; Meiryani, 2019):

1. There is good communication between the developer and the customer.

2. Developers can work better in determining customer needs.

3. Customers play an active role in system development.

4. Save more time in system development.

5. Application becomes easier because the user knows what is expected

2.10   System Testing

2.10.1   Black-box testing

Software testing is the most often used technique for verifying and validating the quality of software. Software testing is the procedure of executing a program or system with the intent of finding faults. It is measured to be labor-intensive and expensive, which accounts for > 50 % of the total cost of software development. Software testing is a significant activity of the software development life cycle (SDLC).

It helps in developing the self-confidence of a developer that a program does what it is intended to do so. In other words, we can say it's a process of executing a program with intends to find errors (Biswal et al. 2010). In the language of Verification and Validation (V&V), black-box testing is often used for validation (i.e. are we building the right software?), and white box testing is often used for verification (i.e. are we building the software right?). This study emphasizes the need to investigate various testing techniques in the software testing field, we have conducted a literature review to achieve reviews from state-of-art.

2.10.2   White-box testing

White Box Testing is a system analysis testing to identify the differences between system requirements with the developed or existing system (Muhammad Miftakhul Syaikhuddin, Choirul Anam, Ade Rizki Rinaldi M El Bahar, 2018).

It is used for fixing code, discovery random typographical errors, and discovery incorrect programming norms. White-box testing is done at low-level design and implementable code. It can be applied at all levels of system development especially Unit, system, and integration testing. White box testing can be used for other development artifacts like requirements analysis, designing, and test cases.

2.11   Unified Modeling Language (UML)

Unified Modeling Language (UML) is a standardized general-purpose modeling language in the field of object-oriented software engineering. UML includes a set of graphic notation techniques to create visual models of object-oriented software systems (Bharath Padmanabhan, 2018).

UML is not only a visual programming language, but can also be directly connected to various languages programming, such as JAVA, C ++, Visual Basic, or even connected directly into an object-oriented database. The models we used in this thesis as follows:

- Use Case Diagram

- Activity Diagram

- Class Diagram

- Sequence Diagram

2.11.1 Use case diagram

Describes the functionality provided by a system in terms of actors, their goals represented as use cases, and any dependencies among those use cases (Bharath Padmanabhan, 2018).
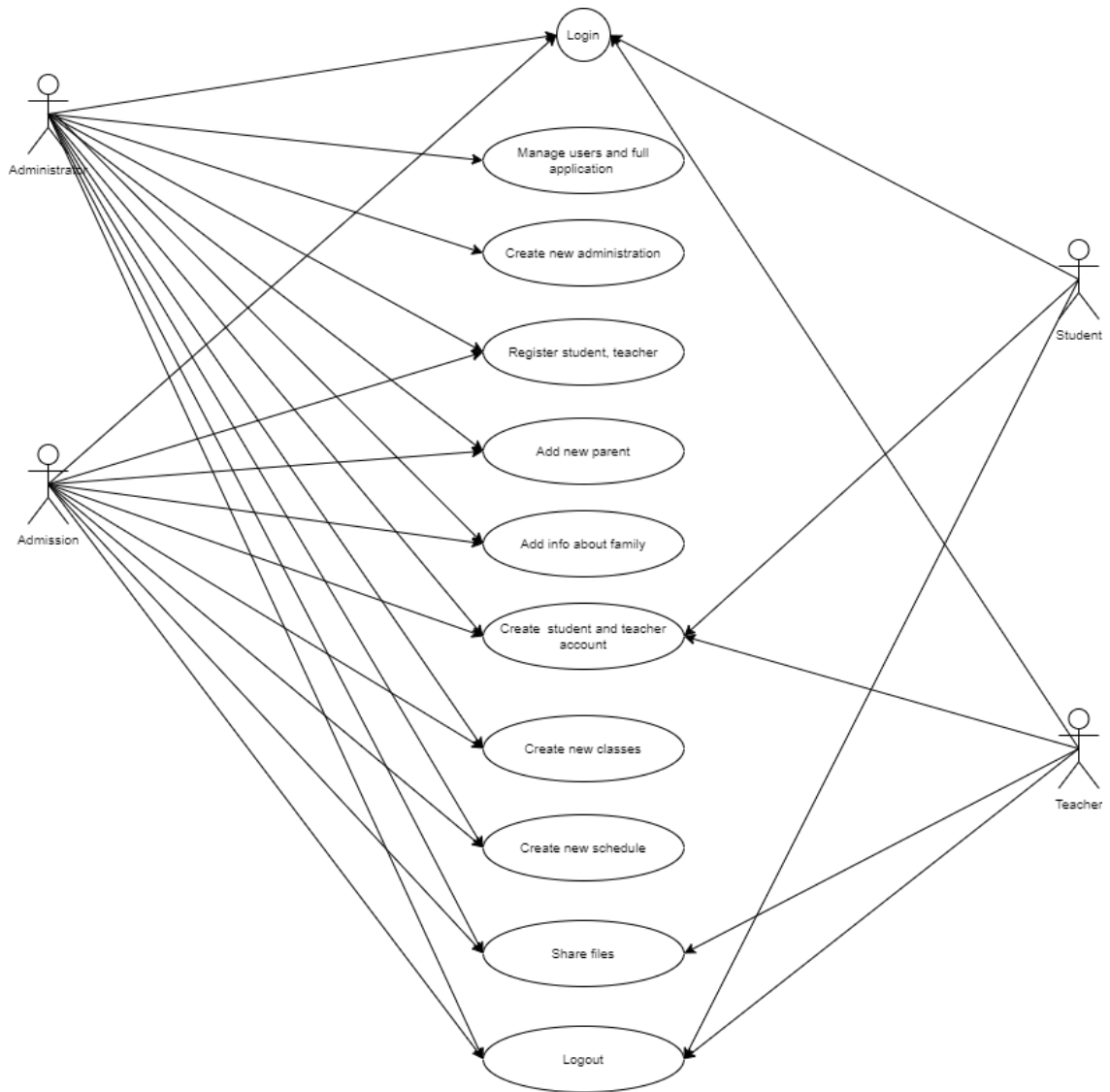
Figure: 2. 5 Use Case Diagram

Table: 2. 1 Properties of a use case

Property	Definition
Actor	Party who obtains the observable result of the value of the use case, also known as the primary actor. An actor can be a person or another system. A use case can have

	supporting actors, i.e., other parties who contribute toward the execution of the process defined by the use case for the ultimate delivery of the service.
Association	An association is a relationship between an actor and a business use case
Generalizations	A relationship between actors to support the re-use of common properties.
Dependencies	Several dependency types between use cases are defined in UML. In particular, extend and include. Extend is used to include optional behavior from an extending use case in an extended use case.

2.11 2   Activity Diagram

UML activity diagram explains the successive or parallel control flow among activities. The activity diagram can be used to modal the dynamic parts of a group of objects or the control flow of and operation.

Describes the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control (Bharath Padmanabhan, 2018).
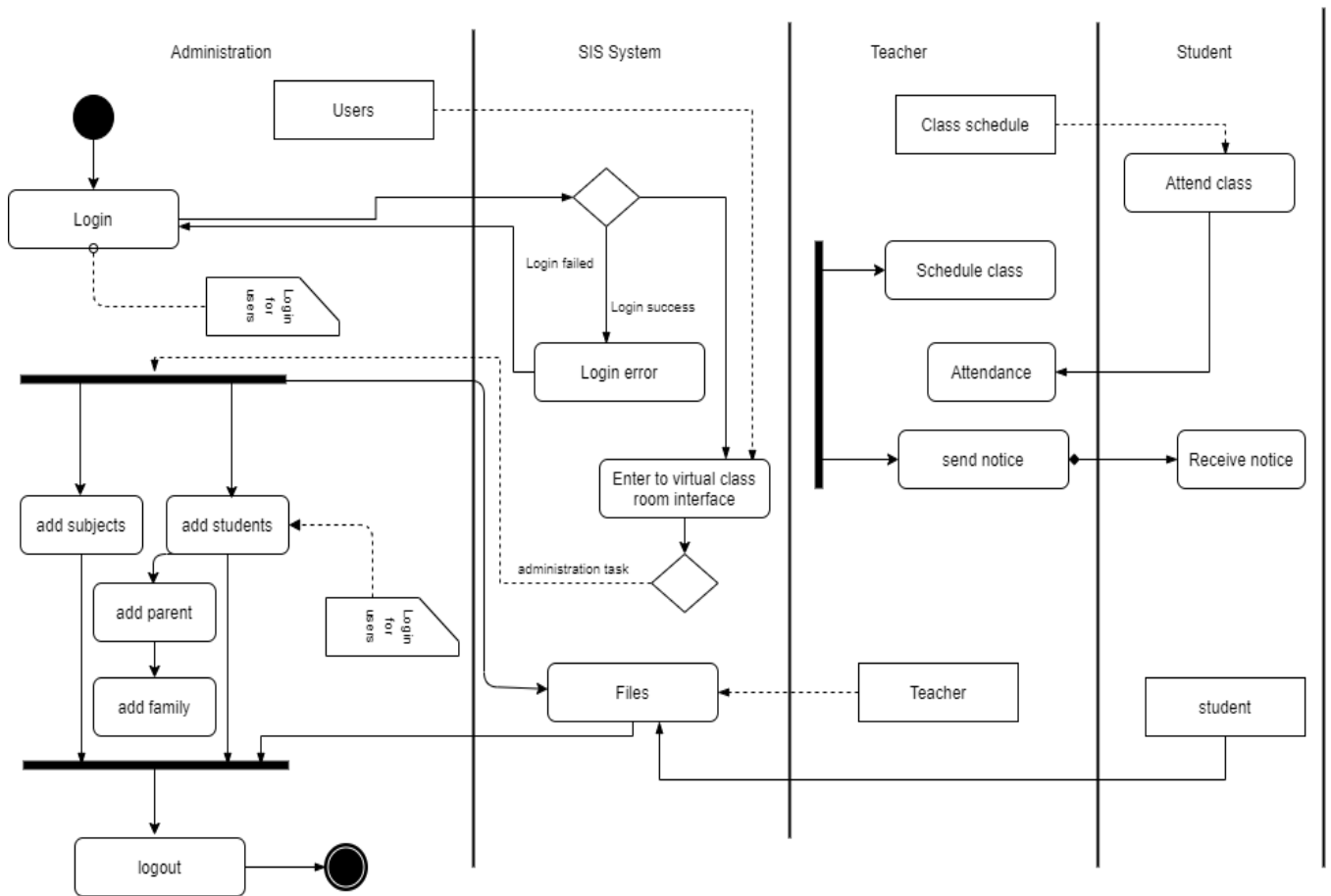
Figure: 2. 6 Manage users and full application

2.11.3 Class Diagram

Describes the structure of a system by showing the system's classes, their attributes, and the relationships among the classes (Bharath Padmanabhan, 2018). Classes are often further classified in terms of generalizations. Syntactically, a UML class diagram may be a collection of those class constructs. during this section, we offer a particular description for the syntactic structure of sophistication constructs in UML like class, association,

association class, and generalization and therefore the static semantics of those class constructs. Based on this description, class diagrams are formally described.
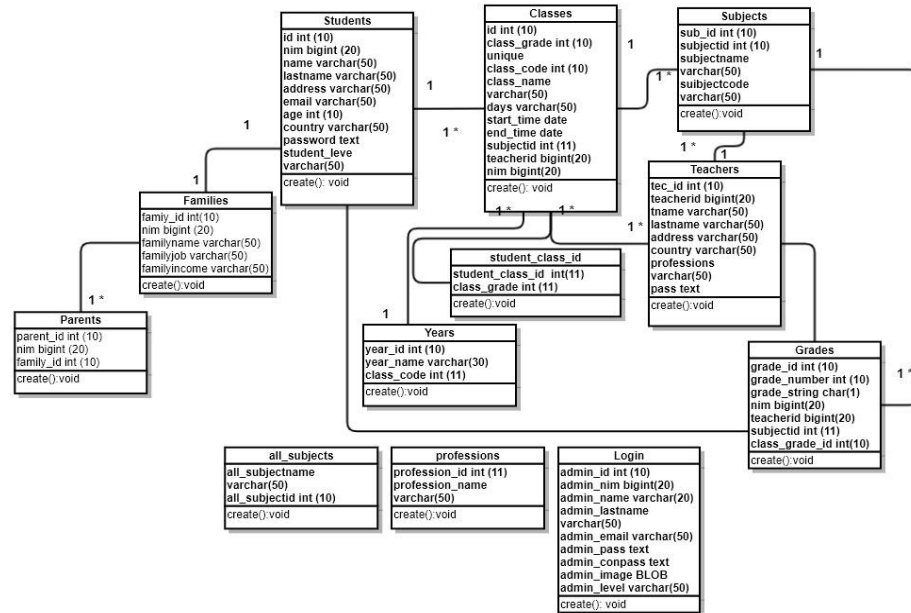
Figure: 2. 7 Class Diagram

2.11.4   Sequence Diagram

Shows how objects communicate with each other in terms of a sequence of messages. Also indicates the lifespans of objects relative to those messages (Bharath Padmanabhan, 2018). Therefore, for describing sequence diagrams, objects must be known involved in a use case and its methods the class instantiated into that object.
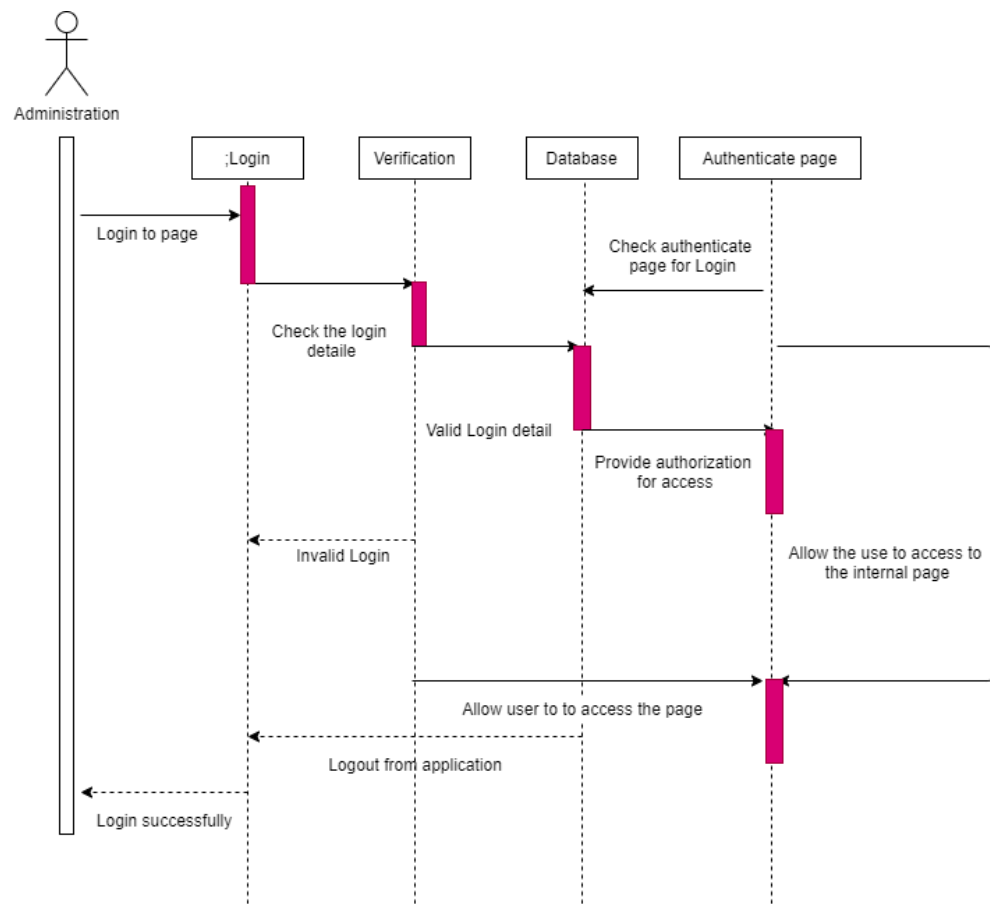
Figure: 2. 8 Administration Sequence diagram
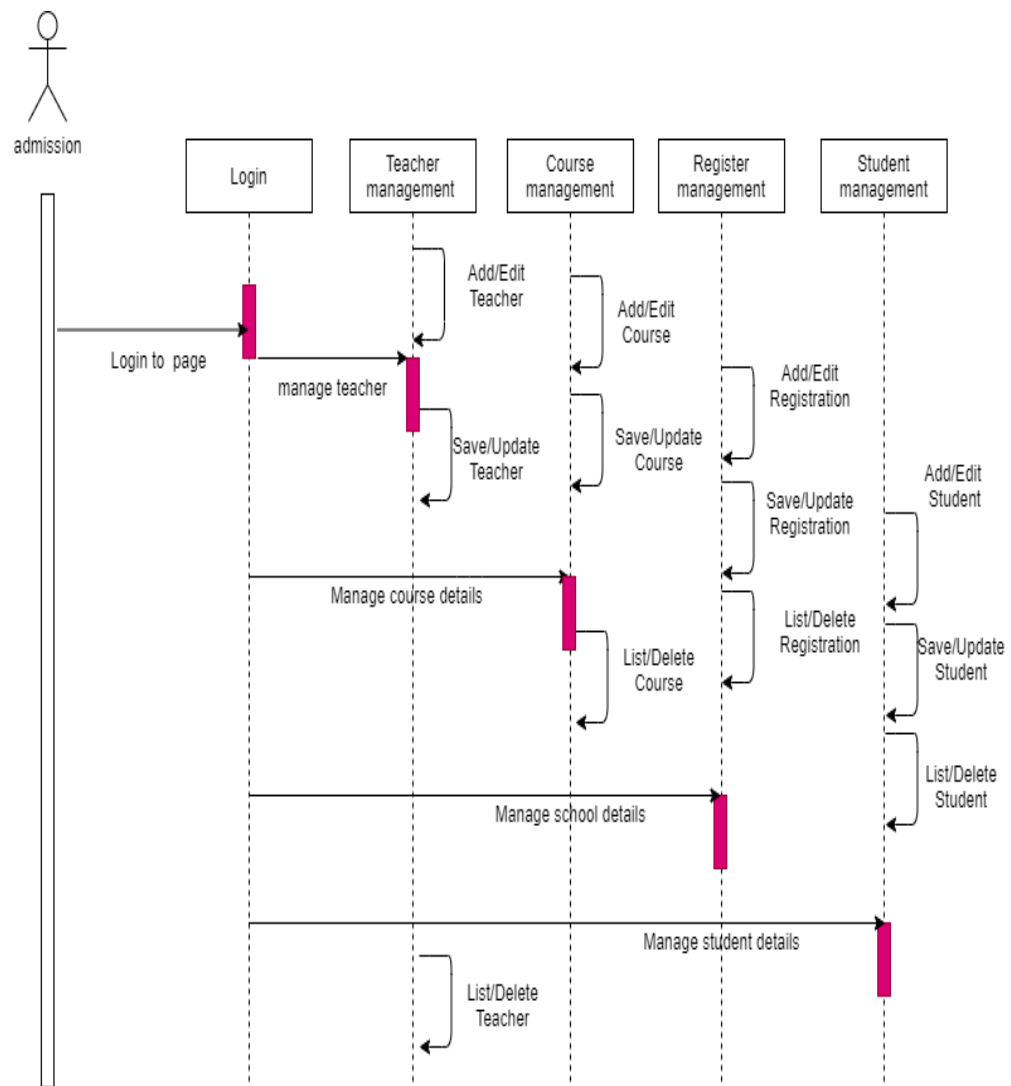
Figure: 2. 9 Admission Sequence Diagram
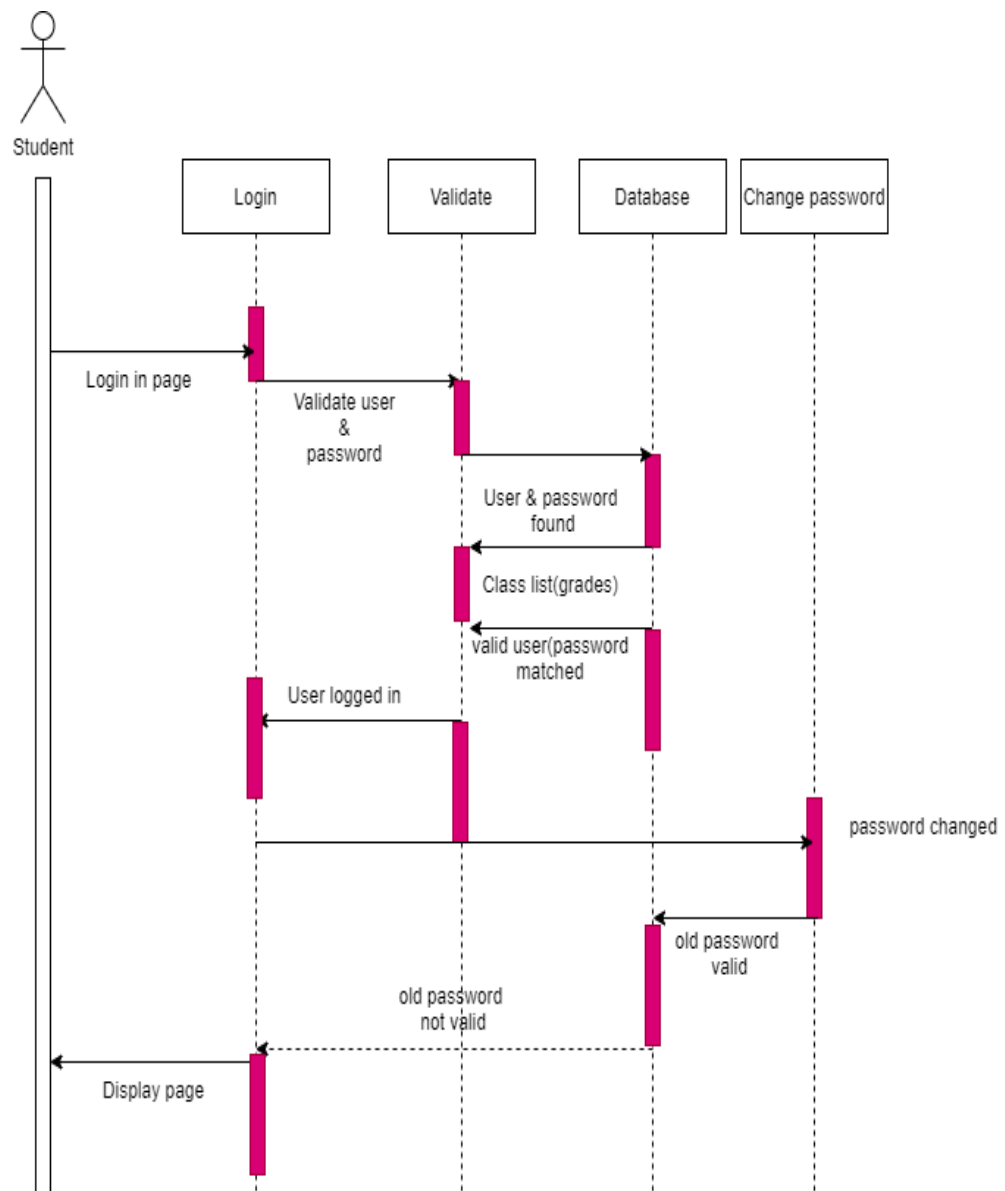
Figure: 2. 10 Student Sequence Diagram
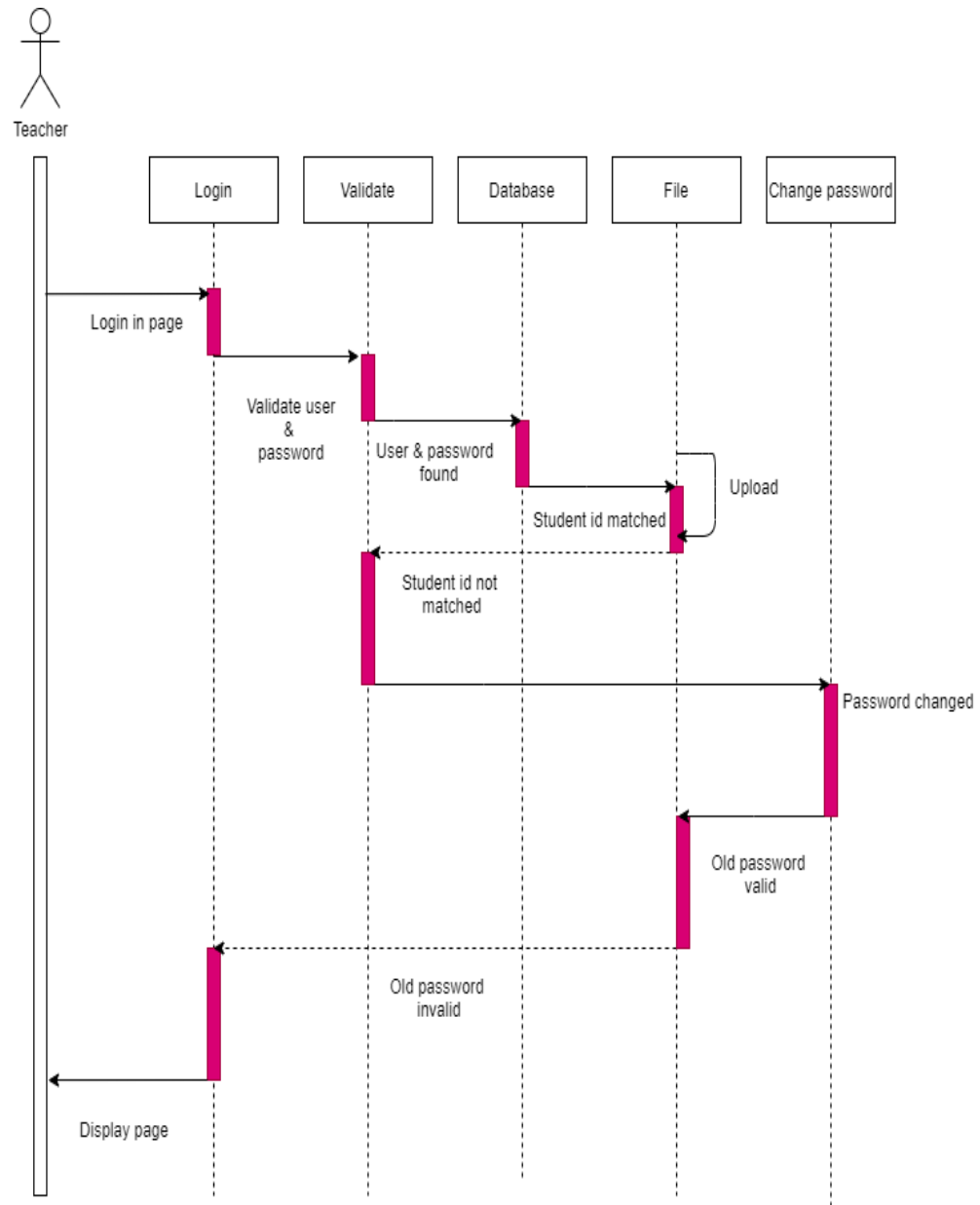
Figure: 2. 11 Teacher Sequence Diagram

2.12   Database Concepts

2.12.1   Understanding of Database

A database is a tool for collecting and organizing information. A computerized database management system (DBMS), such as Access, enables you to easily collect large volumes of data organized into categories of related information. A database management system (DBMS) is software that controls the storage, organization, and retrieval of data. an RDBMS moves data into a database, stores the data, and retrieves it so that applications can manipulate it.

This type of database allows you to store, organize, and manage your data, no matter how complex it is, and then retrieve and present it in various formats and reports (Lance Ashdown, Tom Kyte, Joe McCormack, 2020).

An RDBMS distinguishes between the following types of operations:

- Logical operations

In this case, an application specifies what content is required, like an application request for a student name to add record in a table.

- Physical operations

In this case, the RDBMS determines how things should be done and carries out the operation, the RDBMS stores and retrieves data so that physical operations are transparent to database applications

2.13   MySQL Database

MySQL is the second popular relational DBMS and the first popular relational open source client-server RDBMS, according to figures from solid IT GmbH. The system shows stable and dynamic growth throughout the last 15 years. However, in 2010 Oracle Inc. has acquired Sun Microsystems with all its capital assets including MySQL. This acquisition lead to immediate rift in MySQL community due to ambivalent Oracle's licensing policy. MySQL 5.5 codebase was forked (taken as a source framework) for alternative development branches: MariaDB, Percona Server, Drizzle, WebScaleSQL (Oļegs Čapligins, Andrejs Ermuiza, 2016).

MySQL is an open source free, everyone can use it, it's and flexible, it has a pretty much good documentation mysql.com, MySQL works on windows, Linux, Moc, and other operating systems.

2.14   System Testing Tools

The development of the web applications has become an important area in the field of software engineering. Web applications have a core set of specific characteristics like modularity, by which different functionalities of the same product are written in an in-dependent manner (Iulia Ștefan and Ioan Ivan, 2013).

2.14.1 PHP

Based on the official website of PHP: PHP (recursive acronym for PHP, Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. What distinguishes PHP from something like client-side JavaScript is that the code is executed on the server, generating HTML which is then sent to the client. The client would receive the results of running that script, but would not know what the underlying code was.

You can even configure your webserver to process all your HTML files with PHP, and then there's no way that users can tell what you have up your sleeve. The best things in using PHP are that it is extremely simple for a newcomer, but offers many advanced features for a professional programmer. Don't be afraid of reading the long list of PHP's features. You can jump in, in a short time, and start writing simple scripts in a few hours.

2.14.2 XAMMP and phpMyAdmin

PhpMyAdmin is free and open-source software that lets you handle the administration of MySQL over the web. You can easily manage the database through a graphic user interface known as phpMyAdmin in this case. phpMyAdmin is written in PHP and has gained a lot of popularity in terms of web-based MySQL management solution.

You can perform operations on MySQL via the phpMyAdmin user interface while you can still directly execute SQL queries. And it lets you carry out operations like editing, creating, dropping, amend MySQL database, alter fields, tables, indexes, etc. Which user should be given what privileges, you can manage that too. phpMyAdmin has huge multi-language community support.

2.14.3 Visual Studio Code

Visual Studio Code combines the simplicity of a source code editor with powerful developer tooling, like IntelliSense code completion and debugging. First and foremost, it is an editor that gets out of your way. The delightfully frictionless edit-build-debug cycle means less time fiddling with your environment, and more time executing on your ideas. Visual Studio Code supports mac OS, Linux, and Windows - so you can hit the ground running, no matter the platform.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Method data collecting

In this research we have used several data collection methods to help us understand more about the student system, the collection of data is collected in the form of library, interview, and observation.

3.1.1 Observation

Observation is a method of data collection in which researchers observe within specific research. These observations are made by looking at A.S Private High School, which is located in Afghanistan / Kabul / Darul Aman / postcode 1004. On another hand, it provides a chance to learn things that students and student families may unwilling to discuss in an interview.

This observation took place from January 2020 to August 2020.

3.1.2 Interview

The interview was conducted by interviewing the owner of the school Muhammad Nadir and the manager of (A.S Private High School) Khatira, as I mentioned earlier we cannot meet face to face we set everything through WhatsApp. This interview conducted to obtain information regarding the specifications of user requirements that will be later in building a student management system and the constrain of what happens so that the student management system is needed at A.S Private High School.

2.1.3 Literature review

Researchers use a literature review for collecting data and information, it could be a book, similar research, similar journal, and internet sites. The similar research table below is a collection of similar research as a reference for literature study by researchers.

Table: 2. 2 Comparative Study of Literature

NO	Name	Title	Explanation	Advantage	Disadvantage	Year
1	Venkitachalam, Kamhawi	Knowledge Management as an important tool in Organisational Management	Today, there is hardly a conference or published journal without seeing literature referring to the concept, KM. The importance of KM as a critical tool in organization and the society can therefore not be overemphasized.	knowledge management is a key driver of organizational performance and a critical tool for organizational survival, competitiveness and profitability	It's difficult to find a proper tool for the business to meat to the requirements	2013,2012

| 2 | Lee al | The Effects of Knowledge Sharing on Individual Creativity in Higher Education Institutions: Socio-Technical View | As mentioned above, knowledge management is critical for successfully sharing and utilizing individuals' knowledge at an organization level | knowledge sharing, which is the central activity of knowledge management, has multifaceted implications and potential benefits for organizations, and the effects of knowledge sharing | Although there mention no disadvantages, we assume some people do have good access to the internet. | 2010 |

3	Dirk K. F. Meijer*	Information: what do you mean?	This essay is based on the thesis that information is as fundamental as matter and energy in the fabric of reality, in other words: information is physical.	In modern physics, quantum mechanics is an essential instrument	It's difficult to achieve a clean data	2012

4	Serenko & Dumay	Knowledge Management from its Inception to the Innovation Linkage	The phrase "knowledge management" was firstly used in the last decade of previous century. This two-word expression can be understood in several connotations.	The results revealed significant linkage between knowledge management and innovation in the documents which were analyzed	How to analysis documents	2015

5	Cole and Kelly	The Concept of Management: In Search of a New Definition	"We students of social and industrial research are often lamentably vague. We sometimes do not even know what we know and what we do not know."	It's hard to establish a better management	2015

6	(Lewis and Durrant, Stickgold and Walker, Landmann et al	Increasing Explicit Sequence Knowledge by Odor Cueing during Sleep in Men but not Women	Here we tested the extraction of explicit sequence knowledge by presenting procedural learning-associated odor cues during post-training sleep	The efficacy of a contextual odor cue to facilitate the conversion from implicit into explicit sequence knowledge in a procedural memory task was hitherto unknown.	To have a good memory must have a enough sleep	2011, 2013, 2014

| 7 | Anjiang Jin | On the Development of College Student Information Management System | It also requires rebuilding the previous working process and designing a new one based on information technology. However, so far a unified view on the importance of SIMS hasn't been formulated among universities. | New technologies often bring great changes and breakthroughs, which is both an opportunity and a challenge to the building of CSIMS for universities | Lacking intellectual support. As the most valuable resource human resource plays a key role in determining whether the system can operate constantly and effectively or not . | 2015 |

| 8 | Tarek Ghomeed, Nawal Abu Abdallah | Web Based Student Management System | Technology has not stopped after changing or modifying the teaching techniques but it has also provided IT solutions to the institutions in the upkeep of the administrative and management affairs | The advantages of this system is to remove difficulties, and provide facilities for teacher and student by providing computer system | Storing data is difficult, need a place to save data which is papers and files. Reusing stored data in statistics and reports is almost impossible | 2019 |

| 9 | Eid and Nuhu | Explicit and tacit knowledge conversion effects, in software engineering undergraduate students | This study evaluates the effect of conversion between tacit and explicit knowledge, and its influence on Software engineering and Software Process Improvement in the context of a small school software company in which undergraduate students participate as personnel | A software organization is an entity that uses diverse and constantly increasing knowledge | One of the challenges of the software organization is to identify content, locate, and use tacit and explicit knowledge | 2011 |

Based on the table above there are several advantages of the system to be made by researchers namely:

1. Use the SECI model and core process analysis to analyze knowledge management

2. Using system design and database design for documenting the system

3. This system was built using the PHP programming language

4. For saving data we are using MySQL

3.2 System development method

In this thesis, we are using the Rapid Application Development (RAD) method

3.2.1   Requirement Planning

In this stage, the researchers do the planning of making a knowledge management system for the school that will be developed based on the student requirement, the result achieved throughout the meeting, manager with teachers and teachers with the student.

a. Register student of (A.S Private High School)

b. Each student of (A.S Private High School) should have an account

c. Each student of (A.S Private High School) should be able to check his/her grade

d. Each Teacher of (A.S Private High School) should have an account

e. All the system should be controlled by Admin

3.2.2 Design stage

At this stage, the design and improvements are made knowledge management system for (A.S Private High School) using Unified Modeling Language (UML) tools with the following stages:

a. Make use case diagram

b. Make an activity diagram

c. Make a sequence diagram

d. Make Database specification

e. Database schema planning

f. Make a class diagram

g. Database mapping

h. Matrix CRUD

i. Menu Structure design

j. User interface design (UI)

3.2.3 Implementation stage

At this stage, the testing process of the knowledge management system is carried out for (A.S Private High School), the implementation is as follows:

a. Build a system using the PHP programming language, we are using pure PHP and MySQL as database

b. Test the system using black-box testing or behavioral testing, within this method, we would be able to find the errors, within black-box we don't need our user to understand coding in another hand to be a programmer.

3.2.4   Reasons for using Rapid Application Development

The reason behind Rapid Application Development (RAD), it's as follows:

1. Improve flexibility adaptability as programmers can make adjustments faster during the development process.

2. The quick iteration decreases development time and speeds up delivery.

3. Encouragement for code reuse, reduce the code writing, less error, and shorter testing time.

4. Improve client satisfaction due to high-level collaboration and coordination between stakeholders.

5. Decrease the rate of risk management as stakeholders can discuss and address code vulnerabilities while keeping development processing going.

    There is much more reason behind the RAD method, these are the key reasons what we chose RAD methods.

3.2.5   Reasons for using Black-box testing

The reason behind using black-box testing (BBT) it's as follows:

1. In the black-box testing, there is a validation test, where the system can be said to be successful if the functions are there in this system can be accordant what the user desired.

2. In the black-box testing does not take a long time, compare to white-box testing, using the white-box testing requires more time it has to check procedural from scratch and coding one by one to ensure that there will be no error in the system.

3. In the black-box testing, we can use a use case diagram and scenarios developed and analysis as a guideline, whether the output is in the same line of user expectations or not.

4. With black-box testing, users will run the application directly and the developers will note any input or action taken by the user.

5. With black-box testing, a tester purely checks the input and output of the software. The tester evaluates what system should perform rather than how it is a manual approach to testing.

3.3 Mind Mapping
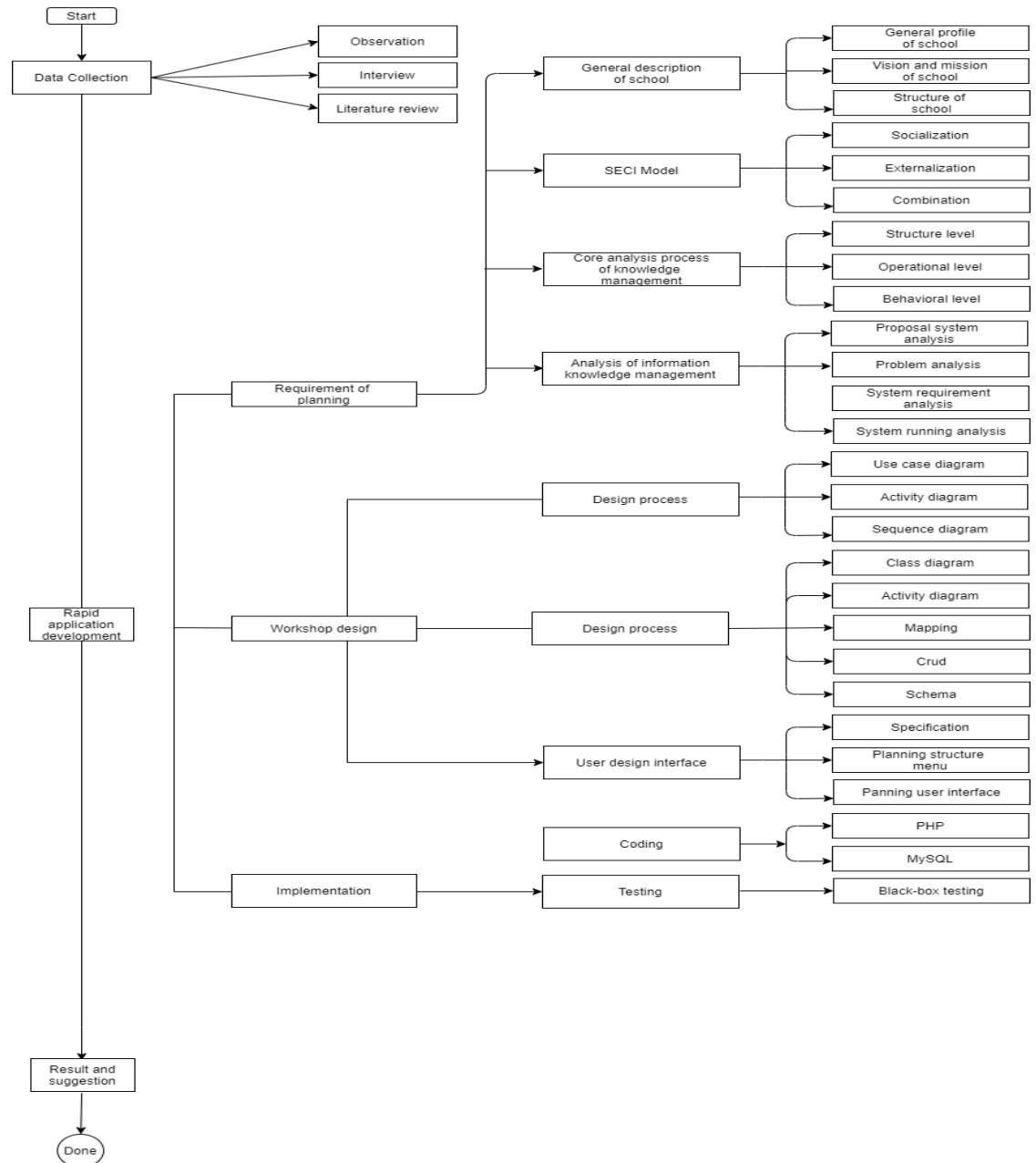
Figure: 3. 1 Mind Mapping

CHAPTER IV

SYSTEM ANALYSIS AND DESIGN

4.1 Requirement Planning

4.1.1   General description of A.S High School

4.1.1.1   Profile of A.S High School

A.S Private High School. It is a private high school that was founded on January 1 of 2010, by Muhammad Nadir. As Afghanistan is an Islamic country, we believe in one Allah, and everything should be based on Islam according to the Afghanistan constitution. Hence, A. S private high school teaches Islamic subjects, besides that it provides computer learning, English learning, Math learning for beginner and advanced levels, and other usual subjects.

This private high school has five more branches around Kabul the capital of Afghanistan and one branch in Baghlan which is one of the northern provinces of Afghanistan. As I mentioned earlier, this private high school aims to provide learning facilities every winter they launch a course under the name of (Winter course), the subjects will be taught by expert teachers who have more than 10 years' experience, for those who really cannot pay school will provide them free classes and give them a discount.

4.1.2 Vision, Mission, and Value of School

4.1.2.1 Vision

We encourage you to learn new and exciting things with expert people and help your family by teaching them what you learn.

4.1.2.2 Mission

1. Our mission is to provide high-quality education for our beloved children and youths.

2. We aim to provide safe learning with an inclusive environment.

3. Beyond our vision for each child and youths to develop and strengthen a curiosity of learning new knowledge

4.1.2.3 Value

1. Be Good person

2. Be honest with your self

3. Treat everyone based on Islam

4. Stand with Al-Quran

5. Follow the Sunnah

6. Respect elders and be kind with children

7. Have curiosity for leaning

4.1.3   Logo of A.S Private High School

Figure: 4. 1 Logo A.S Private High School

4.1.4   Structure of A.S Private High School
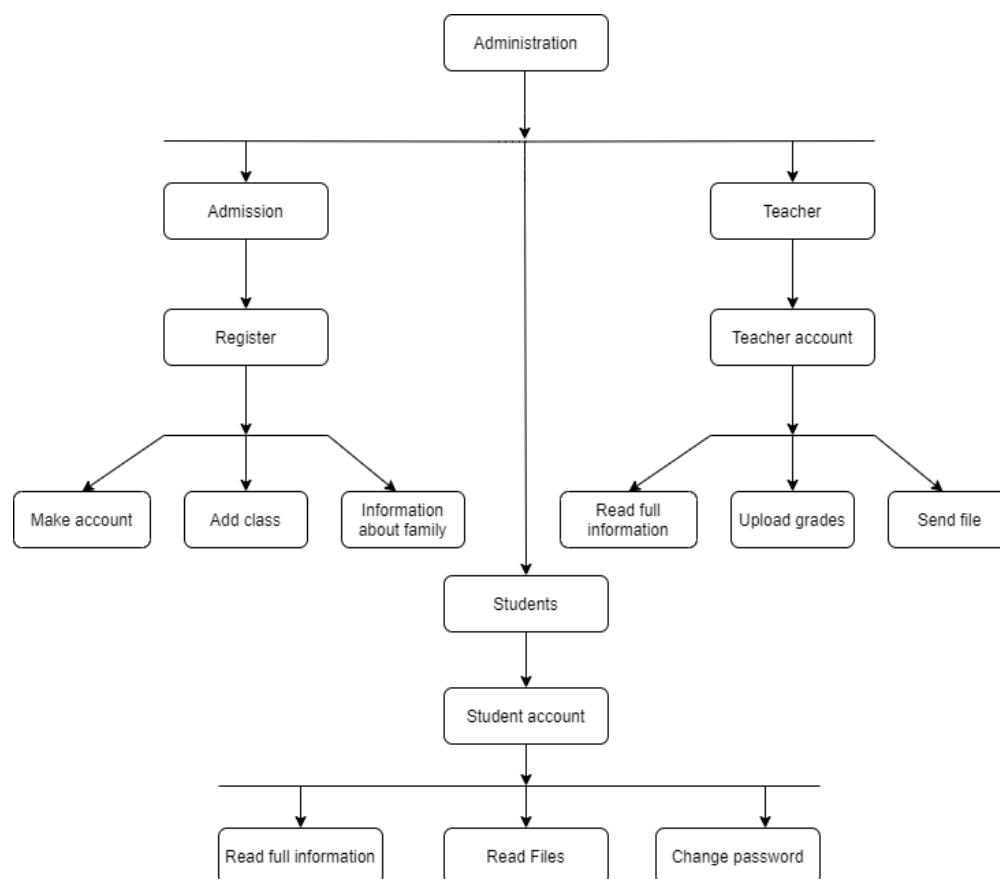
Figure: 4. 2 Structure of A.S Private High School

4.1.5   Duties of A.S Private High School

Board: A primary responsibility of the school board is to ensure the best possible education experience for all students. This involves analyzing schedule and education programs and prioritizing how many should be spent. Head: Heads of school are appointed by and are formally responsible to the board, the head will exercise his/her authority in consultation with the school executive, in consideration of a consensus of the school committee.

Load Study: The study load is based on the grade, as grade goes up, students achieve more subjects.

4.1.6 SECI Model

The SECI model is a well-known conceptual model that was first proposed by Nonaka (1991 and expanded by Nonaka and Takeuchi, 1995). It describes how explicit and tacit knowledge is generated, transferred, and recreated in organizations.

The SECI model, which is said to be linear (Chatti, Schroeder, and Jarke 2012) and sequential (Sian Lee and Kelkar 2013), is viewed by Yeh, Yeh, and Chen (2012) to be the most famous and comprehensive model of knowledge creation in the KM process. Existing studies describe the model as representative of KM (Zheng and Yu 2010), as probably the most widely cited and influential theory in KM (Zhang et al. 2014), and as the most adopted by researchers studying the relationship between knowledge creation and innovation (Esterhuizen, Schutte, and Du Toit 2012). The SECI model is also reported to be simple to use and suitable for explaining the process of knowledge conversion (Zhuang and Tongxin 2010).

The SECI model consists of four modes of knowledge conversion: socialization (tacit to tacit), externalization (tacit to explicit), combination (explicit to explicit), and internalization (explicit to tacit).

4.1.6.1   Socialization

Socialization, or tacit to tacit, it the process of converting new tacit knowledge through shared experiences in day to day social interaction.

4.1.6.2   Externalization

Externalization, or tacit to explicit it is the process of share experiences from documentation such as meeting, discussion, documentation during customer visiting, and other types of forums.

4.1.6.3   Combination

Combination, or explicit to explicit is a process because explicit knowledge is collected from inside or outside the organization and then combined, edited, or processed to form more complex and systematic explicit knowledge is then disseminated among the members of the organization.

4.1.6.4   Internalization

Internalization or, tacit to explicit is a process because explicit knowledge creates and shared throughout an organization than convert into tacit knowledge by individuals.

4.1.7   Core Process Analysis

4.1.7.1   Knowledge Acquisition

Knowledge acquisition refers to the knowledge that an organization tries to obtain from external sources. External knowledge sources are critical and one should, therefore, take a total view of the value chain.

4.1.7.2 Knowledge Development

The knowledge development branch wants to improve the knowledge and capacities of the organization in the region. This can be done with the help of sharing ideas through the routine meeting.

4.1.7.3 Knowledge sharing

Knowledge sharing can be described as either push or pull, knowledge sharing improves communication among employees and customers.

4.1.7.4 Knowledge Utilization

Knowledge utilization is measure information pickup, processing, and application, information pickup means the process of retrieving or receiving information from the organization.

4.1.7.5 Knowledge Retention

Knowledge retention involves capturing knowledge in the organization and that can be used later.

4.1.7.6 Knowledge Goals

To capture knowledge - this goal can be gained by creating KM repositories.

To improve knowledge access – to facilitate the processes of knowledge transform between individual and between an organization

To improve the knowledge environment - by proactively facilitating and rewarding knowledge creation, transformation, and use.

To manage knowledge as an asset – some companies are leveraging their knowledge capital in the balance sheet, others are leveraging their knowledge assets to generate new income from or to reduce costs with their patents base.

4.1.8   Knowledge management analysis

4.1.8.1   Problem analysis

This problem analysis is based on the background above, the problem identified as follows:

1. Not well administration, student information is not accurate, and the school does not have any information about the student's family

2. Lack of knowledge possessed by several teachers of A.S Private High School, regarding student privacy, like student grade, student secret information accurate scheduling, and so on.

3. Lack of knowledge sharing, teachers cannot share their knowledge, most of them are in the state of tacit, which is not useful for other teachers.

4. Knowledge is only limited to certain divisions and is not yet published to the entire school, it demonstrates having a bad management system.

5. Putting documents separately makes lots of difficulties, especially when someone needs the file.

4.1.8.2 Component Diagram

Details about school automation system component diagram:

Student component

Classes component

Registration component

Courses component

School component
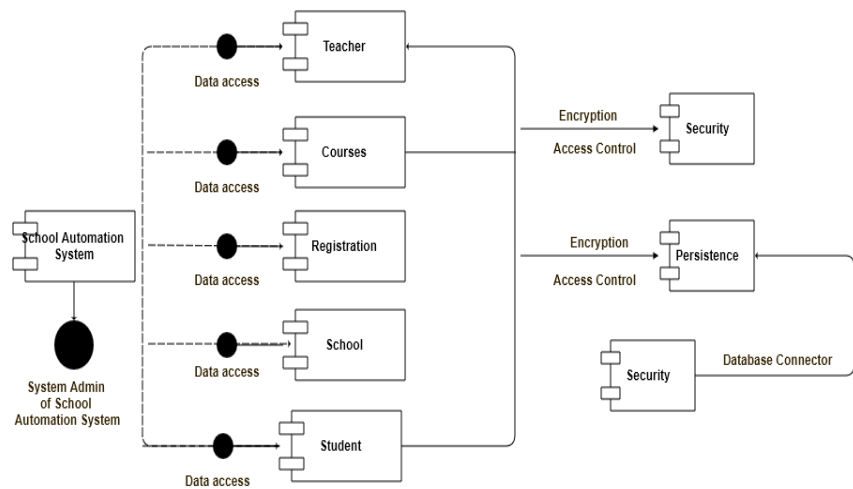
Figure: 4. 3 Component Diagram of school

The school automation system data flow diagram is using as an introductory step to develop an overview of the entire school before going into more detail, which can later help, it consists of overall application dataflow and process of the school system.

4.1.8.3 Zero level Data flow diagram (Zero Level DFD)

The zero levels of DFD of the school automation system, we have tried our best to cover the high-level process of school, it's the overview of the entire school automation system.

We designed this process to show the registration and login to the system as a single high-level process, with its relationship to external entities of schools, students, and classes, now it should be easy to grasp by users easily.
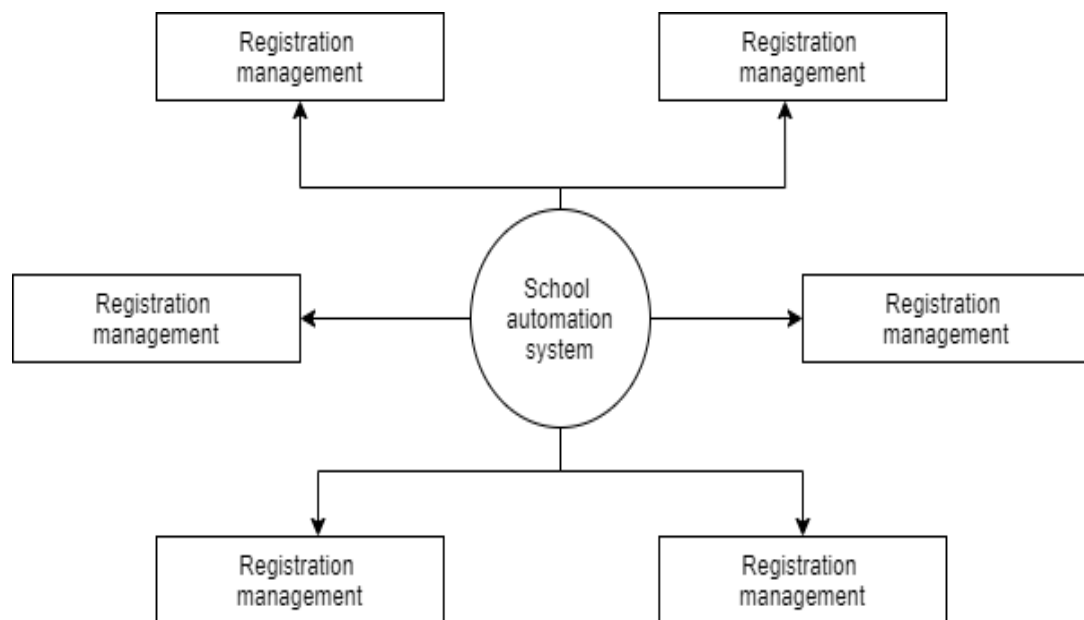
Figure: 4. 4 Zero levels of DFD

High-level entities process flow of school automation system as follows:

- Managing all the school

- Managing all the Student

- Managing all the Classes

- Managing all the Teachers

- Managing all the Courses

- Managing all the Registration

- Managing all the Login

4.1.8.4   First level Data flow diagram (1st level DFD)

The first level of data flow diagram (DFD) school automation system shows the system is divided into sub-systems processes, each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the school automation system as entire. This also identifies internal data stores of login, registration, courses, teachers, classes, that must be present for the school to start its job.

Main entities and output of the first level of the data flow diagram (DFD) as follows:
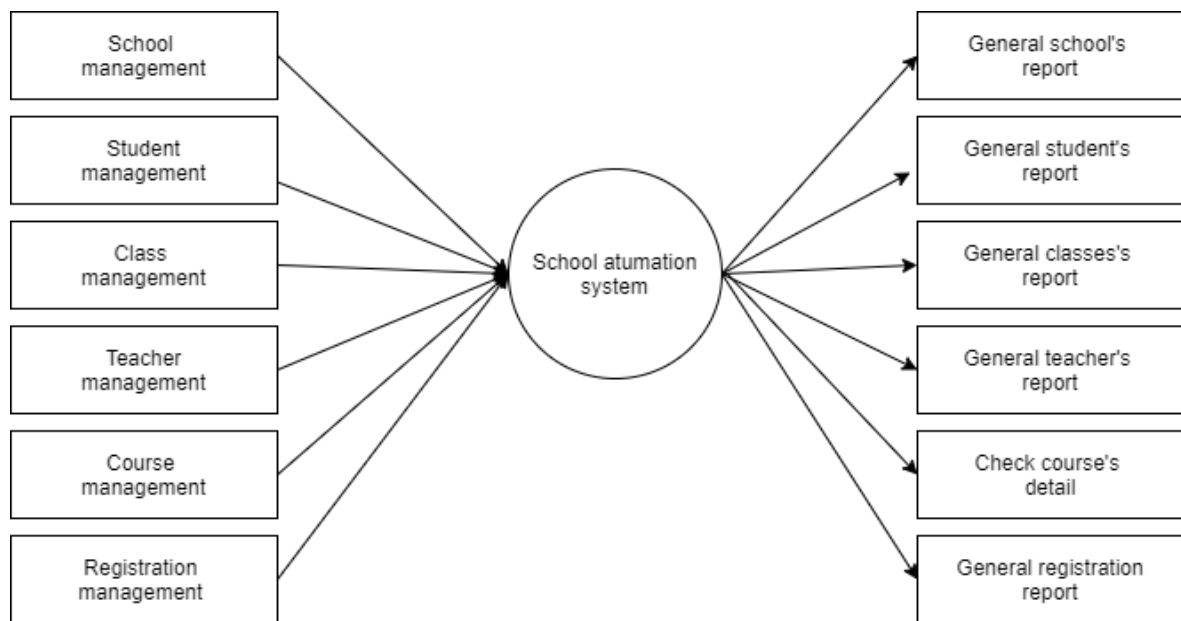
Figure: 4. 5 First-level Of DFD

- Processing school records and generate reports of all schools

- Processing student's records and generate reports of all students

- Processing Classes records and generates reports of all classes

- Processing teacher's records and generates reports of all teachers

- Processing courses records and generates reports of all courses

- Processing registration records and generates reports of all registration

- Processing login records and generates reports of all logins

4.1.8.5   Second level data flow diagram (2nd level DFD)

The second level goes one step deeper into parts level one of school, this level requires more functionality of school to reach the necessary level of details about the school activities and functionalities.
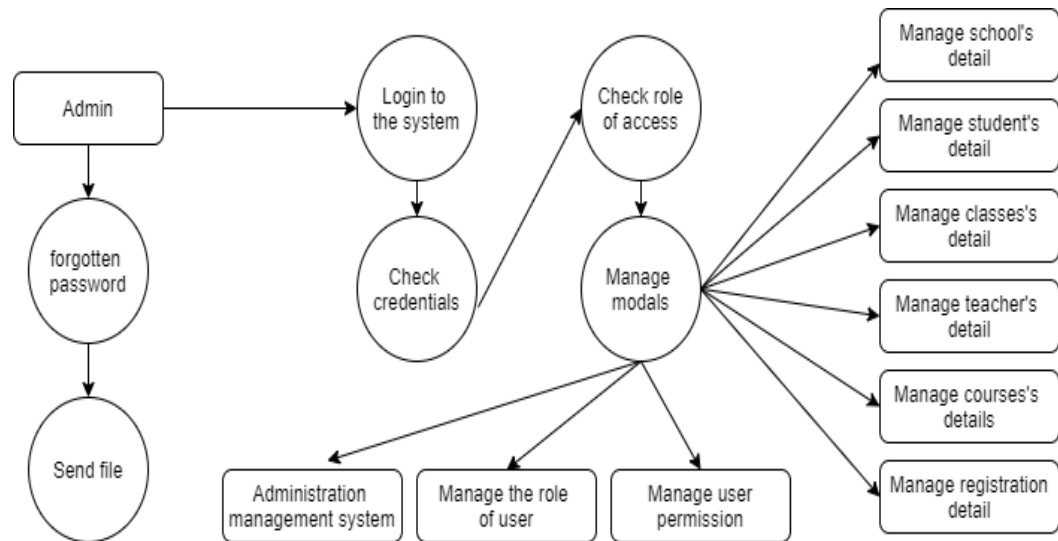
Figure: 4. 6 Second-level of DFD

Low level of functionalities of School automation system as follows:

This level shows the admin functionality, admin can control the entire system,

like add, edit, manage to add new admin, and so on.

4.1.8.6   Current Process

Admission

Administration

Document

Student Report   Teacher Report   Family Report

A.S private High School Manual System

Student

Teacher

Manual Students Report

Manual Report   Information collection
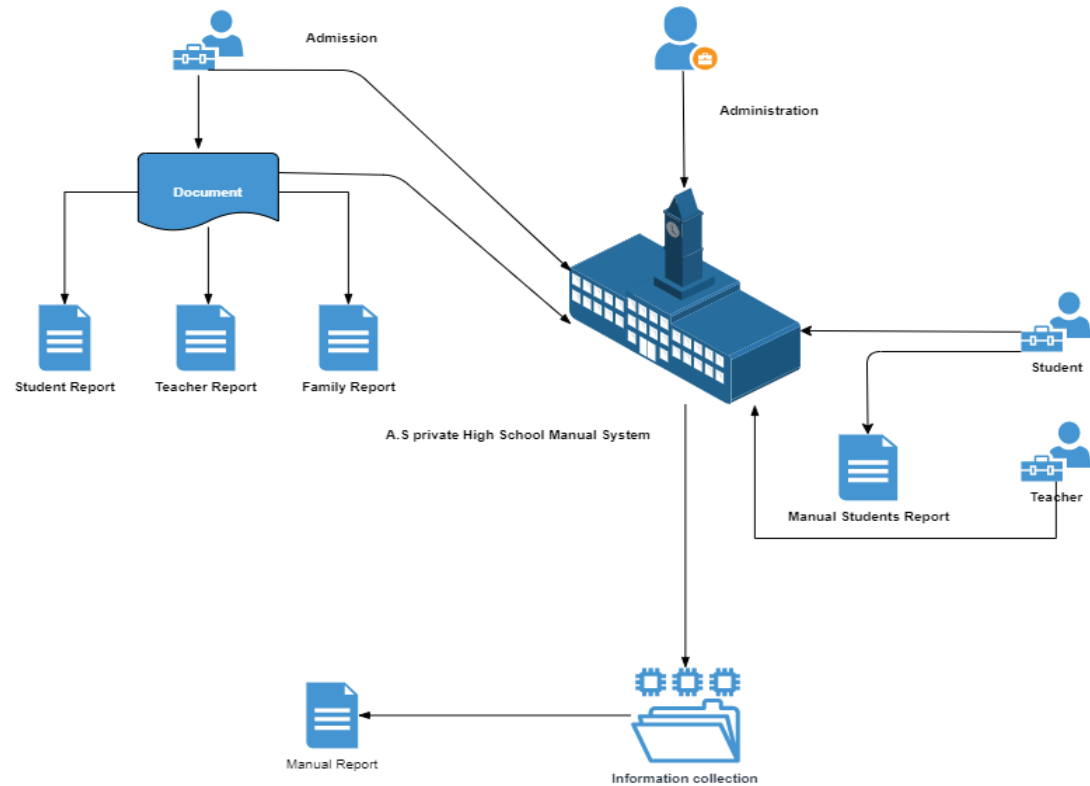
Figure: 4. 7 Rich Picture Current Process

After analyzing the current system, the author found few problems, the problems are:

1. The current system is running manually, the data about student and teacher saving in a notebook.

2. It's hard for a student to note the schedule because it's still manual and written on the board and the teacher asks students to note it.

3. There is no privacy for a student, everyone knows each other grades, grading is one of the privacy of each student.

4. Lack of knowledge sharing, it's hard for a teacher to share their knowledge as she/he wants to share it.

This system is consuming time, at the same its very expensive compare to the student management system, these are the core problem of A.S Private High School.
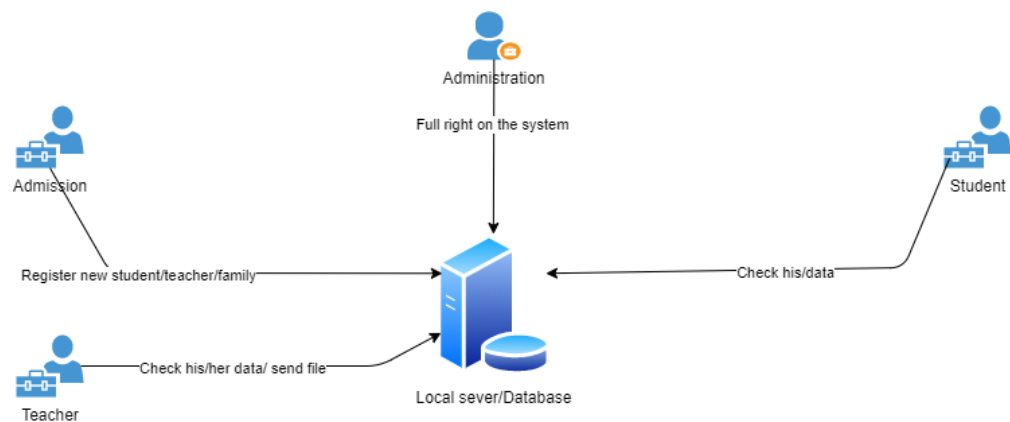
Figure: 4. 8 Rich Picture Propose System

4.1.8.7   System Requirements Analysis

1. Capable of knowledge document process

2. Capable of providing knowledge management facilities

3. Help user in sharing knowledge

4. Software:

- HTML

- CSS

- PHP

- MySQL

- Visual studio code, or any other editor

5. Hardware:

- Processor intel core i5

- RAM 4 BG or above

- Hard disk >200 GB

- Keyboard

- Mouse

4.1.8.8   Proposed System

4.2   Design Workshop

4.2.1   Use Case Diagram

Use case diagrams describe the relationship between actors and A.S Private

High School.

1. Actor Identification

Table: 4. 1 Actor Identification

No.	Actor	Description
1.	Administration	This use case has the full right on the system, administration is the owner of the school as well
2.	Admission	Admission, register new student, teacher, add classes, make the schedule, and make an account,

		admission is part of administration almost has the full right on the system.
3.	Student	A student has only the right to read, the data on his/account and changes the password of his/her account
4.	Teacher	A teacher has the right to read, write, and send including password change, all these done on his/her account

2. Use Case Diagram Identification

Table: 4. 2 Use Case Diagram Identification

No.	Use case name	Description	Actor
1	Login	This is a general login, everyone who has the authority can get in through this login page	All Actors
2	Manage user and full application	This the administration area, where the entire system can be controlled.	Administration
3	Create new administration	This option is only allowed for administration, where the	Administration

		administration can add a new user administration for the school to control the system.	
4	Register student, teacher	Every new and old system can be registered through this user, new users for enrolling to the school, old will be registered for the new academic year.	Admission
5	Add new parent	This is the information part where a student should provide full information about their parents, we made parents because we are using DBMS, relation database management system	Admission
6	Add info about family	The full information about a student's family will be saved in this table	Admission

| 7	Create a Student and Teacher account	This is where a student or teacher achieve their accounts	Admission / admission
8	Create new classes	Create a new class for the student to study, and teacher to teach	Admission
9	Create a new schedule	Here student and teacher achieve their schedule, this can be during admission, or even after that can be added	Admission
10	Share files	Here a teacher can share files like, PNG, JPG, TXT, DOCS, XLSM, this option is available for administration as well	Teacher/ administration
11	Logout	Every user has to logout through one session, this session is available for everyone, after using the work logout.	All Actors
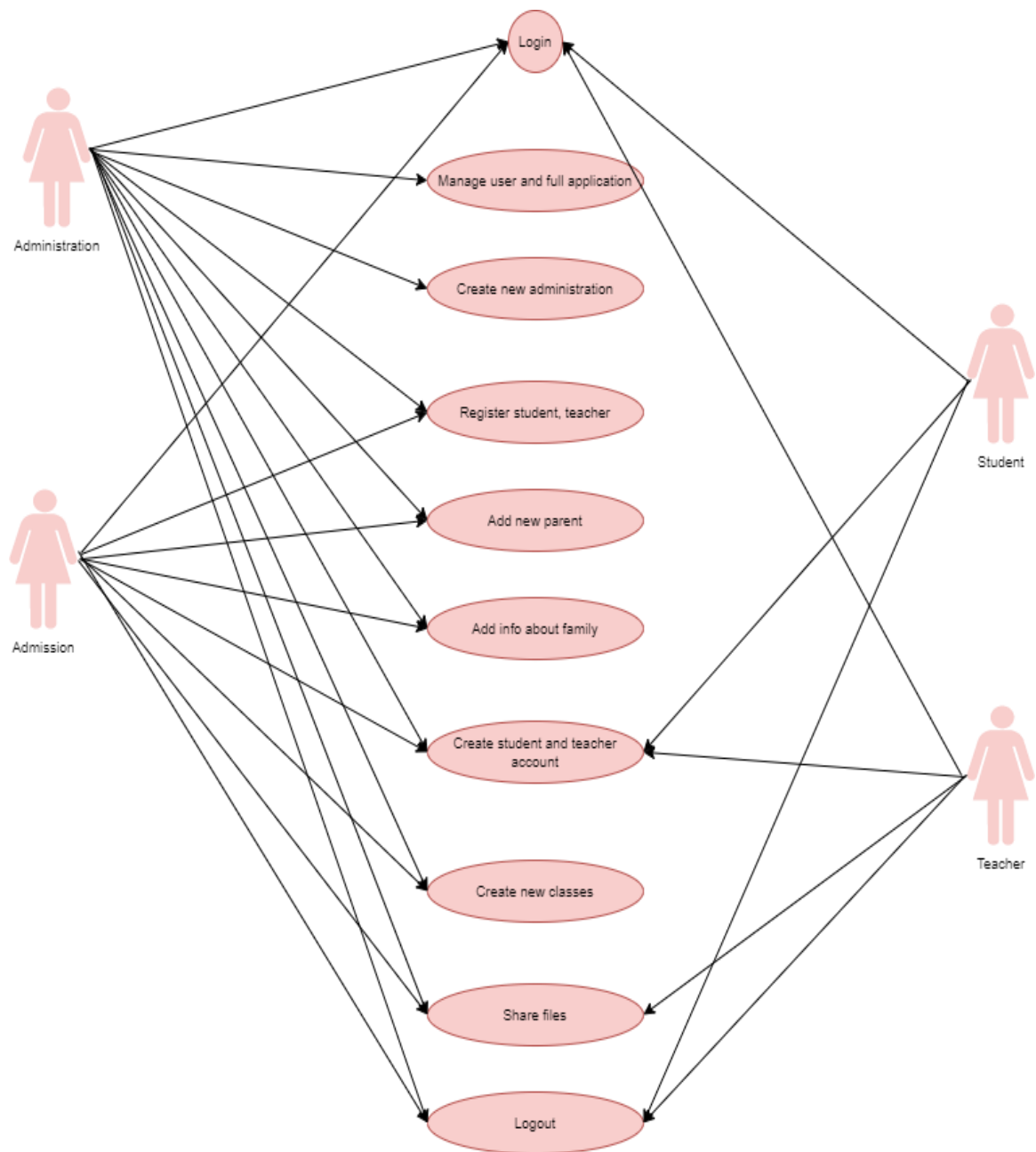
Figure: 4. 9 Rich Picture of Use Case

3. Login

Table: 4. 3 Login Narrative Diagram

Use case name	Login	
Use case id	1	
Actor	All Actors	
Description	This use case describes the login process	
Pre-condition	This use case shows how to login to the system, any user who wants to login have to be registered	
Trigger	After validation and user can open the system	
A typical course of the event	Actor Action	System Response
	input username and password	
	Click login	System checks and validate
		Display the related page
Alternative courses	If the user or password is the wrong redirect to the same page	
Conclusion	After validation actor can get in	
Post Condition	Successfully logged in based on the user level	

4. Manage user and full application

Table: 4. 4 Manage user and full application Narrative Diagram

Use case name	Manage users and full application	
Use case id	2	
Actor	Administration	
Pre-condition	The actor should have high authority in the school	
Trigger	After validation and user can open the system	
The typical course of the event	Actor Action	System Response
	Open dashboard	View data, update, delete, delete, share files, change classes
-	-	Successfully updated
Alternative courses		
Conclusion	This user is for controlling the enter system	
Post Condition	Data has saved inside the database	

5. Create new administration

Table: 4. 5 Create new administration Narrative Diagram

Use case name	Create new administration
Use case Id	3
Actor	Administration
Description	This actor should be part of the administration or the owner of the school
Pre-condition	Part of administration
Trigger	-
Alternative course	-
Conclusion	-
Post Condition	Redirect to the login page

6. Register student, teacher

Table: 4. 6 Register student, teacher Narrative Diagram

Use case name	Register student, teacher
Use case Id	4
Actor	Admission
Description	This use case register student and teachers, here all data about a student and teacher will be asked, after collecting

	the data an account will be made for each student and teacher	
Pre-condition	-	
Trigger	-	
Typical	Actor Action	System Response
courses of	Click login	Display dashboard
event	See all information	
Alternative Courses	-	
Conclusion	-	
Post Condition	Successfully done activity	

7. Add new parent

Table: 4. 7 Add new parent Narrative Diagram

Use case name	Add new parent
Use id	5
Actor	Admission
Description	The data about parent will be collected during the registration, and this can be done through the admission use case

Pre- condition	Should have the admission authority	
Trigger	-	
Typical	Actor Action	System response
course of	Click login	Display the related page
event	Add information about the parent	
Alternative course	-	
Conclusion	-	
Post Condition	Successfully done activity	

8. Add info about family

Table: 4. 8 Add info about family Narrative Diagram

Use case name	Add info about family	
Use case id	6	
Actor	Admission	
Description	An admission use case can add data about student's and teacher's account	
Pre-condition	-	
Trigger	-	
	Actor Action	System Response

Typical courses of event	Actor Action	System Response
	Click login	Display new page
	Add information about family	
Alternative Course	-	
Conclusion	-	
Post Condition	Redirect to the login page	

9. Create student and teacher account

Table: 4. 9 Add info about family Narrative Diagram

Use case name	Create student and teacher account	
Use case id	7	
Actor	Admission	
Description	This is where account made for student and teachers, and the account can be accessible right away	
Pre-condition	This use case should have the admission authority to make an account for student and teacher	
Trigger	-	
Typical course of event	Actor action	System response
	Click login	Display the related page

Alternative course	-
Conclusion	-
Post Condition	Account successfully created

10. Create new classes

Table: 4. 10 Create new classes Narrative Diagram

Use case name	Create new classes	
Use case id	8	
Actor	Admission	
Description	This is the responsibility of admission to make or add a new class for students as well as teachers.	
Pre-condition	Required the admission authority	
Trigger	-	
Typical course of event, alternative course	Actor action	System response
	Click login	Display the related page
Conclusion	-	

Post Condition	Class successfully added

11. Create new schedule

Table: 4. 11 Create new schedule Narrative Diagram

Use case name	Create new schedule	
Use case id	9	
Actor	Admission	
Description	This is the responsibility of admission to make or add a schedule for students and teachers.	
Pre-condition	Required the admission authority	
Trigger	-	
Typical course of event, alternative course	Actor action	System response
	Click login	Display the related page
Conclusion	-	
Post Condition	Schedule successfully added	

12. Share files

Table: 4. 12 Share files Narrative Diagrams

Use case name	Share files	
Use case id	10	
Actor	Admission / teacher	
Description	This use case shares file with students, only teachers and admission can share files	
Pre-condition	Required the admission and teacher	
Trigger	-	
Typical course of event, alternative course	Actor action	System response
	Click login	Display the related page
Conclusion	-	
Post Condition	Schedule successfully added	

13. Logout

Table: 4. 13 Logout Narrative Diagram

Use case name	Logout	
Use case id	13	
Actor	All actors	
Description	This is where all users should be logged out	
Pre-condition	Must be logged in	
Trigger	-	
Typical course of event, alternative course	Actor action	System response
	Click login	Display the related page
Conclusion	-	
Post Condition	Redirect to the login page	

4.2.2 Activity Diagram

The above diagram shows the activity of actors and roles of them, here a brief description of each. The diagrams as follows:

A. Login

This diagram shows the activities of the actor who holds the user and password, to login first user needs to put his/her username and after his/her

password and press the login button if the password and user name its true system will display a new page with specific data for user holder, if not system will return you in the same page and display a message of "wrong password or username."

This is a general login, where every user can get access through this the same login when a user puts his/her username and password system checks for validation and permission if the user has the admin authority system will open the admin dashboard if teacher user will open teacher page the same procedure is for students and admission. This login is safe with an encrypted password even a hacker gets access to our password still cannot do anything, because the hacker cannot read the password. We use the highest hash password in our system, the hash password is a functionality of the PHP programming language.

1. Login Activity Diagram
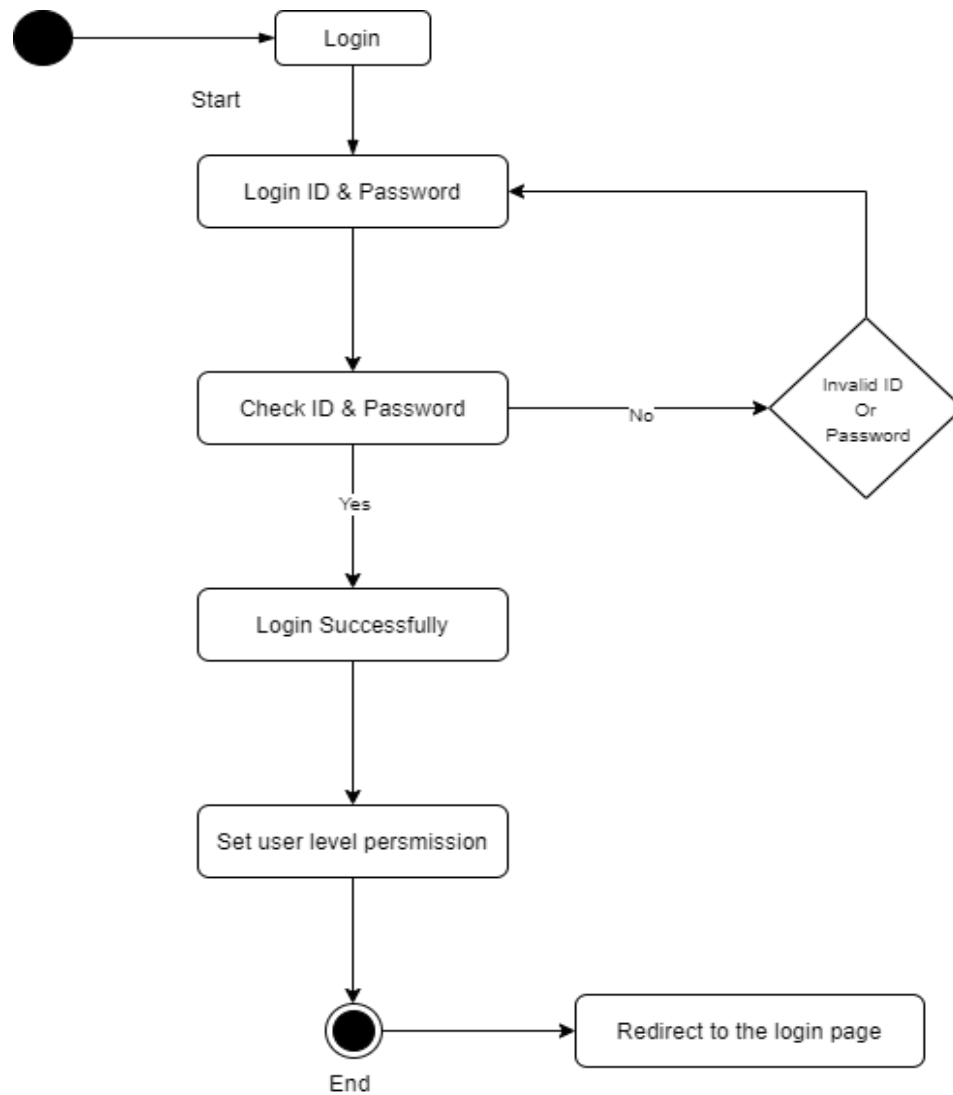
Figure: 4. 10 Login Activity Diagram

2. Manage users and full application
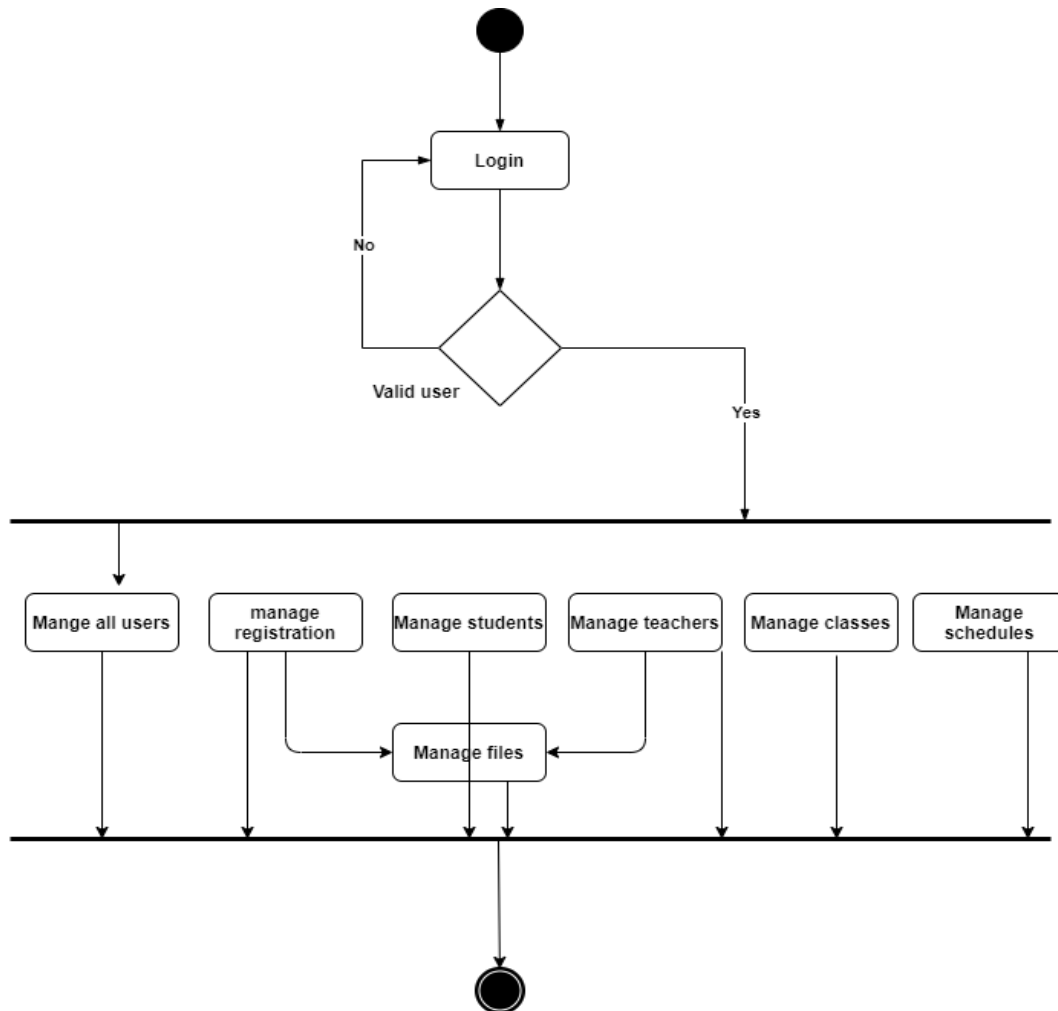
Figure: 4. 11 Manage users and full application Activity diagram

In the above activity diagram, manage users and full application as the name implies it controls the entire system, and this user is allowed to add new administration user for the school, this user able to delete and update or even add new student, teacher on the system, this user can be controlled through the owner of the school or the one who has the high authority in the school.

3. Create new administration
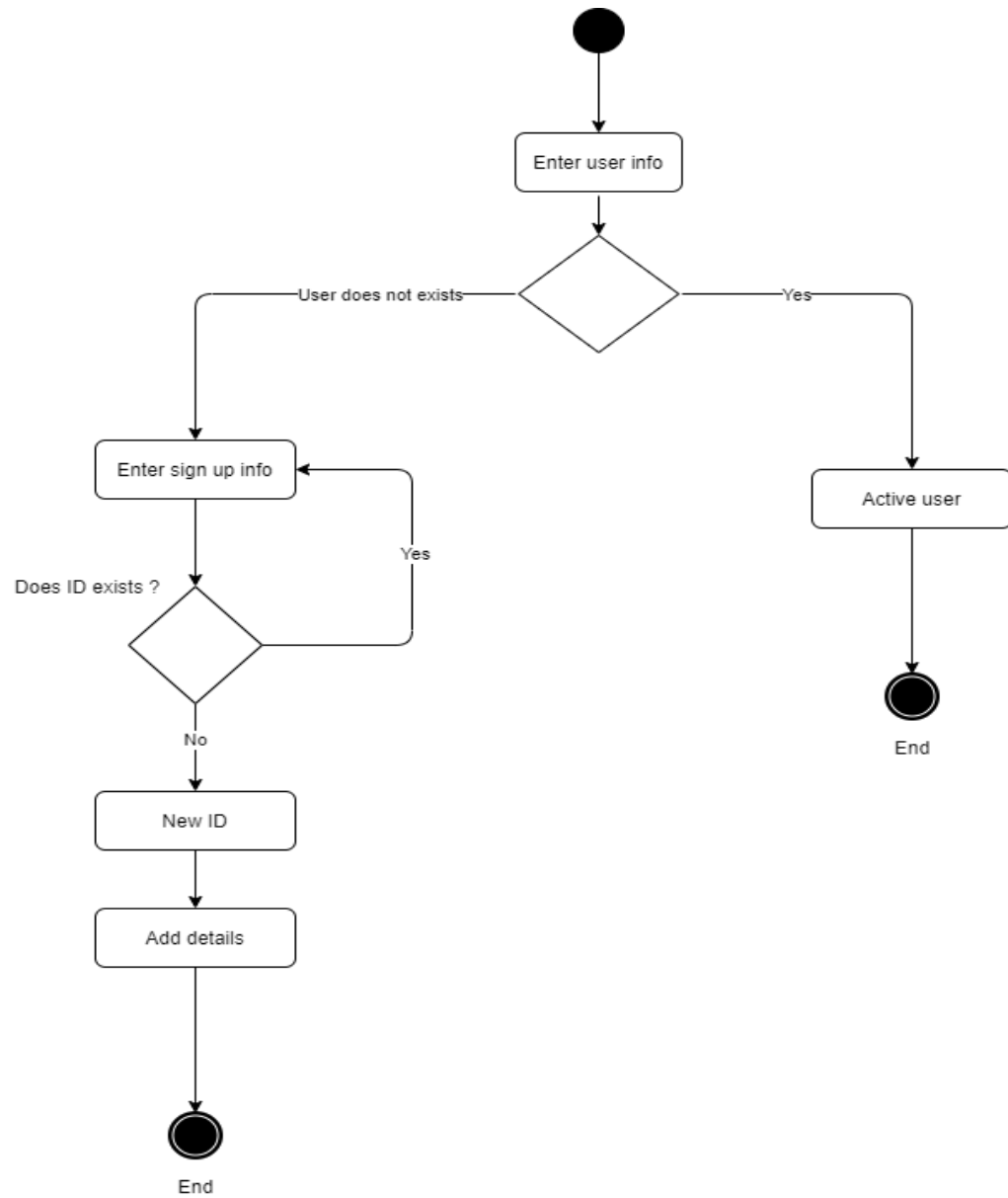
Figure: 4. 12 Create new administration Activity Diagram

The above activity diagram shows how the system makes a new administration user, only the administration can make new administration, this user will be able to control the system, with this system we can access to the sensitive data.

4. Register student and teacher
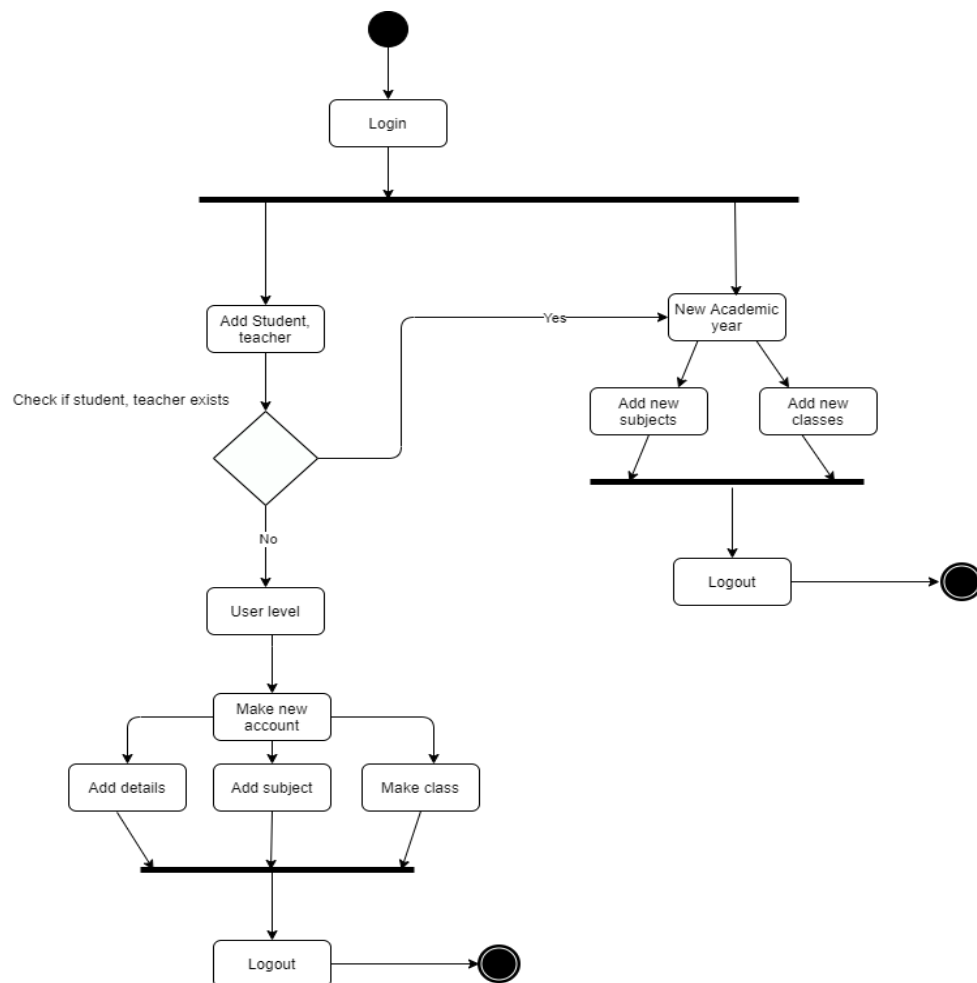
Figure: 4. 13 Create student and teacher Activity Diagram

The above activity diagram shows how a student and teacher can be registered, student and teacher will be made based on the level within one user, this can be done with admission or either administration user, as I mentioned before admission is part of the administration of the school.

5. Add new parent
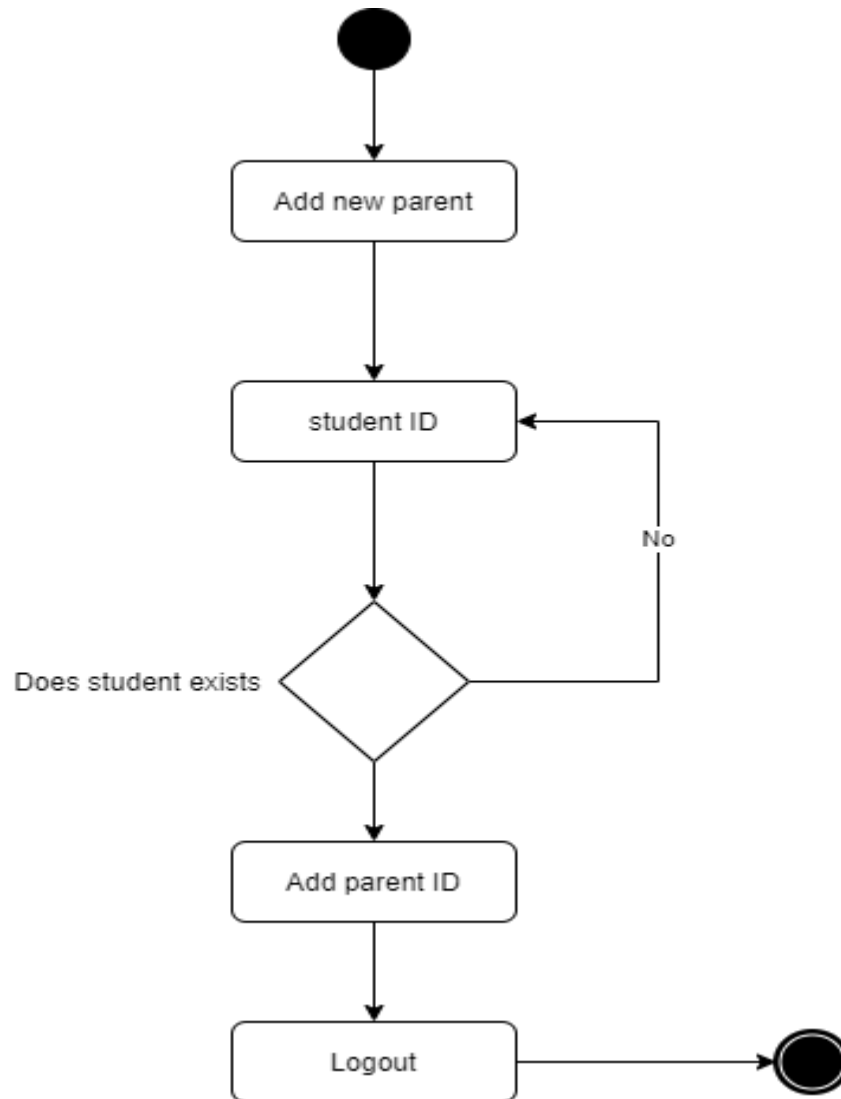
Figure: 4. 14 Add new parent Activity Diagram

The above activity diagram shows how students related to a parent, we are using a relational database management system DBMS that's why we made this table on our database although we could do this with only one table of the family, that is not good practice and design.

6. Add info about family
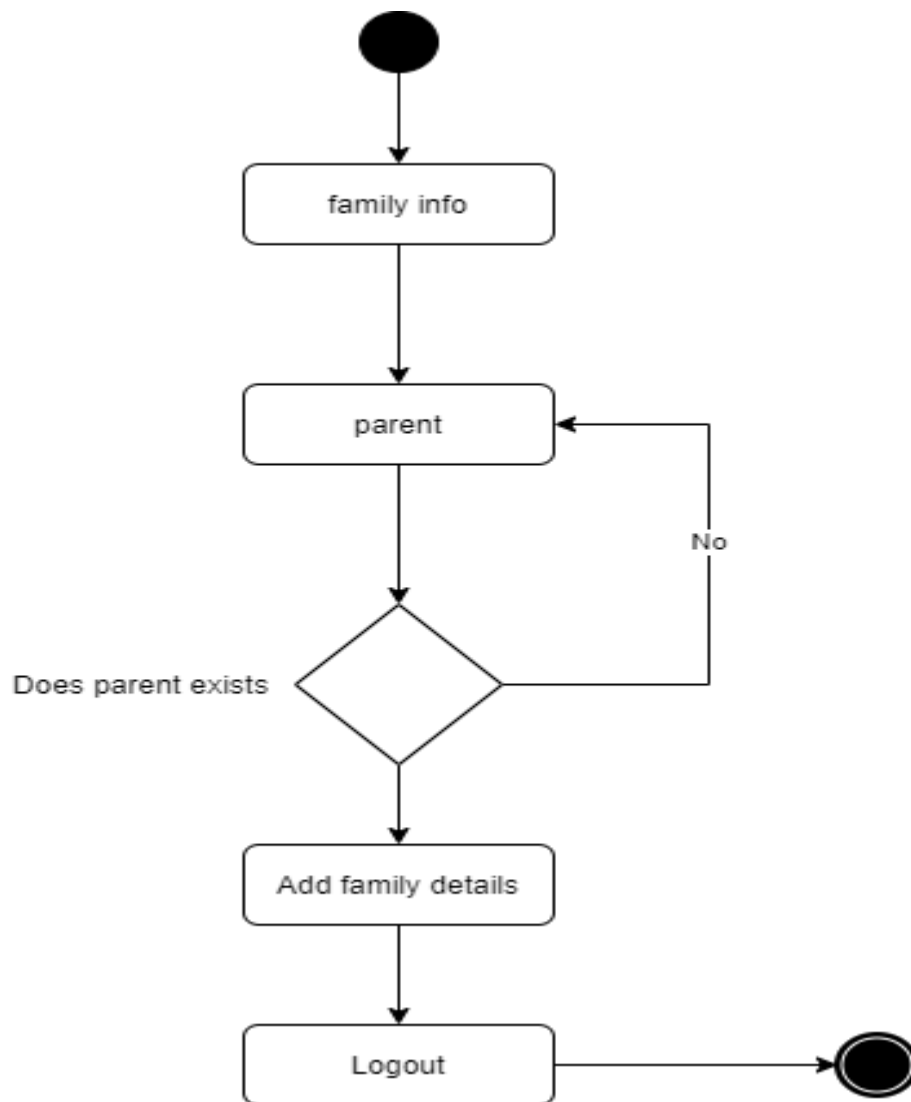
Figure: 4. 15 Add info about family Activity Diagram

The above table shows adding information about the family, this table belongs to the parent, a student must have a parent's ID to add complete details of the student's family.

7. Create an account for the student, teacher
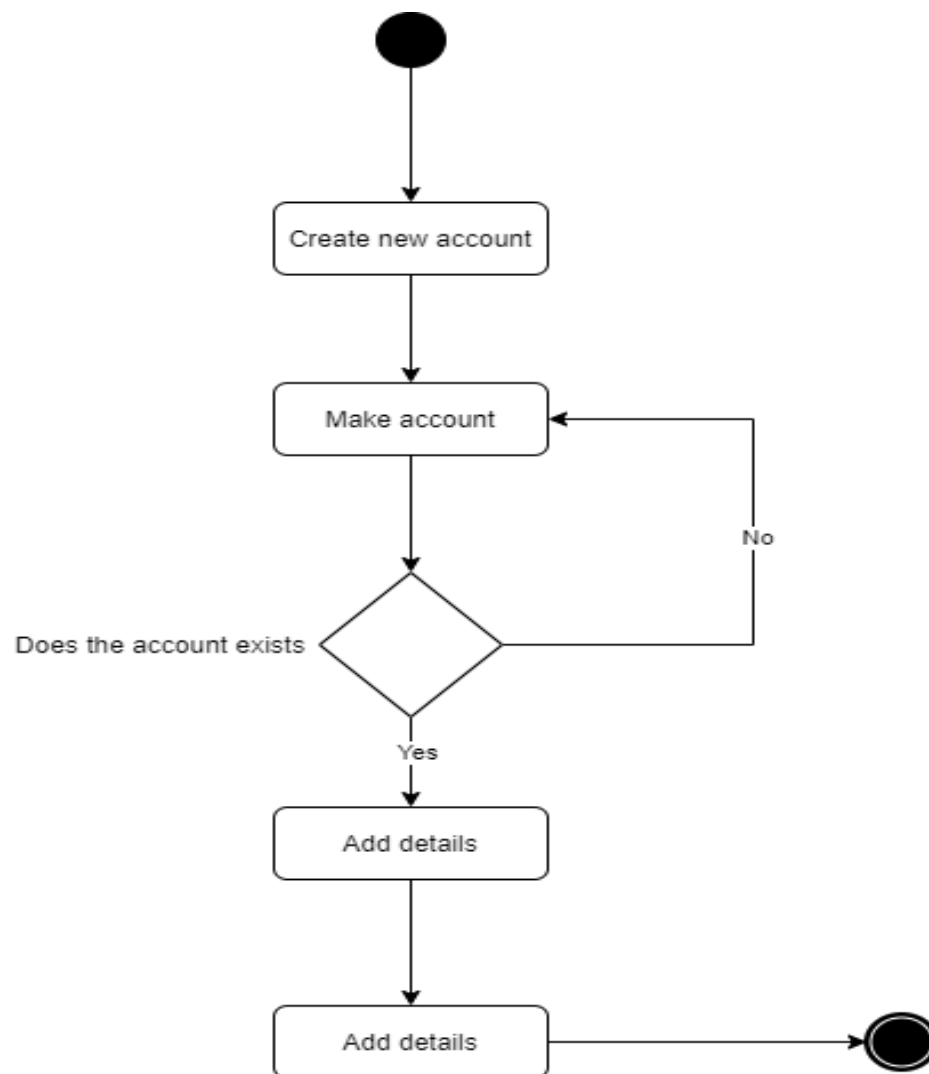
Figure: 4. 16 Create an account for student and teacher

The above activity diagram shows how to student and teacher proceed, the only one who can make an account of student and teacher is admission and the owner of the school which is the administration.
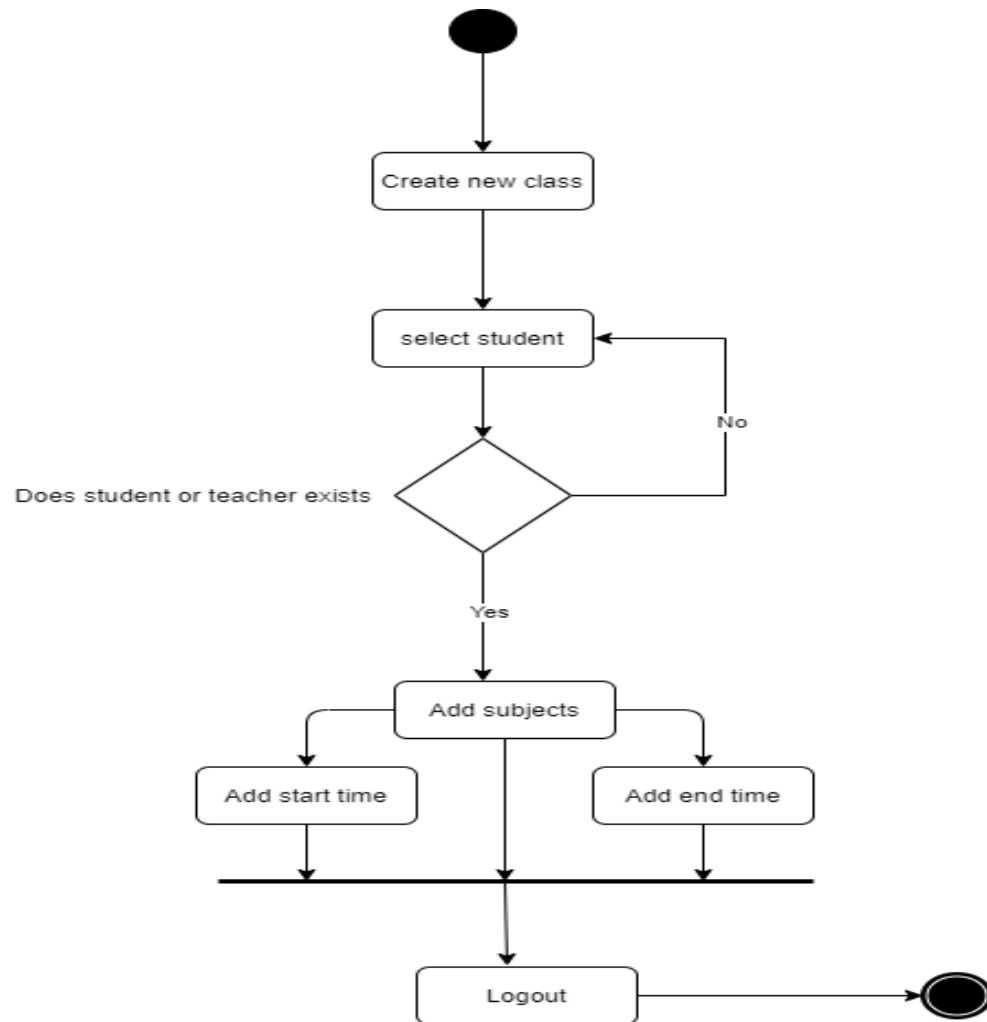
8. Create new classes

Figure: 4. 17 Create new classes Activity Diagram

The above activity diagram shows how a new class is made, this activity diagram belongs to a teacher and student, admission has to add subjects, time, teachers, and other details, like start time and end time.
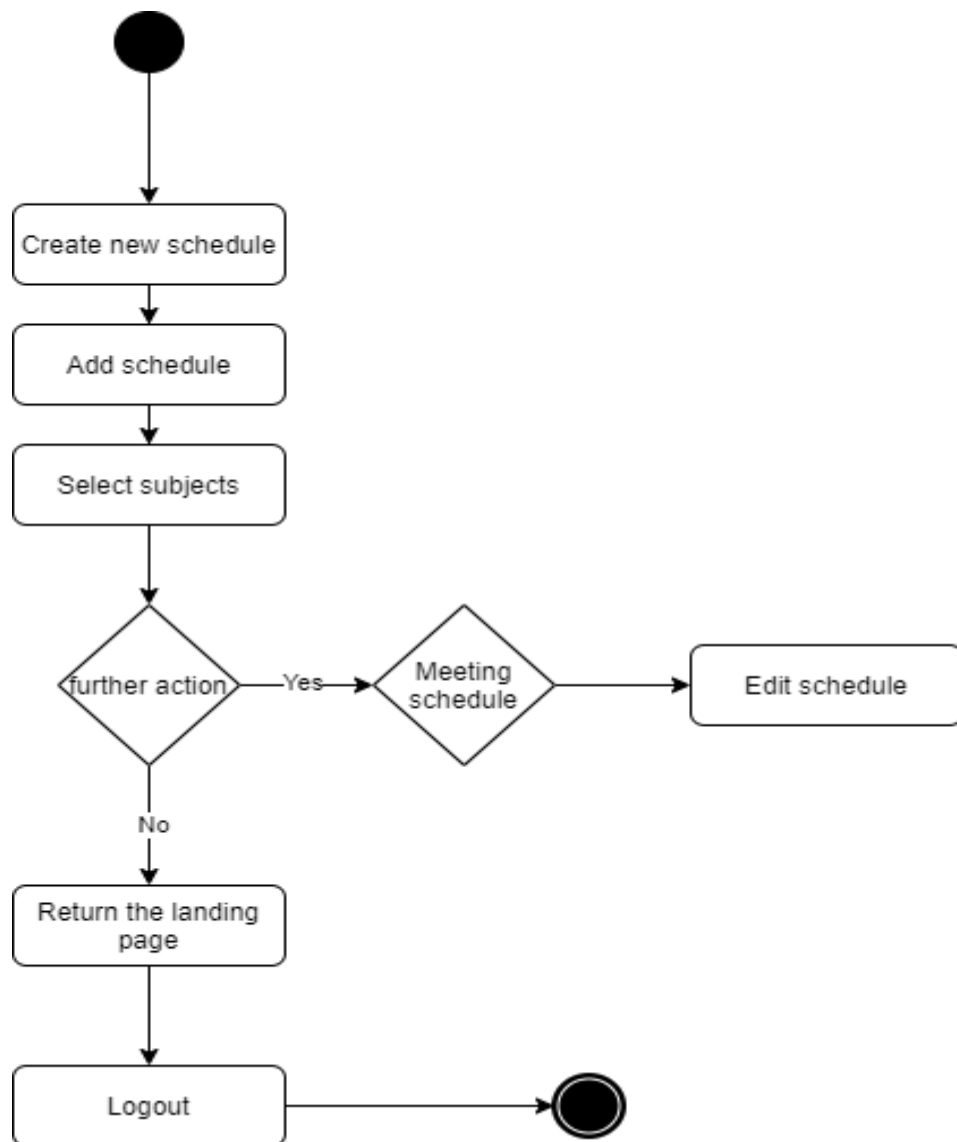
9. Create new schedule

Figure: 4. 18 Create new schedule Activity Diagram

The above diagram shows how the process of creating a schedule is, every

schedule needs a subject, to make a schedule we need to select a subject as we
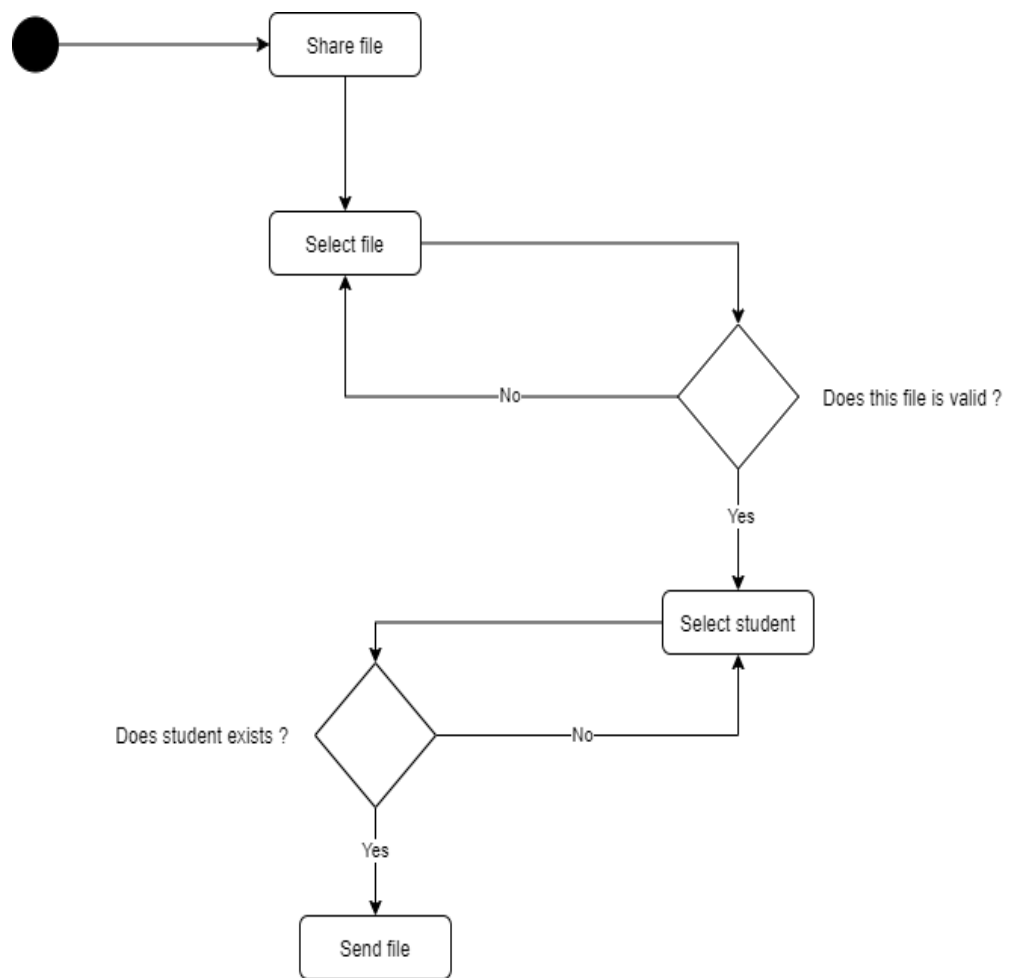
showed in the activity diagram.

10. Share file

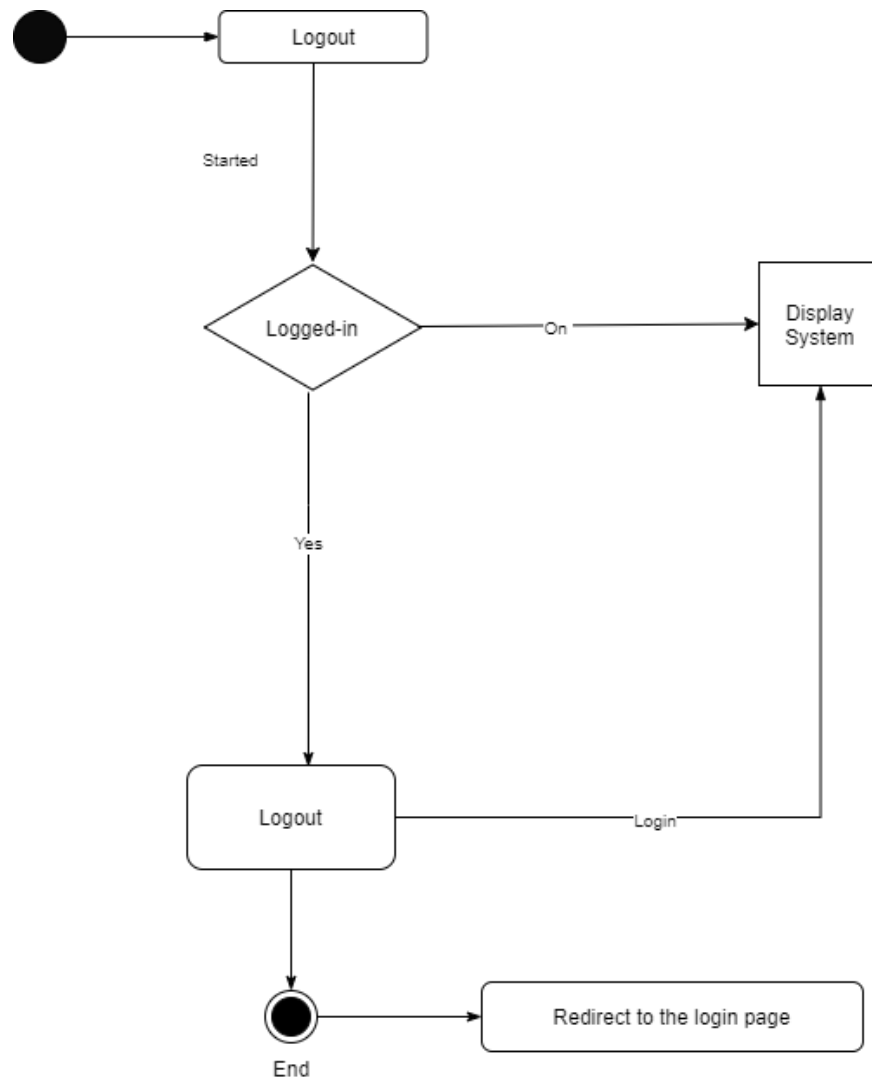Figure: 4. 19 Share file Activity Diagram

11. Logout

Figure: 4. 20 Logout Activity Diagram

All the users including the administration would log out from one session, the system shares only one session.

4.2.3   Class Diagram

The purpose of the class diagram is to show the structure of the system, the class diagram provides a very basic notation for other structures, and it helps users to understand the system very well.
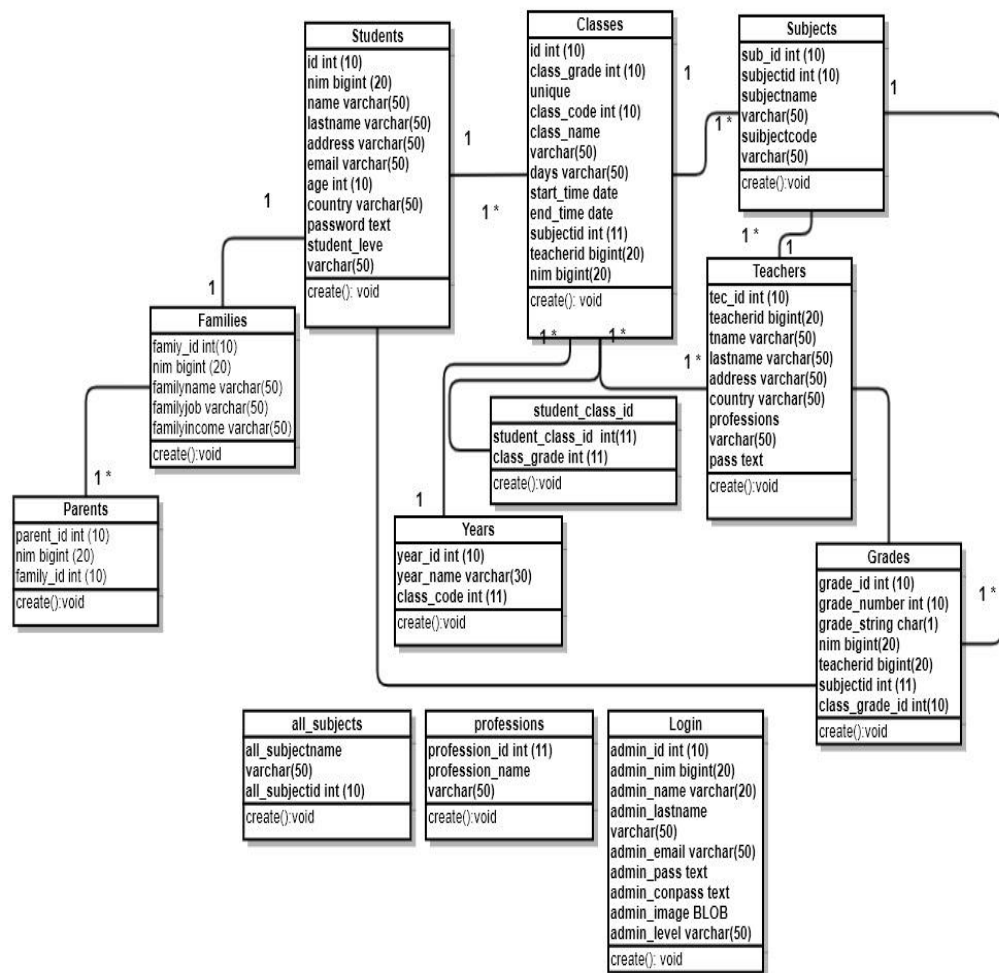

Figure: 4. 21 Class Diagram

4.2.4 Mapping Cardinality

A mapping cardinality is a data constraint that specifies how many entities
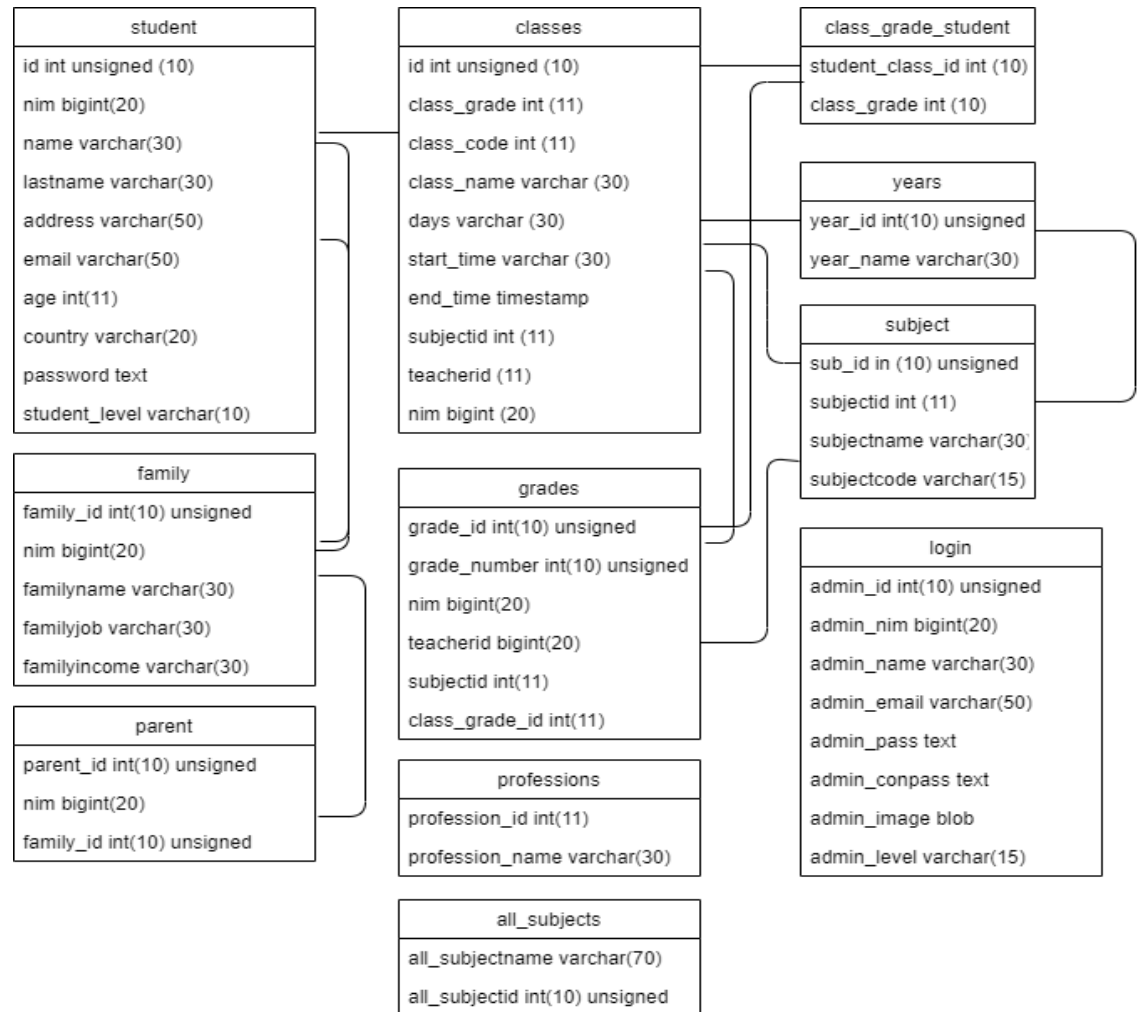
can be related to in a relationship set.

student
id int unsigned (10)
nim bigint(20)
name varchar(30)
lastname varchar(30)
address varchar(50)
email varchar(50)
age int(11)
country varchar(20)
password text
student_level varchar(10)

classes
id int unsigned (10)
class_grade int (11)
class_code int (11)
class_name varchar (30)
days varchar (30)
start_time varchar (30)
end_time timestamp
subjectid int (11)
teacherid (11)
nim bigint (20)

class_grade_student
student_class_id int (10)
class_grade int (10)

years
year_id int(10) unsigned
year_name varchar(30)

subject
sub_id in (10) unsigned
subjectid int (11)
subjectname varchar(30)
subjectcode varchar(15)

family
family_id int(10) unsigned
nim bigint(20)
familyname varchar(30)
familyjob varchar(30)
familyincome varchar(30)

grades
grade_id int(10) unsigned
grade_number int(10) unsigned
nim bigint(20)
teacherid bigint(20)
subjectid int(11)
class_grade_id int(11)

login
admin_id int(10) unsigned
admin_nim bigint(20)
admin_name varchar(30)
admin_email varchar(50)
admin_pass text
admin_conpass text
admin_image blob
admin_level varchar(15)

parent
parent_id int(10) unsigned
nim bigint(20)
family_id int(10) unsigned

professions
profession_id int(11)
profession_name varchar(30)

all_subjects
all_subjectname varchar(70)
all_subjectid int(10) unsigned

Figure: 4. 22 Mapping Cardinality

4.2.5 Sequence Diagram

12. Login

This Sequence diagram shows the different parts a system work in a sequence to get something done. The below diagram shows the login sequence, how it functions to allow users inside the system. All users using from one login page, with different passwords and usernames, the system decides the authority who's the admin who's a teacher, and who's the student.
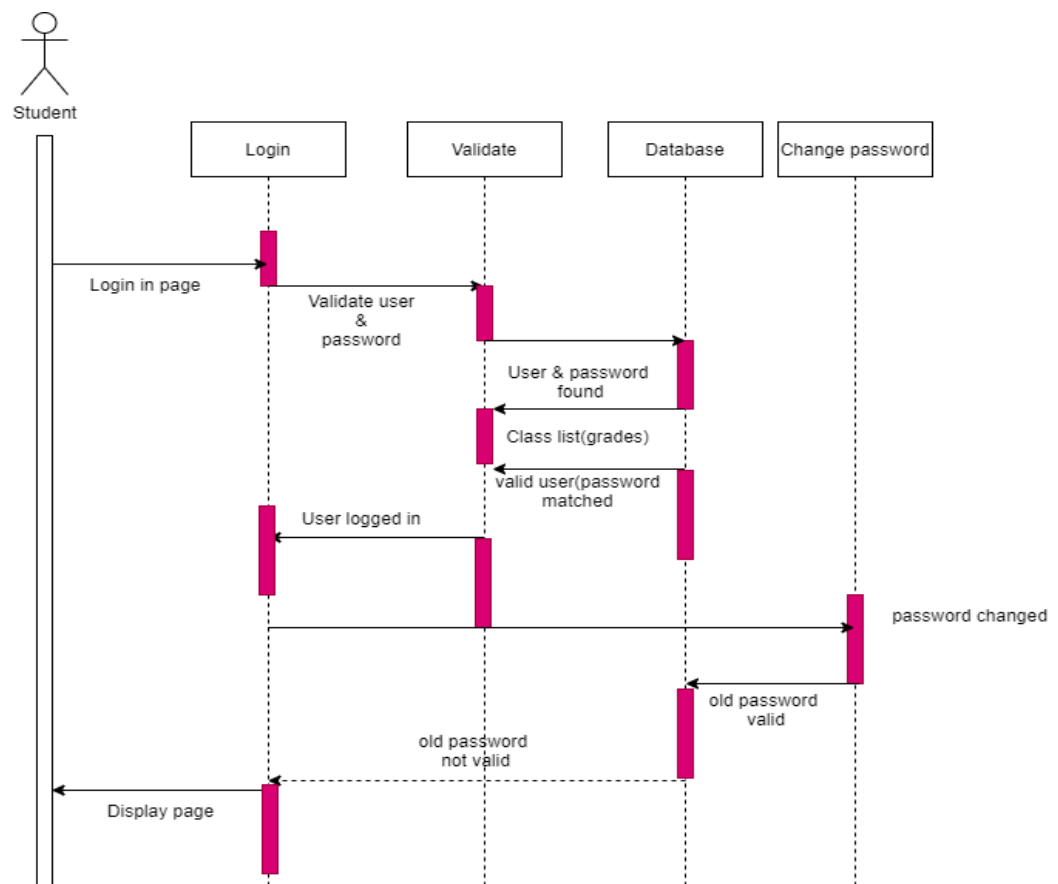

Figure: 4. 23 Login Sequence Diagram

13. Logout

Sequence logout, in this stage sequence, shows how users logged out from the system, every user logged out from one session. In logout users don't need to put a password or username, the system just takes them out, the system doesn't need for validation as well.
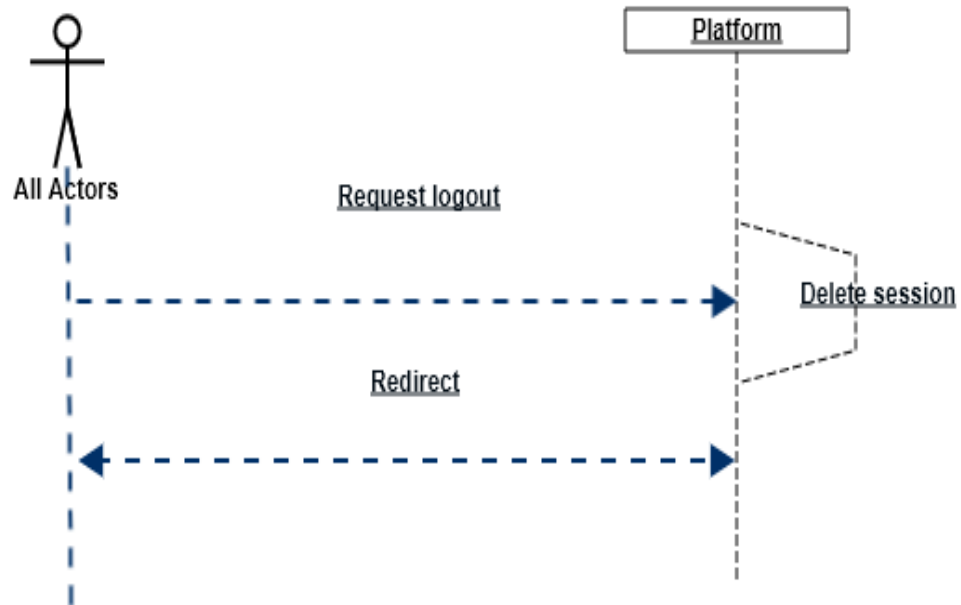
Figure: 4. 24 Logout sequence

1. Administration

In this stage, the administration has the right to update, delete, and insert new teacher, student, or event can make new admin, any changes will be saved in the database.
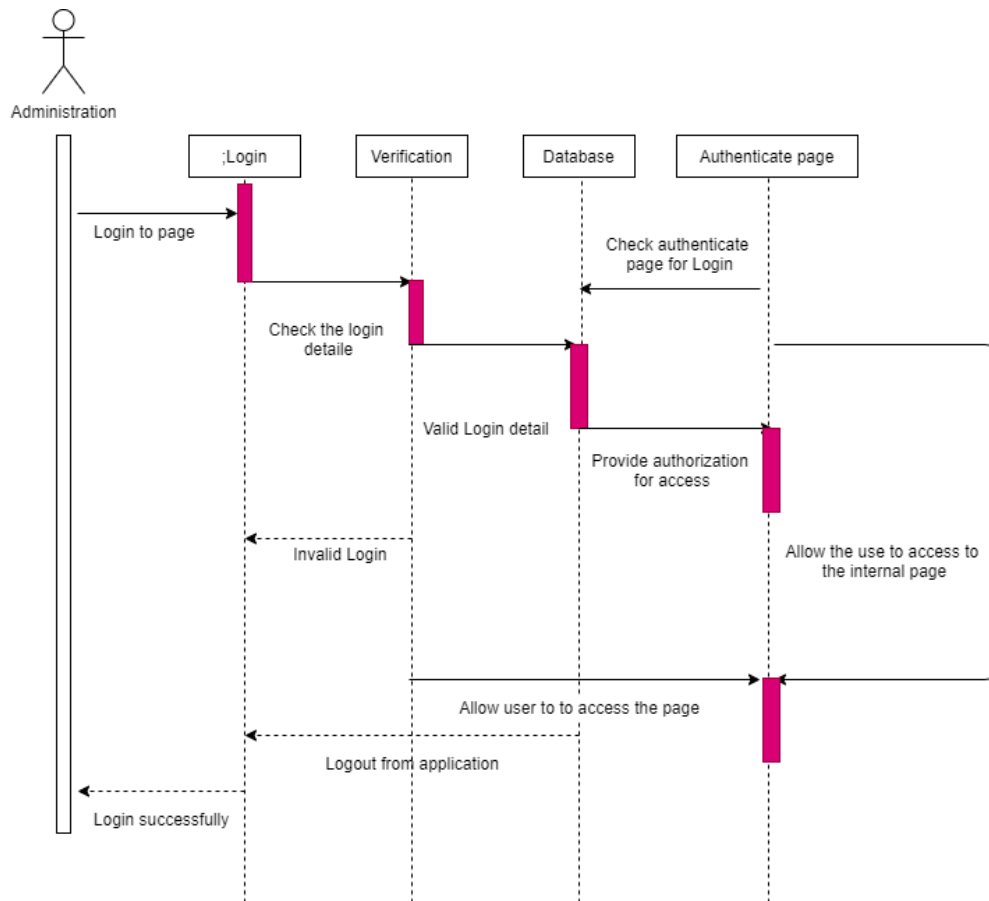
Figure: 4. 25 administration Sequence Diagram

2. Admission

The below sequence demonstrates the admission interaction with the objects.
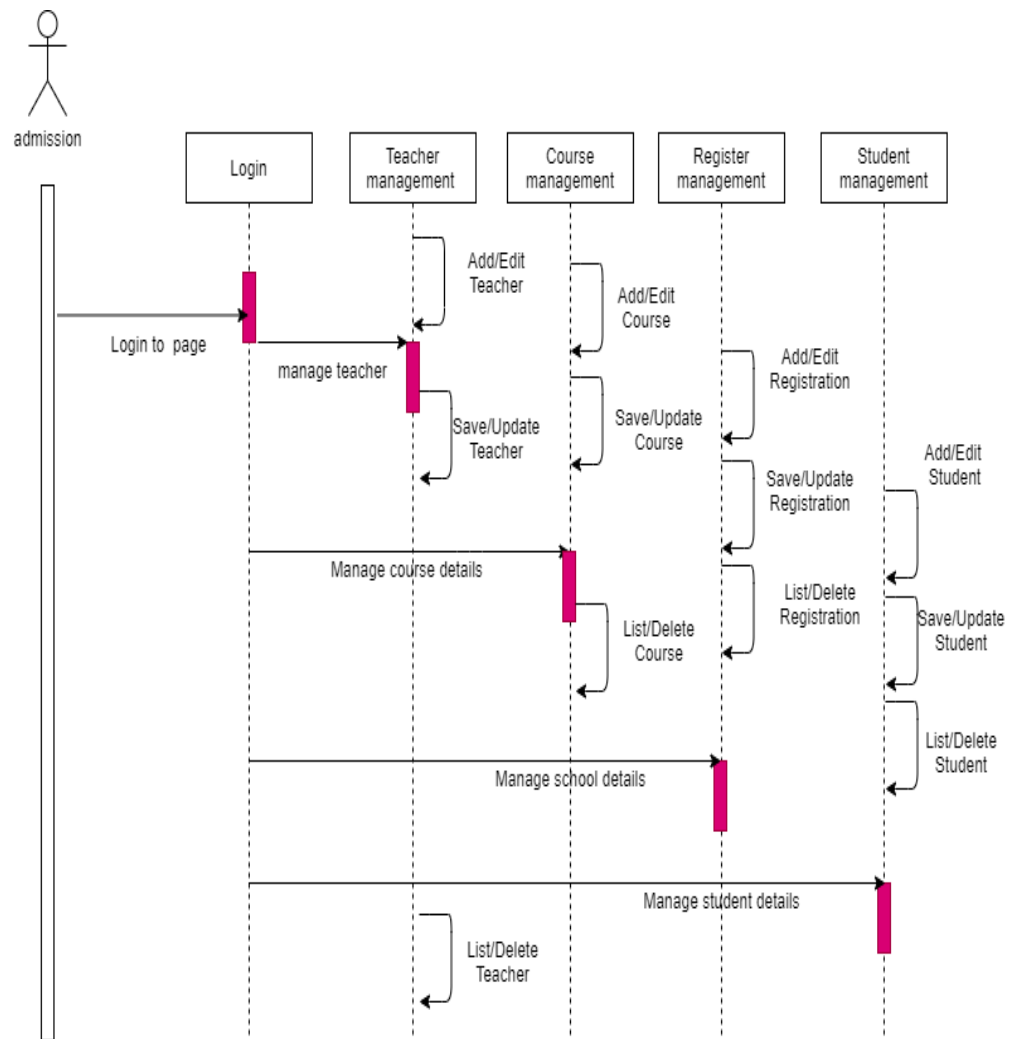
Figure: 4. 26 Admission Sequence Diagram

3. Student

The interaction of students with their account
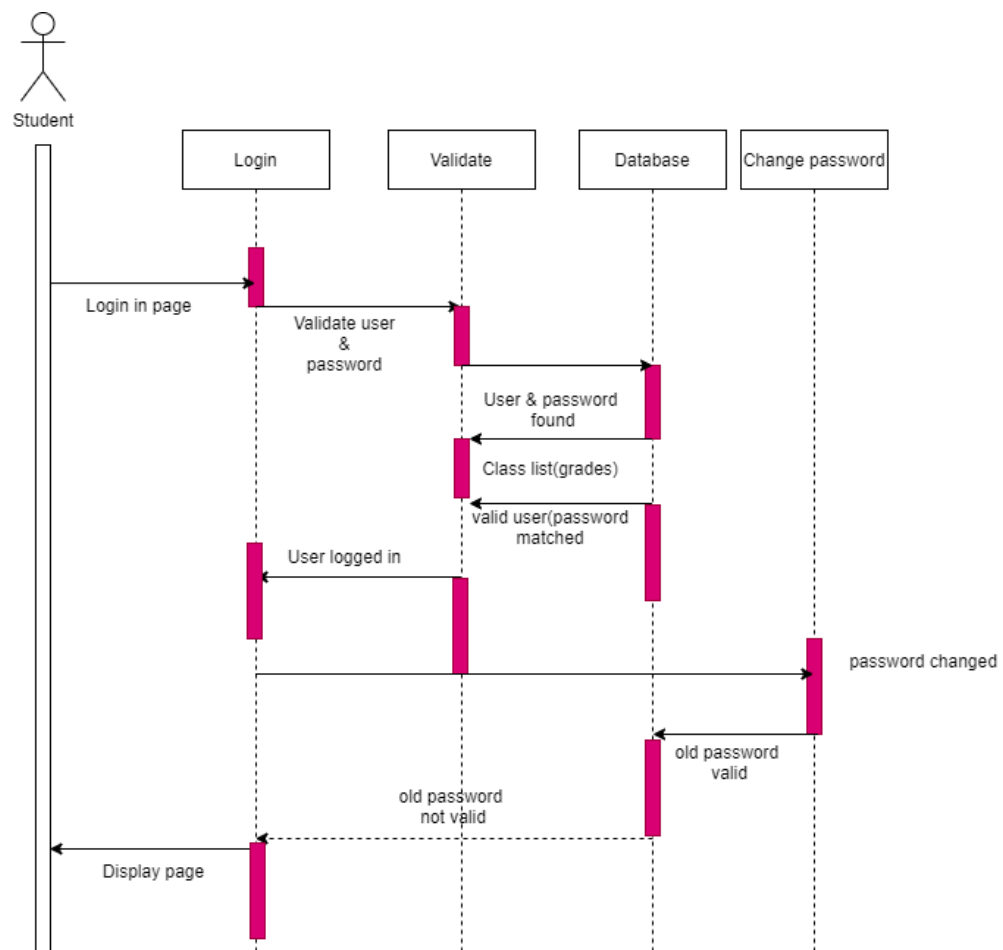
Figure: 4. 27 Student Sequence Diagram

4. Teacher

The below sequence shows the teacher's interaction with classes and teachers.
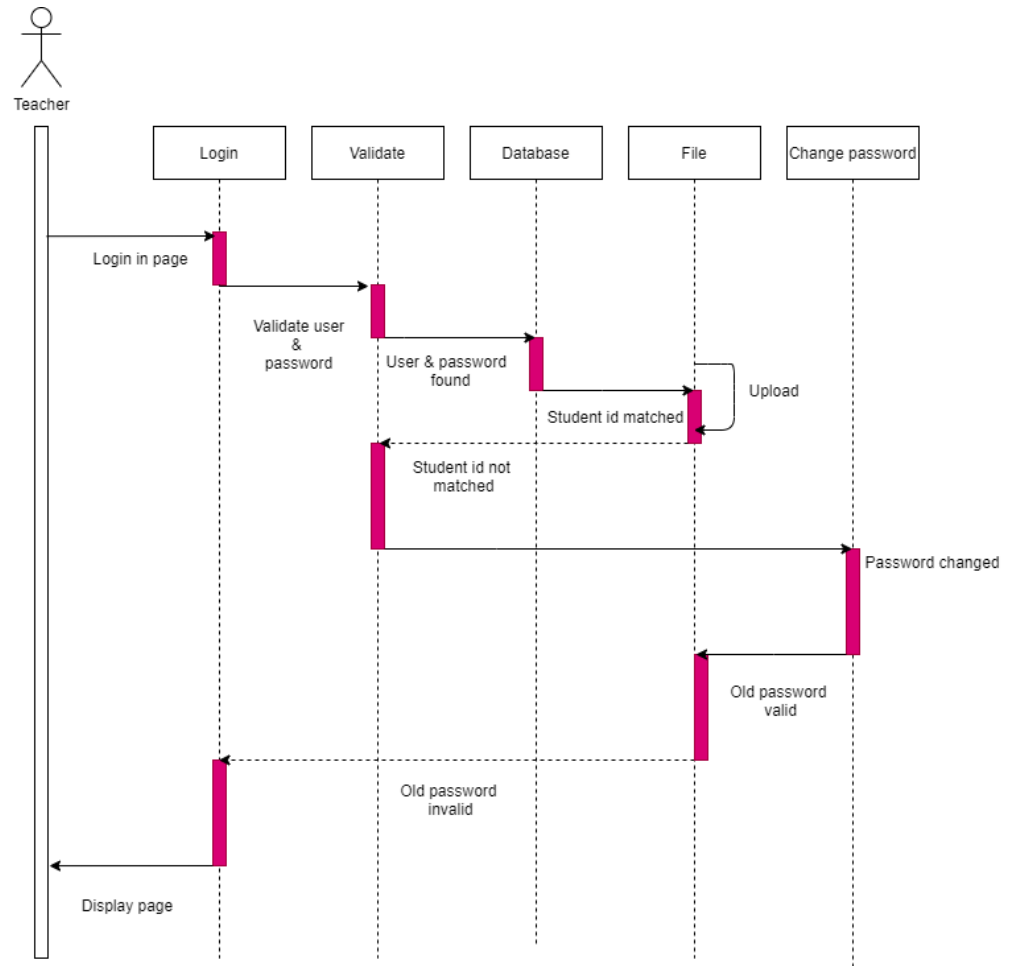
Figure: 4. 28 Teacher Sequence Diagram

4.2.6 Crud Matrix

A crud matrix is a table showing the functions in an application containing the SQL, MongoDB, Oracle, MySQL statement affecting parts of the database. We use crud to identify the tables in a database that are used in any user interaction with a web site.

Attributes	Student	Classes	Class-grade-student	Years	Subject	Grades	Family	Parent	All_subject	professions	Login
student	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
id	CR	R	R	R	R	R	R	R	R	R	R
nim	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
last name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
last name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
address	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
country	CR	R	R	R	R	R	R	R	R	R	R
password	CR	U	U	U	U	U	U	U	U	U	U

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classes	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
class_id	CR	R	R	R	R	R	R	R	R	R	R
class_student_grade	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
class_student_code	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
class_student_days	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
class_student_start_time	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
class_subject_id	CR	R	R	R	R	R	R	R	R	R	R
class_teacher_id	CR	R	R	R	R	R	R	R	R	R	R
class_student_id	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
Class-grade-student	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
student_class_id	CR	R	R	R	R	R	R	R	R	R	R
class_grade	CR	R	R	R	R	R	R	R	R	R	R
years	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
year_id	CR	R	R	R	R	R	R	R	R	R	R

year_name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
subject	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
sub_id	CR	R	R	R	R	R	R	R	R	R	R
subjectid	CR	R	R	R	R	R	R	R	R	R	R
subjectname	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
subjectcode	CR	R	R	R	R	R	R	R	R	R	R
grades	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
grade_id	CR	R	R	R	R	R	R	R	R	R	R
grade_number	CR	CRU	CRU	CRU	CRU	CRU	CRU	CRU	CRU	RU	CRU
nim	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
teacherid	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
subjectid	CR	R	R	R	R	R	R	R	R	R	R
class_grade_id	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
family	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU

family_id	CR	R	R	R	R	R	R	R	R	R	R
nim	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
familyname	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
familyjob	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
familyincome	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
parent	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
nim	CR	R	R	R	R	R	R	R	R	R	R
family_id	R	R	R	R	R	R	R	R	R	R	R
all_subjects	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
all_subjectname	CRU	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
all_subjectid	CR	R	R	R	R	R	R	R	R	R	R
professions	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
profession_id	CR	R	R	R	R	R	R	R	R	R	R
profession_name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU

login	CRUD	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
Admin_id	CR	R	R	R	R	R	R	R	R	R	R
admin_nim	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
name	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
email	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU
password	CR	U	U	U	U	U	U	U	U	U	U
confirm password	CR	U	U	U	U	U	U	U	U	U	U
role	CR	RU	RU	RU	RU	RU	RU	RU	RU	RU	RU

Table: 4. 14 Crud Matrix

4.2.7 Database Scheme
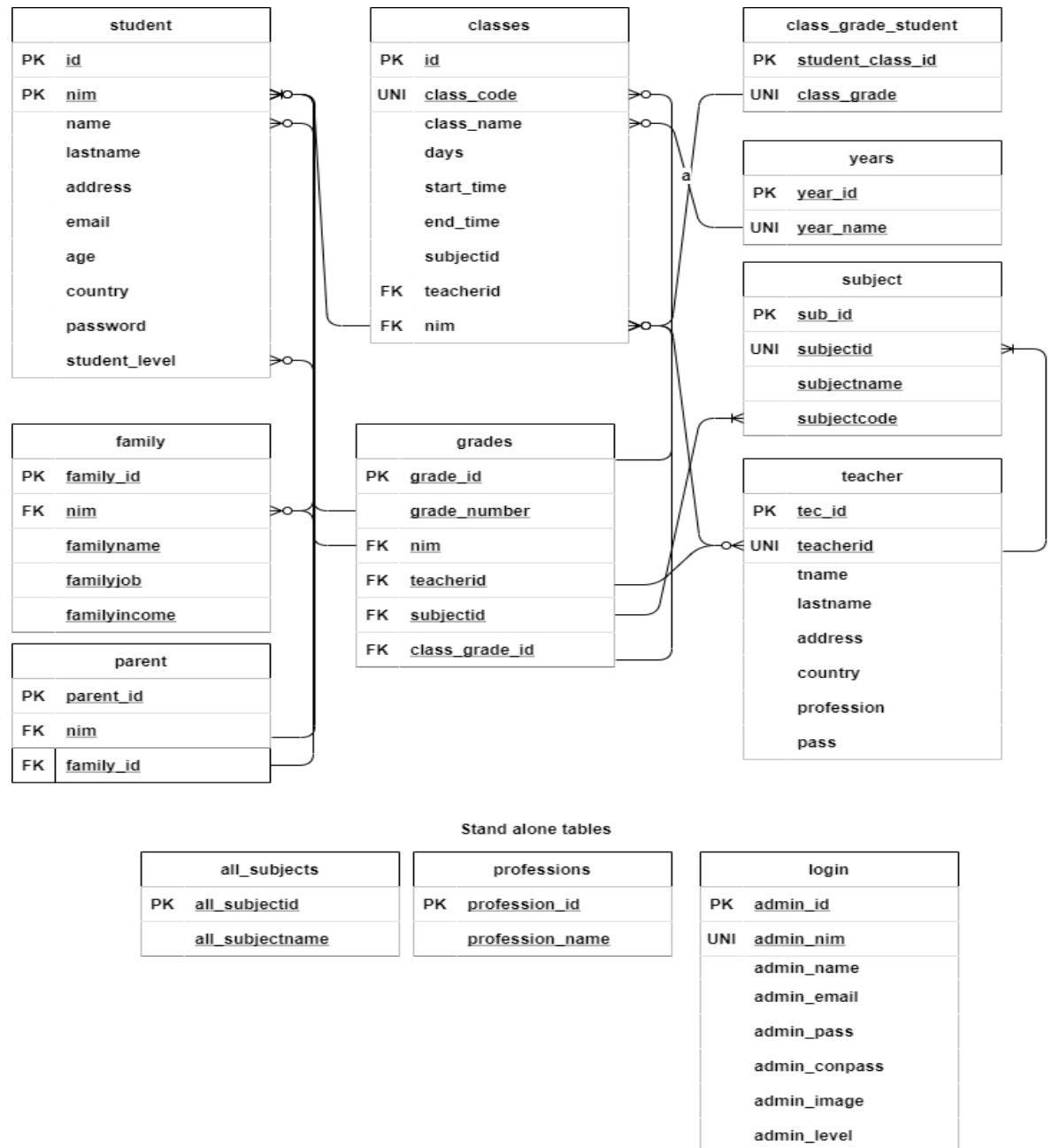
Figure: 4. 29 Database Schema

4.2.8 Database Specification

1. Login

   Table Name   : Login

   Primary key   : ID

   Type of table   : General

Table: 4. 15 User Specification

No.	Field	Type	Size	Information
1	Id	INT	10	INT 1: ADMIN_ID PRIMARY KEY AUTO_INCREMENT
2	Student_nim	GIGINT	20	UNIQUE
3	Teacher_nim	BIGINT	20	UNIQUE
4	Admission_id	BIGINT	20	UNIQUE
5	Admin_nim	BIGINT	20	UNIQUE

1. Login

Table Name   : Login

Primary Key   : ID

Table type   : Login

Table: 4. 16 Admin Specification

No.	Field	Type	Size	Information
1	Id	INT	10	INT 1: ADMIN_ID PRIMARY KEY AUTO_INCREMENT
2	Admin_nim	BIGINT	20	UNIQUE
3	Admin_name	VARCHAR	30	NOT NULL
4	Admin_lastname	VARCHAR	30	NOT NULL
5	Admin_email	VARCHAR	50	NOT NULL
6	Admin_pass	TEXT	-	NOT NULL
7	Admin_conpass	TEXT	-	NOT NULL
8	Admin_level	VARCHAR	15	NOT NULL

2. Student

Table Name : Student

Primary Key : nim

Foreign Key : nim

Table Type : Student Registration

Table: 4. 17 Student Specification

No.	Field	Type	Size	Information
1	id	INT	10	INT 1: ADMIN_ID PRIMARY KEY AUTO_INCREMENT
2	nim	BIGINT	20	UNIQUE
3	name	VARCHAR	30	NOT NULL
4	lastname	VARCHAR	30	NOT NULL
5	address	VARCHAR	50	NOT NULL
6	email	VARCHAR	50	NOT NULL
7	age	INT	11	NOT NULL
8	country	VARCHAR	20	NOT NULL
9	password	TEXT	-	NOT NULL
10	student_level	VARCHAR	10	NOT NULL

3. Family

       Table Name   : family

       Primary Key   : Family_id

       Foreign Key   : Family_id

       Table Type   : Family info

Table: 4. 18 Family Specification

No.	Field	Type	Size	Information
1	family_id	INT	10	INT 1: FAMILY_ID AUTO_INCREMENT PRIMARY KEY
2	nim	BIGINT	20	FOREIGN KEY
3	familyname	VARCHAR	30	NOT NULL
4	familyjob	VARCHAR	30	NOT NULL
5	familyincome	VARCHAR	30	NOT NULL

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4. Parent

        Table Name   : parent

        Primary Key   : parent_id

        Foreign key   : nim

        Foreign key   : family_id

        Table Type   : Parents infor

Table: 4. 19 Parents Specification

No.	Field	Type	Size	Information
1	parent_id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	nim	BIGINT	20	FOREIGN KEY
3	family_id	INT	10	FOREIGN KEY

5. Classes

Table Name   : classes

Primary key   : id

Foreign key   : subjectid

Foreign key   : teacherid

Foreign key   : nim

Table type   : Classes info

Table: 4. 20   Parents Specification

No.	Field	Type	Size	Information
1	id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	class_grade	INT	11	NOT NULL
3	class_code	INT	11	UNIQUE
4	days	VARCHAR	30	NOT NULL
5	start_time	VARCHAR	30	NOT NULL
6	end_time	TIMESTAMP	-	NOT NULL
7	subjectid	INT	11	FOREIGN KEY
8	teacherid	BIGINT	20	FOREIGN KEY
9	nim	BIGINT	20	FOREIGN KEY

6. Subjects

        Table Name   : subjects

        Primary key   : sub_id

        Foreign key   : subjectid

        Table Type   : subjects info

Table: 4. 21 Subjects Specification

No.	Field	Type	Size	Information
1	sub_id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	subjectid	INT	11	UNIQUE
3	subjectname	VARCHAR	30	NOT NULL
4	subjectcode	VARCHAR	15	NOT NULL

7. Teachers

      Table Name   : teacher

      Primary key   : tec_id

      Foreign key   : teacherid

      Table Type   : teacher info

Table: 4. 22 Teacher Specification

No.	Field	Type	Size	Information
1	tec_id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	teacherid	BIGINT	20	UNIQUE
3	tname	VARCHAR	30	NOT NULL
4	lastname	VARCHAR	30	NOT NULL
5	address	VARCHAR	70	NOT NULL
6	country	VARCHAR	30	NOT NULL
7	profession	VARCHAR	30	NOT NULL
8	pass	TEXT	-	NOT NULL

8. Grades

       Table Name   : grades

       Primary key   : grade_id

       Foreign key   : nim

       Foreign key   : teacherid

       Foreign key   : subjected

       Table Type   : grades info

Table: 4. 23 Grades Specification

No.	Field	Type	Size	Information
1	grade_id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	grade_number	INT	10	0
3	grade_string	CHAR	1	FOREIGN KEY
4	nim	BIGINT	20	FOREIGN KEY
5	teacherid	BIGINT	20	FOREIGN KEY
6	subjectid	INT	11	NOT NULL
7	class_grade_id	INT	10	NOT NULL

9. Years

     Table Name   : years

     Primary key   : year_id

     Table Type   : Years Info

Table: 4. 24 Years Specification

No.	Field	Type	Size	Information
1	year_id	INT	10	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	year_name	VARCHAR	30	UNIQUE

10. Professions

     Table Name   : professions

     Primary key   : profession_id

     Table Type   : Professions of teacher

Table: 4. 25 Professions Specification

No.	Field	Type	Size	Information
1	profession_id	INT	11	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	profession_name	VARCHAR	30	-

11. Share files

Table Name   : files
Primary key   : file_id
Foreign key   : teacherid
Foreign key   : nim

Table: 4. 26 Share file Specification

No.	Field	Type	Size	Information
1	file_id	INT	11	INT: 1 AUATO_INCREMENT PRIMARY KEY
2	nim	BIGNINT	20	FOREIGN KEY
3	teacherid	BIGINT	20	FOREIGN KEY
4	file_title	VARCHAR	30	-
5	file_description	TEXT	-	-
6	file_attachement	BLOG	-	-
7	send_date	TIMESTAMP	-	-

4.2.9 Menu Structure Design
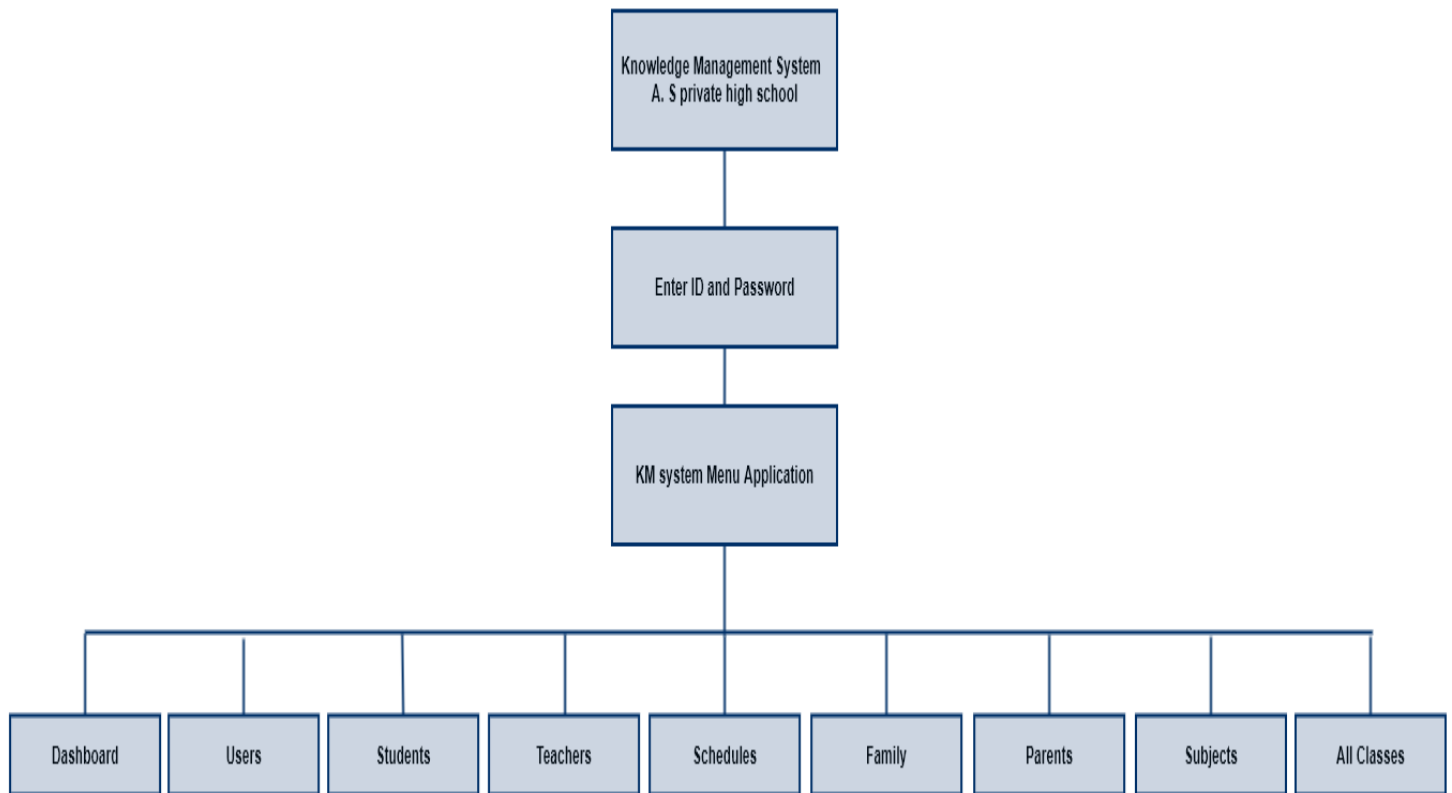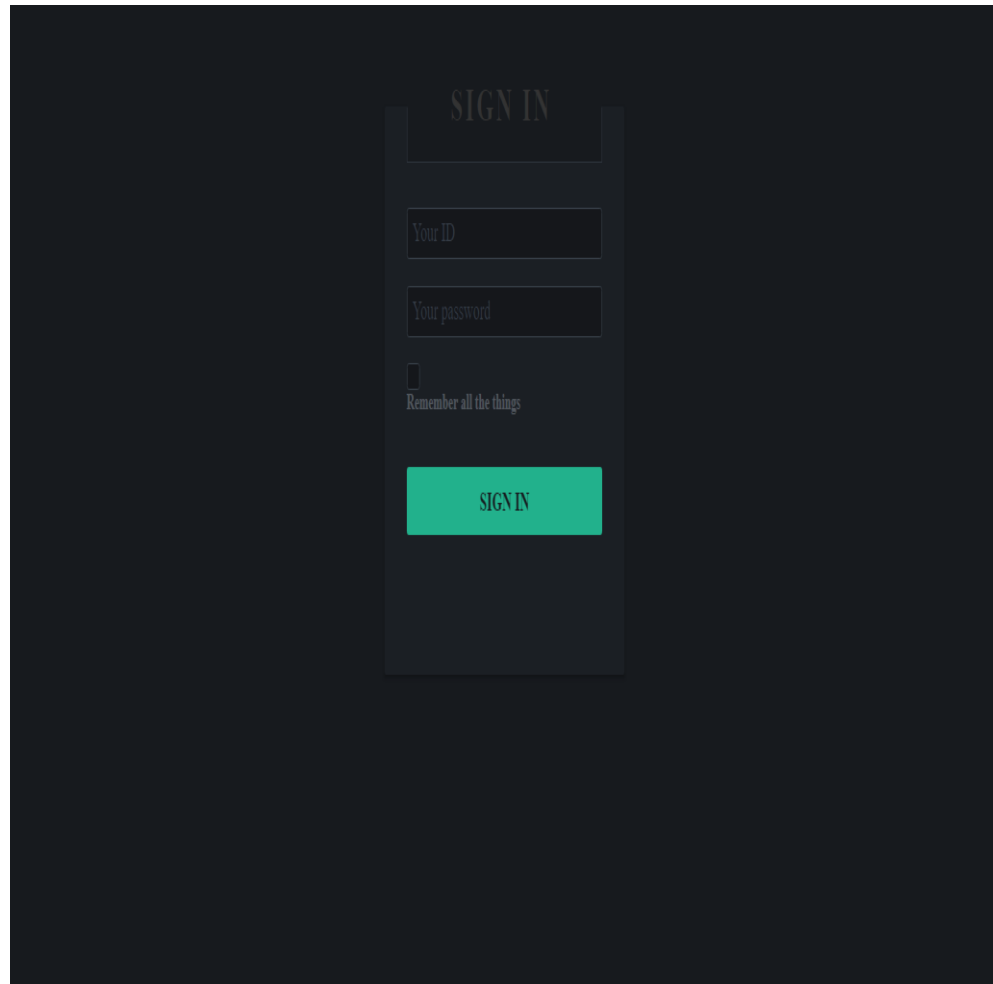
Figure: 4. 30 Admin Menu Application

4.3.1   Interface Design

Login

Figure: 4. 31 Login Interface Design

Dashboard

Figure: 4. 32 Dashboard Interface Design

Student

Figure: 4. 33 Student Interface Design

Teacher

Figure: 4. 34 Teacher Interface Design

Teacher add grade

Figure: 4. 35 Teacher add the grade

Register Student

Figure: 4. 36 Register Student Interface Design

Update Student

Figure: 4. 37 Update Student Interface Design

Add New Teacher

Figure: 4. 38 Add New Teacher

Update Teacher

Figure: 4. 39 Update Teacher

Settings
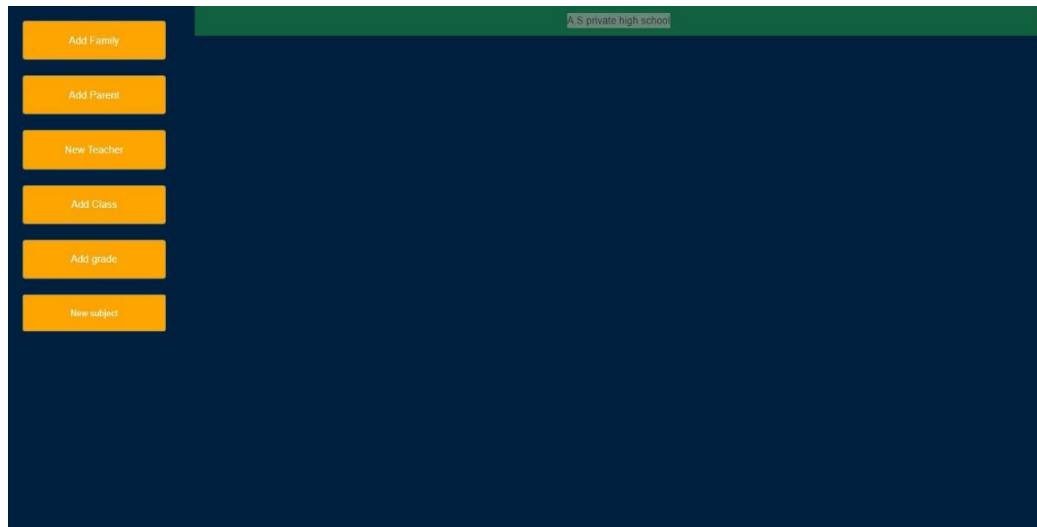
Figure: 4. 40 Settings Interface Design

Add New Family

Figure: 4. 41 Add New Family
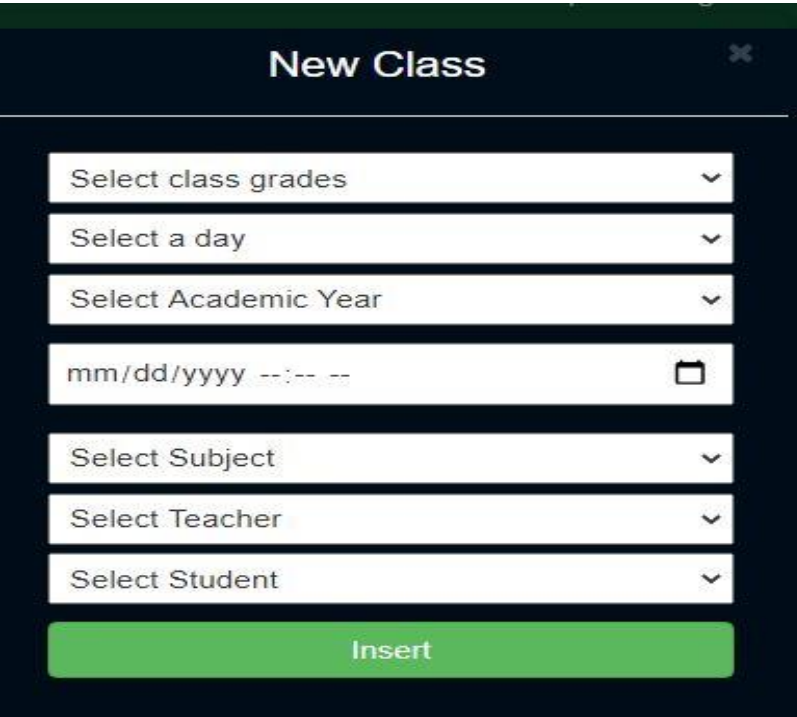
Add New Parent

Figure: 4. 42 Add New Parent

Add New Classes
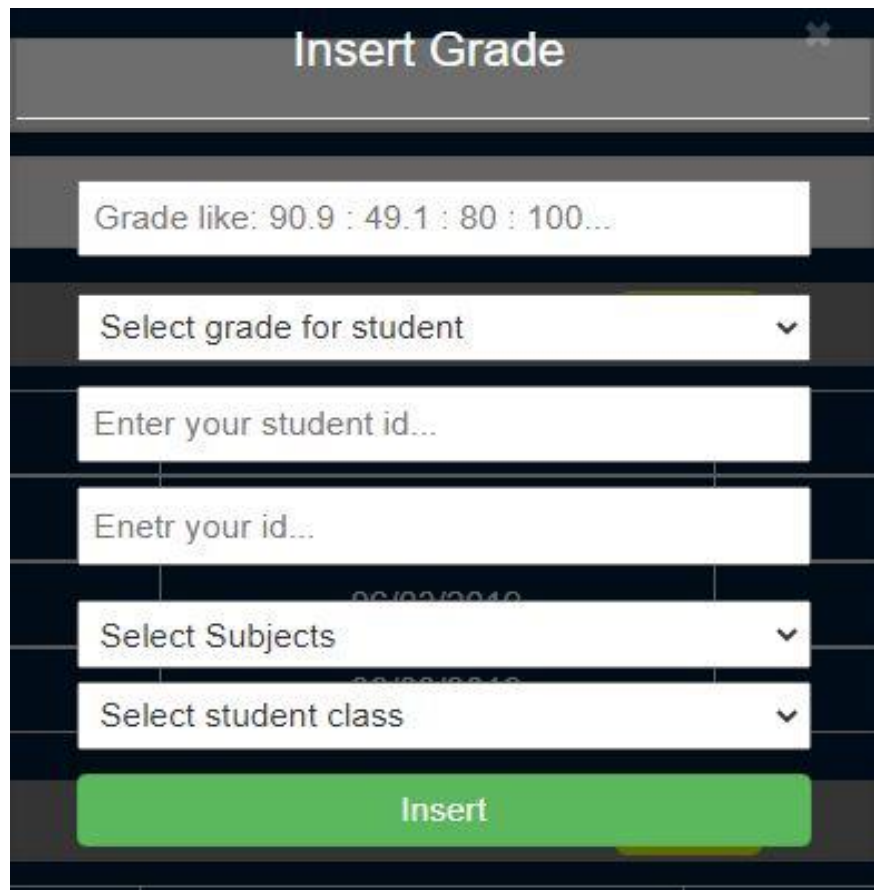
Figure: 4. 43 Add New Classes

Add New Grade

Figure: 4. 44 Add New Grades

Add New Subject

Figure: 4. 45 Add New Subject

4.4 Implementation

In the coding stage of the knowledge management system of A. S private high school we have used pure PHP programming language version 7.5, and MySQL as database as well phpMyAdmin for database management, we used visual studio code (VSC) for writing the script.

4.4.1 Testing

In this stage, we are using black-box testing or behavioral testing, the testing process carried out in the form of experiments and examination by running the system, as for the party that runs it the system in the testing process is (A. S private high school), this test shown as follows:

The testing displayed is based on the system namely:

1) Testing Login Menu

The Testing result for login design is shown in the table below:

Table: 4. 27 Testing Login Menu

No.	Design process	User	Expected result	Normalized	Result
1	Input ID and password click login	All actors	-If the ID and passwords are the same main page will open for use. -If the ID or password is not the same an error	Login Form And Main Page	Ok

			message will show the wrong user or ID		

2) Testing Dashboard Menu

The Testing result for dashboard design is shown in the table below:

Table: 4. 28 Testing Dashboard Menu

No.	Design process	User	Expected result	Normalized	Result
1	Click Dashboard menu for registration, add, update, delete	All actors	-If the ID and Password are correct show the dashboard.	Dashboard Form and modals	Ok

3) Students

The Testing result for student design is shown in the table below:

Table: 4. 29 Testing Student Menu

No.	Design process	User	Expected result	Normalized	Result
1	Click login in the student account	All actors	-If the ID and Password are correct to show the student.	Every student must see	Ok

No.	Design process	User	Expected result	Normalized	Result
				his/her account	

4) Teacher

The Testing result for teacher design is shown in the table below:

Table: 4. 30 Testing Teacher Menu

No.	Design process	User	Expected result	Normalized	Result
1	Click login in the teacher account	All actors	-If the ID and Password are correct to show the teacher.	Every teacher must see his/her account. Add grade for the student	Ok

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CHAPTER V

CLOSING

5.1 Conclusion

The manual system of the school was insecure consuming time and expose all the privacy of the students, with the new version of the student management system we enhanced the school performance and secured the privacy of each student and teacher.

This conclusion is based on the description and discussion in previous chapters, it can be concluded as follows:

In this thesis, the knowledge management documentation process is owned by A.S Private High School. Now data can be stored using computers and databases and data can be manipulated more effectively.

The result of this thesis is a student management system, in which student can see all their data within a personal account which will be made during registration.

Developing a web-based system for A. S private high school using PHP programming language and MySQL for storing data, MySQL database allows all students, teachers, to see their account as well as admin to control the system including information about a student and teacher.

5.2   Suggestion

For further development of this research, I suggest investigate deeper about students, including staff, families, teachers the details are as follows:

Further research can extend more functionality for students to ease student activities like online socialization, an online library based on their grades.

Allow specific students on the system to contribute to other students, ask students for their opinion about the system.

MySQL is one of the best databases in the world, I suggest go for MariaDB, Oracle, or MongoDB, with more space.

PHP has lots of Libraries use one of them to make the system more professional and user friendly, if you are not comforted with PHP choose a different language, like Django, Node.js, or Java.

REFERENCES

(Lewis and Durrant, S. a. (2011, 2013, 2014). Increasing Explicit Sequence Knowledge by Odor Cueing during Sleep in Men but not Women. *Tacit knowledge*, 2.

Aderonke Olaitan Adesina, D. O. (2020). The SECI Model in Knowledge Management Practices. *SDLC*, 3.

Agarwal, A. (2017). KNOWING "KNOWLEDGE" AND "TO KNOW": AN OVERVIEW OF CONCEPTS. *Knowledge*, 2.

al, L. (2010). Their effect on knowledge sharing and team performance. *Their effect on knowledge sharing and team performance*, 3.

al, M.-W. e. (2011). Tacit Knowledge for the Development of Organizations. *Tacit Knwoledge* , 3.

al., (. (2010). The Effects of Knowledge Sharing on Individual Creativity in Higher Education Institutions: Socio-Technical View. *Knwoledge managment*, 3.

Amr Salah Hamed Ramadan Ali*, E. G. (2013). Mobile Apps Based Management Information System Using Cloud Computing in E-marketing and E-learning . *Management Information System*, 3.

Cole, G. A. (2015). Management – Theory and practice (8th ed.). Andover: Cengage. *Information mangement system*, 3.

Dumay, S. &. (2015). Knowledge Management – from its Inception to the Innovation Linkage. *Knowledge managmenet* , 2.

Fakeeha Fatima, M. J. (2018). An Approach To Enhance Quality Of The Rad Model Using Agents. *Prototype*, 2.

Fatemeh Torabia, J. E.-D. (2). The impact of Knowledge Management on Organizational Productivity: A Case Study on Koosar Bank of Iran. *Knowledge mangement system*, 2017.

Haradhan Kumar Mohajan. (2017). Tacit Knowledge for the Development of Organizations. *tacit*, 2.

Heisig. (2015). Knowledge Management – from its Inception to the Innovation Linkage. *Knowledge managmenet*, 2.

Hitt. (2013). Management. *Management*, 3.

Hossein Hakimpoor1, *. M. (2018). Management Information Systems, Conceptual Dimensions of Information Quality and Qualityof Managerial Decisions: Modelling Artificial Neural Networks. *MIS*, 2.

Imran et al., K. e. (2014, 2018). RELATIONSHIP BETWEEN MODERN HUMAN RESOURCE MANAGEMENT PRACTICES AND ORGANIZATIONAL INNOVATION: EMPIRICAL INVESTIGATION FROM BANKING SECTOR OF CHINA. *Human journal* , 1.

Ivan, I. Ş. (2014). WEB TESTING APPLICATION WITH PHP AUTOMATED TOOL. *PHP*, 1.

Jin, A. (2015). On the Development of College Student Information Management System . *Knowledge sharing*, 1.

Jin, A. (2015). On the Development of College Student Information. *On the Development of College Student Information*, 2.

K. Sunil Manohar Reddy, a. V. (2019). A Review of Conventional SDLC Process Models. *SLDC*, 3.

Kabir, S. M. (2016). METHODS OF DATA COLLECTION. *Data collection*, 2.

Kamhawi. (2012). Knowledge Management as an important tool in Organisational Management: A Review of Literature. *Knowledge Management as an important tool in Organisational Management: A Review of Literature*, 2.

Kividi Kikama Jr, L. U. (2010). Securing the Rapid Application Development (RAD) Methodology . *RAD benefits*, 37.

Knowledge Management as an important tool in Organisational Management: A Review of Literature. (2013). *Knowledge management*, 2.

Kosasi, S. (2015). PENERAPAN RAPID APPLICATION DEVELOPMENT PADA SISTEM PENJUALAN SEPEDA ONLINE. *RAD*, 2.

Lance Ashdown, T. K. (2020). Database Concepts. *Database* , 26.

M. R. Keyvanpour, H. H. (2011). Automatic Software Test Case Generation,. *Journal of Software Engineering, vol. 5, no. 3, pp. 91–101, Mar. 2011.*

M. Sharma and B. S. Chandra. (2010). Automatic Generation of Test Suites from Decision Table - Theory and Implementation. *in Software Engineering Advances (ICSEA), 2010 Fifth International Conference on, 2010, pp. 459 –464*.

Marvel & Droege. (2010). Experiential knowledge in the internationalization processFrom a founder's personal experiences perspective. *Explicit* , 6.

Meijer, D. K. (2010). Information: what do you mean. *Information*, 15.

Muhammad Miftakhul Syaikhuddin, C. A. (2018). Conventional Software Testing Using White Box Method . *white text box*, 3.

Mum Wai Yip, a. A. (2013). Knowledge Management Activities in Small and Medium Enterprises/Industries: A Conceptual Framework . *knowledge*, 1.

Mustaquim, M. N. (2015). A System Development Life Cycle for Persuasive Design for Sustainability. *SDLC*, 3.

Nowduri, S. (2010). Management information systems and business decision making:. *Management information systems*, 2.

Nuhu, E. a. (2011). Explicit and tacit knowledge conversion effects, in software engineering undergraduate students. *Tacti and explicit*, 1.

Padmanabhan, B. (2018). UNIFIED MODELING LANGUAGE (UML) OVERVIEW. *UML*, 3.

Rathna, S. R. (2020). Android based Student Management System. *Android based Student Management System*, 2.

Sebastian K Boell, D. C.-K. (2015). What is an Information System? . *IS*, 2.

SEBoK. (2016). Defining "System": a Comprehensive Approach . *Ssytem*, 2.

Skyrme. (2011). The impact of knowledge management on organizational performance in today's economy. *knowledge managmenet benefits* , 3.

Susanto, A., & Meiryani. (2019). System Development Method with The Prototype . *prototype advantages*, 4.

Tarek Ghomeed, N. A. (2019). Web Based Student Management System. *Web Based Student Management System*, 1.

Tarek Ghomeed, N. A. (2019). Web Based Student Management System. *Information student management* , 2.

Thompson. (2015). Evolution of design for sustainability: From product design to design for system innovations and transitions. *Design Concept* , 2.

Venkitachalam. (2013). Aligning strategies and processes in knowledge management: a framework. *Knowledge Management*, 2.

APPENDIX

APPENDIX 1

INTERVIEW

Interviewees   : Mr. Muhmmad Nadir

Questioner   **:** Abdul Saboor Hamedi

1 What is the big issue of the school?

   Consuming time, It's one of the big challenges we're facing, every teacher has the responsibility to collect information about their students for giving the grades.

2 How is the registration system?

   In our school, A. S private high school everything is manual we ask students about their biodata, like name, last name, email, nationality, and some other information and we write them in a piece of paper and keep them on the yearly document.

3 What about the student family, do you know the student's family?

   Yeas we do know them, this our responsibility, it's the same as the student registration method, but don't go so deep about family, we ask them their names jobs, and incomes, and we save it in the families' document.

4   How is the grade announcing system?

Every teacher is responsible for distributing the grades, every teacher should give grades at the end of the academic year.

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3. Mrs. Nida'ul Hasanati, S.T. MMSI secretary of faculty of science and technology UIN Syarif Hidayatullah Jakarta.

4. Mrs. Evy Nurmiati, MMSI, lecturer of UIN Syarif Hidayatullah Jakarta.

That accept me to continue this thesis under their guidance. I start writing my thesis at the beginning of COVID-19 and I acknowledge plagiarism

Sunday, August 20, 2020

Abdul Saboor Hamedi

11160930000120

APPENDIX 2
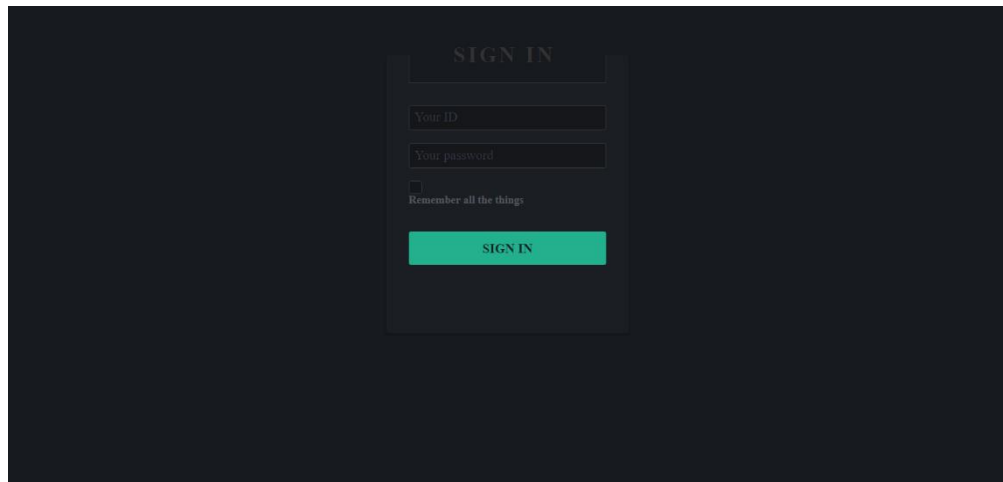
LETTERS

Note: I have not received the letters yet, after all my revision is done, Prodi will send me those letters.

APPENDIX 2

USER INTERFACE

Login

Dashboard

Admin Users

Admin ID	Admin nam	Admin email
11160930000120	Saboor	saboorhamedi49@gmail.com
11160930000192	New admin	newadminy@yahoo.com

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Student Data

No	ID	Name	Last Name	Address	Email	Age	Country	insert	edit	delete	view	export
1	83789553791438	saboor	hamedi	alkdfj	kfjlaksdf@gmail.com	12	askdfjlkj	+	✎	👤	👁	⬇
2	9932532004883	asdf	aaaaa	asdfasdf	asdfasd@gmail.com	5	alsfj	+	✎	👤	👁	⬇
3	5428577213337	asdfasd	asdf	asdf	sfasd@gmail.com	12	asdfasf	+	✎	👤	👁	⬇
4	22092393858586	asdf	asdf	asdfasd	asdf@gmail.com	21	asd	+	✎	👤	👁	⬇
9	17034213768553	asdf	asdf	asdf	asdfas@gmail.com	12	aslfjk	+	✎	👤	👁	⬇
10	54141807378939	kjhk	klhk	asdf	kjhgkjghjh@gmai.com	15	asdf	+	✎	👤	👁	⬇
11	88900252966804	lkjfasdk	asldkfj	asdkfjl	aldjlaksdj@gmail.com	7	asdf	+	✎	👤	👁	⬇

Teacher Data

No	ID	Name	Last Name	Address	Country	Profession	edit	delete
1	43632372818789	Wahid	Rahimi	Kabul	Afghanistan	Language professional	✎	👤
2	17352183302292	Aahron	Abo	asdfa	sdfd	HTML	✎	👤
3	73401312312453	Abrahaim	Abraham	asdf	asdf	HTML	✎	👤
4	89643142801876	Abrahame	Abrahamo	asdfasdf	asdfasd	HTML	✎	👤
5	18154898755021	Abrahem	Abrahim	asdfasd	asdfas	HTML	✎	👤
6	47526615248432	Abrahm	Abrahon	akjdfhj	ajksdk	HTML	✎	👤
7	80605444465409	sdf	asdf	asdfasdf	asdf	Languages (French, German, Spanish)	✎	👤

Schedules

No	Subject Code	Grade	Day	Start Time	End Time	edit	delete
4	73218	1	Tuesday	2020-06-19 11:54:00	2020-06-05 11:54:00	✎	👤
5	89124	1	Monday	2020-06-16 13:18:00	2020-06-16 13:18:00	✎	👤
6	73218	4	Tuesday	2020-06-06 13:23:00	2020-06-06 13:23:00	✎	👤

154

Family Data

No	Family ID	Family Name	Family Job	delete
1	asdf	asdf	48832	
2	asdfasdasdf	asdfasdf	234	

Parent Data

Parents data

No	Student ID	Family ID
1	83789553791438	1

Subjects

Subjects

Subject ID	Subject Name	Subject Code	Insert
73218	Language Arts	L1AS	
89124	Language Arts	ALU1	
23412	History	H13D	
35216	Music	YN7U	
9314	Anthropology	L8JY	
26156	Area Studies	KTWA	
11511	Geography	TOBK	

All Classes

No	Class grade	Class code	Class name	Days	start time	End time	Subject ID
2	1	42485	56XR	Moday	06/03/2020	2020-06-30 20:25:00	89124
3	1	95819	WRTJ	Moday	06/03/2020	2020-06-30 20:40:00	23412
4	2	60908	FHIB	Moday	06/03/2020	2020-06-30 20:42:00	23412
5	1	41603	WSD9	Moday	06/03/2019	2020-06-30 20:58:00	35216
6	1	4635	LA5G	Moday	06/03/2019	2020-06-25 21:02:00	54566
7	2	88533	JX57	Tuesday	06/03/2019	2020-06-06 21:04:00	30183
8	5	10964	B4YU	Moday	06/03/2020	2020-06-30 21:24:00	11511

Add new Admin

Register New Student

Add New Teacher

Add New Family

Add New Parent

Add New Classes

Add Grades

Student Account

Student Class Grade

No	Days	Class grade	Teacher Name	Teacher ID	Course	Start Time	End Time
				1			
2	Moday	1	Wahid	43632372818789	Language Arts	06/03/2020	2020-06-30 20:25:00
5	Moday	1	Wahid	43632372818789	Music	06/03/2019	2020-06-30 20:58:00
6	Moday	1	Wahid	43632372818789	Physics	06/03/2019	2020-06-25 21:02:00
				2			
No	Days	Class grade	Teacher Name	Teacher ID	Course	Start Time	End Time

Student Grades

ID	Subject	Total Grade	String Grade
1			65.0000
2	Language Arts	70	B
5	Music	90	A
6	History	50	D
2			65.0000

ID	Subject	Total Grade	String Grade

Teacher Account

Teacher Classes

No	Class grade	Class code	Years	Subjects
1				06/03/2019
5	1	41603	06/03/2019	Music
6	1	4635	06/03/2019	Physics
7	2	88533	06/03/2019	Life Sciences
1				06/03/2020

No	Class grade	Class code	Years	Subjects

Teacher Add Grades