A

PROJECT REPORT

ON

"Student Management Application"

is a partial fulfilment of the Diploma in **Information Technology** of
Maharashtra State Board of Technical Education, Pune during the academic
year 2020-2021.

By

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DEPARTMENT OF INFORMATION TECHNOLOGY

JSPM's JAYAWANTRAO SAWANT POLYTECHNIC

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(Academic Year: 2020-2021

MAHARASHTRA STATE BOARD
OF TECHNICAL EDUCATION

CERTIFICATE

This is to certify that **Mr. Abhishek Rajkishor Sharma** from (institute) Jayawantrao Sawant Polytechnic (Code:0711)havingEnrollmentNo:1607110006 has completed Capstone Projec tPlanning Report havening title **Student Management Application"**in a group consisting of 3 Candidates under the guidance of the Faculty Guide Mr. Patil C.R.

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Academic Year 2020-21

"Student Management Application"

POs	Mapping	Justification
PO1	✓	An ability to develop project "**Student Management Application**" will substantially help students to develop an ability to apply knowledge to Engineering Fundamentals and Engineering Specialization to solve Engineering problems.
PO2	✓	An ability to develop project "**Student Management Application**" will substantially help students to identify and analyse well defined Engineering problems.
PO3	✓	An ability to design project "**Student Management Application**" will substantially help students to design solutions to well defined technical problem and assist processes to meet specified needs.
PO4	✓	An ability to develop project "**Student Management Application**" will substantially help students to develop modern engineering tool ssuch as Android Studio and appropriate techniques.
PO5	✓	An ability to develop project "**Student Management Application**" will moderately help the students to apply appropriate technology in context of society and ethical practices.
PO6	✓	An ability to develop project "**Student Management Application**" will substantially help students to develop skills of working in team member or a leader and to communicate effectively by applying engineering management principles.
PO7	✓	Life-Long Learning is highly recommended as new technologies are emerging and there will be difference in needs with respect to group, cultureetc.

PSO	Mapping	Justification
PSO1	✓	An ability to develop project " **Student Management Application** " will substantially help students to use and learn latest Technologies.
PSO2	✓	An ability to develop project "**Student Management Application**" will substantially help students to maintain the information processes using modern information and communicationtechnology.

I

ACKNOWLEDGEMENT

It is matter of great pleasure for me to submit this semina report on"student management application" a part of curriculum for award of Maharashtra education of technical education's Diploma in information technology from JSPM's Jayawantrao SawantPolytechnic.

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II

ABSTRACT

This work is aimed at developing an Android Application for parent-faculty interaction, which is very important in any educational institution. This system will be useful for both parents and faculty members for effective communication. Faculty members can upload technical information like lecture notes, tutorial sheets, online course details, maintaining records, attendance, daily activities. In prior days managing faculty details, a schedule was entirely based on manual effort and it is a time-consuming process. The student management application has been proposed to overcome such problems. This emphasizes a continuous and comprehensive upgrading of visualizing the required changes in the modernized technology. This application has a record of daily activity planning that lists criteria for a piece of work. This application saves a considerable amount of time when instructors creates and manages activities. Overall, this application helps faculty in their work and improve their daily activity planning system.

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Chapter01   Introduction

As colleges got expanded the number of students also gets increased and also the student related contents increase. Student manegment Application is application software which is deliberated to begin with exchange of information in a secure manner to affiliate with students, faculties, parents and the college/school administration.

The suggested system contains whole data regarding information of the student such as informing parents regarding students' progress through mail system, and also modifying the student particulars through the application can be achieved successfully, student progress reports on consistent basis will be sent to respective parent in message format in regular intervals. Thefaculty will be going to enterthe student data contains the information (like roll no, mobile number, class, date-of-birth, gender, email-id, parent name, internal assessment marks, attendance etc.). These statistics will be stored in thedatabase.

This application can be effortlessly used In any educational institutions. In private and government educational institutions also, it can be implemented. (SMA) application is a web application that means it is easy to access and easy to control from anyplace and at any time. So GFM is uncomplicated application to the end user. Student information is stored in respective educational institutions with respectivedetails.

The responsibility of the faculty to maintain the record regarding attendance and internal assessment marks. Maintaining the attendance report by manually is not systematic ,not secure and in addition to that more time is needed to organize the record and to determine the average attendance of individual student. Also, manual internal assessment record system also not secure, more time is needed to organize it and getting an average is difficult. So, it is significant to have a system and which will over come the downsides of traditional system like information arrangement of a student, average attendance estimation, to enter student internal assessment marks, to generate the average and also to get the report of student attendanc as well asinternal assessment progress. The proposed system is going to a ccumulate the details of student those who are absent and present attendance details as well as internal assessment marks in electronic format so that management of attendance and internal assessment becomes comfortable. The limitations in traditional model is if a student who missed his/her name, meanwhile other student can make some proxy attendance record. Faculty has to carry attendance register every time and there is a chance of data manipulation.

1.1. Background Information

• **Java** :It is a general-purpose programming language that is class-based, object-oriented (although not a pure object-oriented language, as it contains primitive types and designed to have as few implementation dependencies as possible. It is intended to let application developers (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java application saretypically compiled to byte code that can run on any Javavirtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but it has fewerlow-level facilities tha neither of them. As of 2019 ,Java was on of the most popular programming lanuage since use according to GitHub ,particularly for client-server web applications, with a reported 9 milliondevelopers.

o **Features ofJava:**

• **Java isSimple:**

The Java programming language is easy to learn. Java code is easy to read and write.

• **Java isFamiliar:**

Java is similar to C/C++ but it removes the drawbacks and complexities of C/C++ like pointers and multiple inheritances. So, if you have background in C/C++, you will find Java familiar and easy to learn.

• **Java supports Functional programming:**

Since Java SE version 8 (JDK 8), Java is updated with functional programming feature like functional interfaces and Lambda Expressions. This increases the flexibility of Java.

• **Java is an Object-Oriented programming language:**

Unlike C++ which issemiobject-   oriented, Java is a fully object-oriented programming language.

With automatic garbage collection and simple memory management model (no pointers like C/C++), plus language features like generics,try-with-resources,… Java guides programmer toward reliable programming habits for creating highly reliable applications.

- **Java isSecure:**

  The Java platform is designed with security features built into the language and runtime system such as static type-checking at compile time and runtime checking (security manager), which let you creating applications that can't be invaded from outside. You never hear about viruses attacking Java applications.

- **Java isMultithreaded:**

  The Java platform is designed with multithreading capabilities built into the language. That means you can build applications with many concurrent threads of activity, resulting in highly interactive and responsive applications.

- **Java is Platform Independence:**

  Java code is compiled into intermediate format (bytecode), which can be executed on any systems for which Java virtual machine is ported. That means you can write a Java programonce and run it on Windows, Mac, Linux or Solaris without re-compiling. Thus the slogan "Write once, run anywhere" ofJava.

  Besides the above features, programmers can benefit froma strong and vibrant Java ecosystem. Java is powered by Oracle - one of the leaders in the industry. Java also gets enormous support from big technology companies like IBM, Google, Red hat, so it has been always evolving over theyears.

- **Java is High Performance:**

  Java code is compiled into bytecode which is highly optimized by the Java compiler, so that the Java virtual machine (JVM) can execute Java applications at full speed. In addition, compute-intensive code can be re-written in native code and interfaced with Java platform via Java Native Interface (JNI) thus improve the performance.

MySQL:

MySQL is the world's most popular open source database, enabling the cost-effective delivery of reliable, high-performance and scalable Web-based and embedded database applications. It is an integrated transaction safe, ACID-compliant database with full commit, rollback, crash recovery, and row-level locking capabilities. MySQL delivers the ease of use, scalability, and highperformance,aswellasafullsuitofdatabasedriversandvisualtoolstohelpdevelopersand   DBAs build and manage their business-critical MySQL applications. MySQL is developed, distributed, and supported by Oracle, and the latest information about MySQL software can be found on the MySQL Website.

The MySQL database provides the following features:

- High Performance and Scalability to meet the demand so fexponentially growing data loads and users.

- Self-healing Replication Clusters to improve scalability, performance andavailability.

- Online Schema Change to meet changing business requirements.

- Performance Schema for monitorin guser-andapplication-level performance andr esource consumption.

- SQL and NoSQL Access for performing complex queries and simple, fast Key Value operations.

- Platform Independence giving you the flexibility to develop and deploy on multiple operatingsystems.

- Big Data Interoperability using MySQL as the operational data store for Hadoop and Cassandra.

- To achieve the highest level of MySQL scalability, security, reliability and uptime, MySQL Enterprise Edition includes the most comprehensive set of advanced features, management tools and technical support, including MySQL Enterprise Monitor, MySQL Enterprise Backup, as well as scalability, security, auditing and high availability features. MySQL Enterprise Editional so includes 24x7 Oracle Premier Support and Oracle product certifications and integrations.

o **Different Embedded Server LibraryFunctions:**

- The embedded MySQL server library make sit possible to run a full-featured MySQL server inside a client application. The main benefits are increased speed and more simple management for embedded applications.

- The embedded server library is based on the client/server version of MySQL, which is written in C/C++. Consequently, the embedded server also is written in C/C++. There is no embedded server available in other languages.

- The API is identical for the embedded MySQL version and the client/server version. To change anoldth readed application to use the embed dedlibrary ,you normally only have to add calls to the followingfunctions.

Table 1.1: MySQL Embedded Server Library Functions

Function	When to Call
mysql_library_init ()	Call it before any other MySQL function is called, preferably early in the main () function.
mysql_library_end()	Call it before your program exits.
mysql_thread_init ()	Call it in each thread you create that accesses MySQL.
mysql_thread_end ()	Call it before calling pthread_exit ().

- Then you must link your code with my my sql .a in flibmysql client .a .To sure binary compatibility between your application and the server library, be sure to compile your application against headers for the same series of MySQL that was used to compile the serverlibrary.Forexample,iflibmysqldwascompiledagainstMySQL5.1headers,donot compile your application against MySQL 5.5 headers, or viceversa.

- The mysql_library_*xxx*() functions are also included in libmysqlclient. a to enable you to change between the embedded and the client/ serverversion by just linking your application with the right library. See Section 23.8.7.40,"mysql_library_init()".

- One difference between the embedded server and the standalone server is that for the embedded server, authentication for connections is disabled bydefault.

1.2. Motivation

-
- This system will save a lot of paperwork and will give easy and quick access to all the studentsand facultymembers,thatwouldliketo checktheirstatus–andsavecountlessman hours.

- The system will present the university as a modern place to nominees. With an electronic system, forms will not be "lost" And countless trees will besaved.

- To provide better information management.

- Themotivationfor doing thisprojectwas primarily an interest in undertaking a challenging project in an interesting area ofresearch.

- The opportunity to learn about a new area of computing. Motivation has a strong influence on projectresults.

- A project team that is highly motivated to accomplish the goals of the project is much more likely to reach thosegoals.

Chapter02   LiteratureReview

The system has come up with many functionalities for educational institutions to track the student progress and managing daily records. It helps both student and guardian to keep track of student progress without visiting to the college. It also notifies student and guardian during the time of important events which are happening in institution. One more feature is guardian get alerted when ever student get faile din the exam or student not able to meet the expect edaverage.Guardian Faculty Member Android Application is application software and which has intention to begin a conductive and direct interchanging the statistics in a secure platform to communicate with students, faculties, parents and the college/school administration. The student information has the particulars (like register number, date-of-birth, parent phone number, address, parent name, etc.) in vadet ot he system by the faculties. All the separti cularsis store din the database.(SMA)application is trouble free to us in schools ,colleges ,universities ,and anyother educational institutions .It can be customized as per the need. It can be used in private and government educational institutions also. SMA application is an internet-based application we can login to the system from anywhere irrespective of geographical area it will give seamless snavigation .The paper provides the particulars to carry out the performance, management and decision-making functions of enterprises or organizations. Asstudent added to the educational system it is difficult to manage and track student details. To overcome difficulties, we come up with this new approach student information management system with additional features. This new approach will provide fast processing, efficient student tracking, and produces desired result. This approach will allow students to save their personal details. It is more secure, reliable and easy to use. activities ispart of any system to keep track of the particular person. It is mandatory process in educational system which directly reflects the student progress. There is enormous grow in the software industry which has privileged colleges to maintain the records by using gadgets which is the best way. As we are using the smart phones, we not require maintaining a register. It can be easily done in mobile application. Faculty will be going to take the attendance when class gets started. They will initially login to the system through mobile application. The faculties can also do the necessary functions like registering new students, deleting the information about a particular student, modifying the information regarding the student etc. The main intention of this process is to reduce the risk of manual efforts. It also reduces the time consumption.

Topic	Author	Year	Advantage
Student Management System – A Survey [1]	Krithi , Dr Ramakrishna	Student Management System – A Survey May 2017	The status will be sent to the parent by a SMS, called SMS module, and email will be sent to the respective parent and it is known as email module.
Student Attendance Management [2]	Mrs.Dhanashree Amit Gupta	November 2011	The purpose of developing attendance management system is to computerized the tradition way of taking attendance.
Web Based Attendance Management System [3]	Sahar Hassan	December 2015	The system facilitates end user with interactive design and automated system of attendance management.
A Synchronous Tool for Innovation and Improvement of University Communication, Counselling and Tutoring: The WhatsApp	David Perez-Jorge, Fernando Barragan-Medero, Jouse Gutierrez-Barroso, Fatima Castro-Leon.	April 2018	This approach makes reflect upon use of alternative tools to face to face academic tutoring, which promotes monitoring.

- The suggested system contains whole data regarding information of the student such as informing parents regarding students' progress through mail system, and also modifying the student particulars through the application can be achieved successfully, student progress report sonconsistent basis will besentt or espective parent in letter format in regular intervals. (Krithi , Dr M Ramakrishna May 2017)[1]

- To overcome the problems of manual attendance, they have developed"web-based attendance Management System".Attendance Management System Is based on web server ,which can be implemented on any computer. (Sahar Hassan, December, 2015)[2]

- The purpose of developing attendance management system is to computerize the traditional way of taking attendance. (Mrs. Dhanashree Amit Gupta, November 2011)[3]

- The approach reflects on use of alternative tools to face to face academic tutoring, which promotes monitoring and contact with students. (David Perez-Jorge, Fernando Barragan-Medero, Jouse Gutierrez-Barroso, Fatima Castro-Leon, April 2018)[4]

Chapter03   RequirementAnalysis

3.1 Basic Requirements:-

For implementing this project, we need to install the Android Studio, jdk in our systems which will help the code to executesuccessfully.

3.2 Hardware Requirements:-

- Processor: - intel i3(3.4Ghz-4.2Ghz)
- Ram: -4GB
- Hard Disk: - 500GB

3.3 Software Requirements:-

- Operating System: - Windows(10)
- Android Studio3.5
- Java JDK 8 or 8+
- MySQL8.0.12
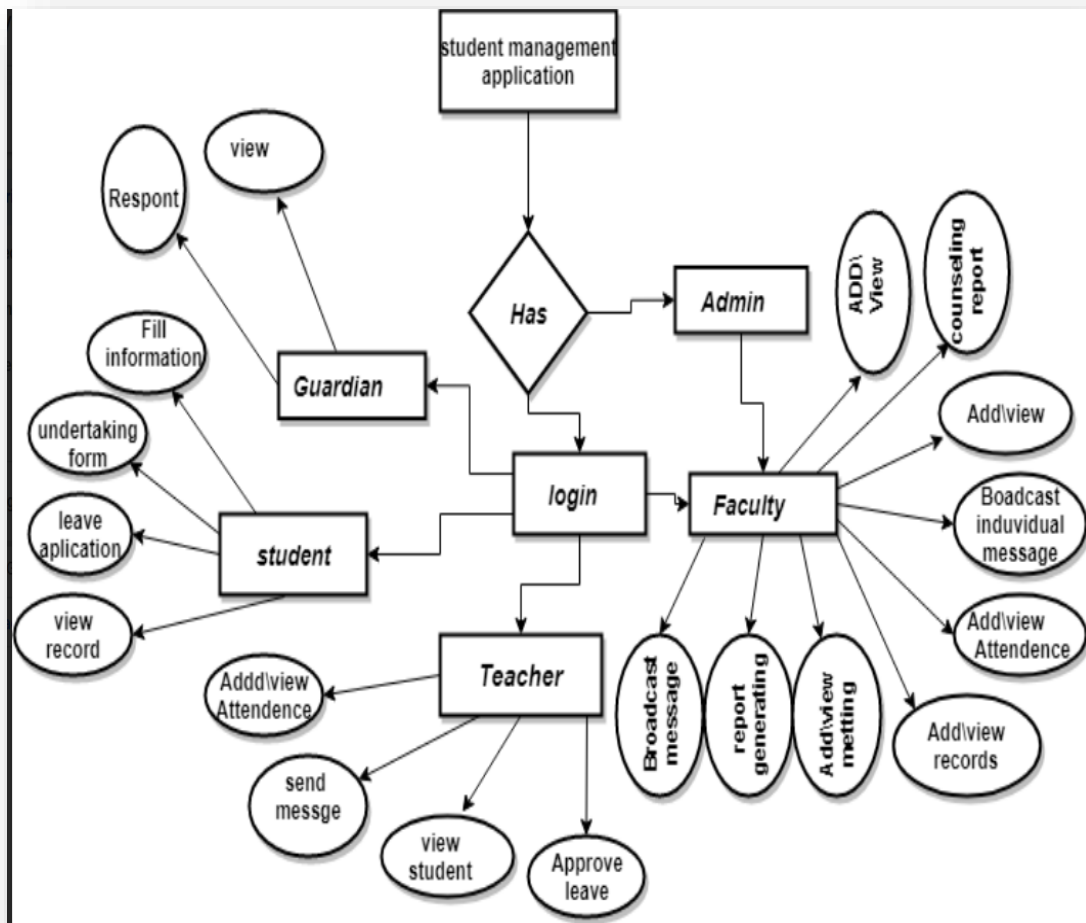- AWS

Chapter 04 Design Modelling

4.1 ER Diagram of Proposed: -

Fig 4.1: ER diagram for Guardian-Faculty Member
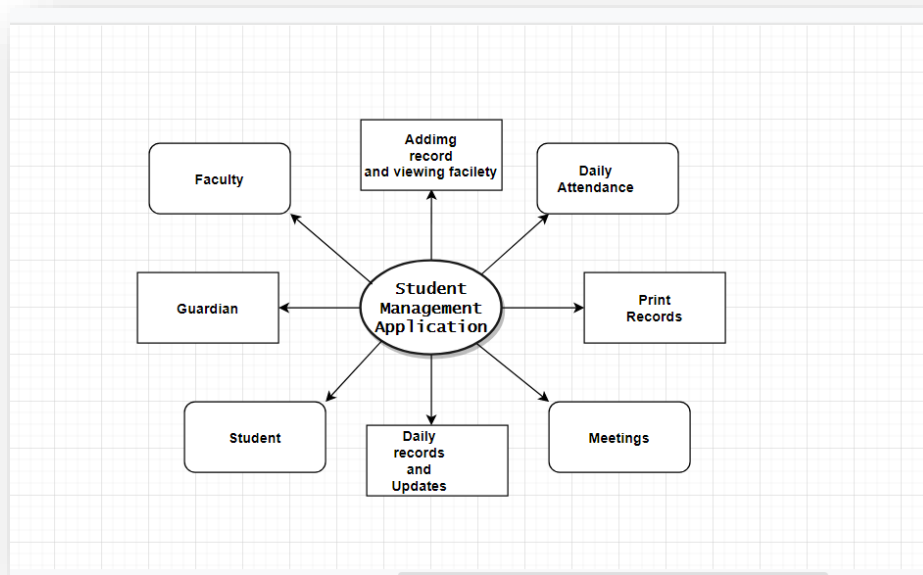
4.2. DFD diagram of Proposed:-

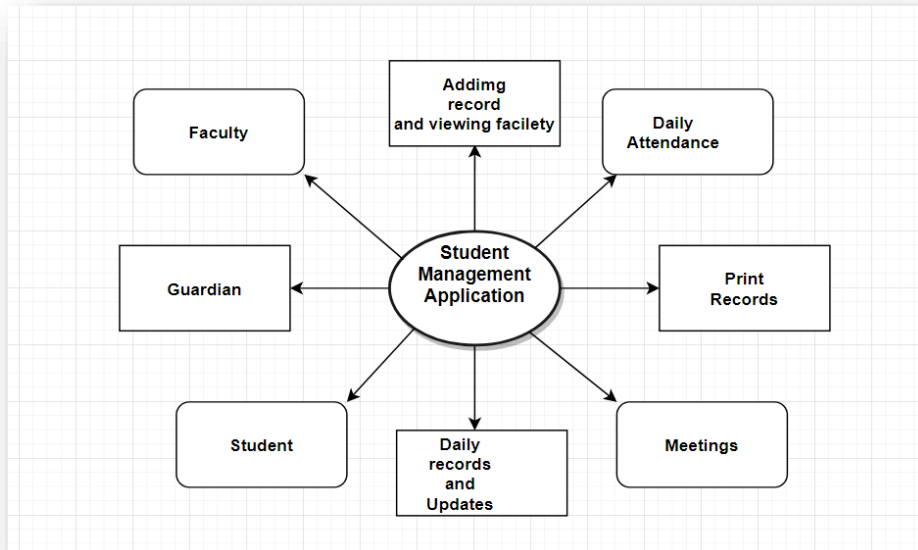Fig 4.2: Level 0 DFD for Guardian-Faculty Member

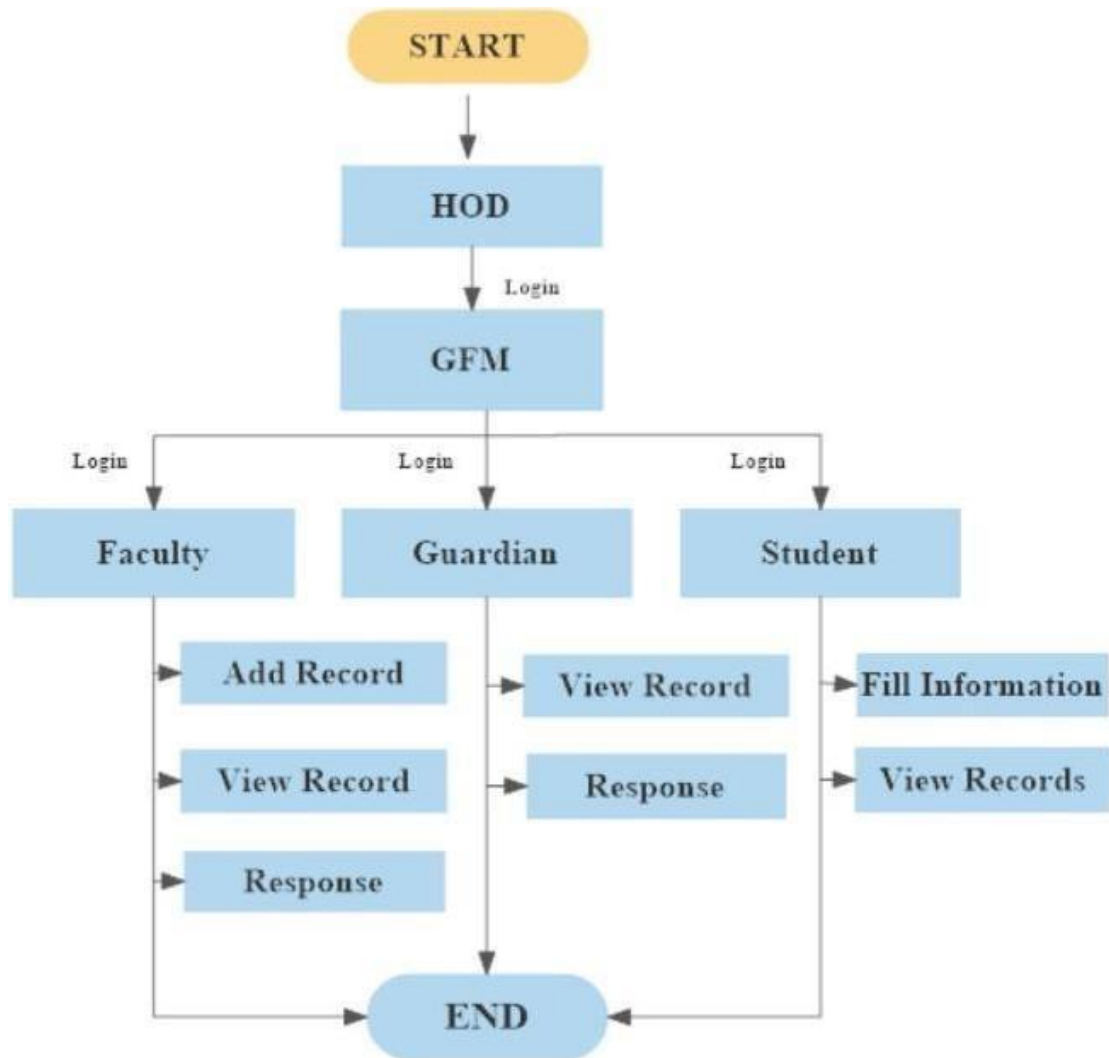Fig 4.3: Level 1 DFD for Guardian-Faculty Member

4.3. Flow Chart of Proposed:-

Fig 4.4: Flowchart for Guardian-Faculty Member

Chapter05   ExistingSystem

5.1. ManualSystem

A manual system is a bookkeepingsystem where records are maintained by hand, without using a computer system. In This system, more time is consumed. While making your app work offline you will often need to store data directly on the device.This allows your application to work effectively even when there is no connection. There are several different methods or levels of an offline data storage that make an app run offline. It can be different for different mobile platforms (iOS, Android, Windows phone and other).Large amount of paper workis needed to accomplish the task in the current system and more time is needed to perpetuate necessary record. This system is used far and wide and it requires lot of human efforts and interaction is needed to maintain the records. It is very difficult to get the information about the old students who left the college more than ten years. There is a chance of data loss in case of any physical damage is encountered or in case of any natural disaster. It is decentralized and asymmetric way of storing the data.

5.2. List of disadvantages in previousmodule/system

- Have to maintain lot of paperwork.
- Cannot use when offline.

Chapter06   ProposedSystem

Current system has encountered with many limitations. The suggested system hits the restrictions found in the current system. There exists lot of advantages in a proposed system that is the system is complete package so there are no slipups concerning the statistics of student's attendance and internal assessment marks etc. Also, it eliminates redundancy. It is easy to get information from single source .No latency when bringing back statistics and status of the student .Complete statistics of a student can be recovered in the method of SMS to the mobile phone through one touch. Notifications will be conveyed to the respective guardians through SMS when particular student not able to attend the class as per the university guidelines and also email can be sent to respective parent and also pie and bar charts can be generated as per student's performance. Also, it allows admin to store student and faculty details also admin can track the faculty and student detail. The application allows bringing about courses surrounded by a class domain. It has got profile based super vision like administrat or ,faculty and student. It allows faculties to manage student attendance and their internal assessment marks. And also, it allows students to view their own details and also can generate report. Students get alerted with all the notices andcircular.

6.1. Advantages: -

- User -Friendly GUI

- Interacting with parent's becameeasier

- Less time consuming

- Flexible