

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

PROJECT PROPOSAL (SYNOPSIS)

BCSP-064

ON

E-LEARNING MANAGEMENT SYSTEM

By

Lavanya Goyal (176231510)

UNDER GUIDANCE

OF

Mr. Suman Sankar Jha

Submitted to the Shyam Lal College (0769) in
Partial fulfilment of the Requirements for the
degree of
Bachelor
Of
Computer Applications



Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068

Table of Content

S.NO.	CONTENT	PAGE NO.
1.	Title of the Project	
2.	Introduction and Objectives of the Project	
3.	Project Category	
4.	Analysis	
5.	A complete structure	
6.	Tools / Platform, Hardware and Software Requirement specifications	
7.	Are you doing this project for any Industry/Client?	
8.	Future scope and further enhancement of the project.	
9.	Bibliography	

1. Title of Project

E-Learning Management System



2.1 Introduction of the Project

The "E-learning Management System" has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate and in some cases reduce the hardships faced by this existing system. Moreover this system is designed for the particular need of the company to carry out operations in a smooth and effective manner.

The application is reduced as much as possible to avoid errors while entering the data. It also provides error message while entering invalid data. No formal knowledge is needed for the user to use this system. Thus by this all it proves it is user-friendly. E- Learning Management System, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus it will help organization in better utilization of resources.

Every organization, whether big or small, has challenges to overcome and managing the information of Student, Assignment, QUIZ, CLASS, and QUESTION. Every E-learning Management System has different Assignment needs, therefore we design exclusive employee management systems that are adapted to your managerial requirements. This is designed to assist in strategic planning, and will help you ensure that your organization is equipped with the right level of information and details for your future goals. Also, for those busy executive who are always on the go. These systems will ultimately allow you to better manage resources.

2.2 Objective of the Project

The main objective behind this project is to provide a user friendly environment to provide knowledge and give everyone a chance to learn, irrespective of where they are, provided they register themselves with the system.

The main features that the system provides can be made use of, once the registered people select their interested subject and take a starter test. This helps to establish incremental learning process. After taking this, based on their level of competence, they can take available tutorials, take online tests and also discuss an issue/topic by posting messages in the discussion forum. Along with this they can also take real time simulations of the most widely known competitive exams.

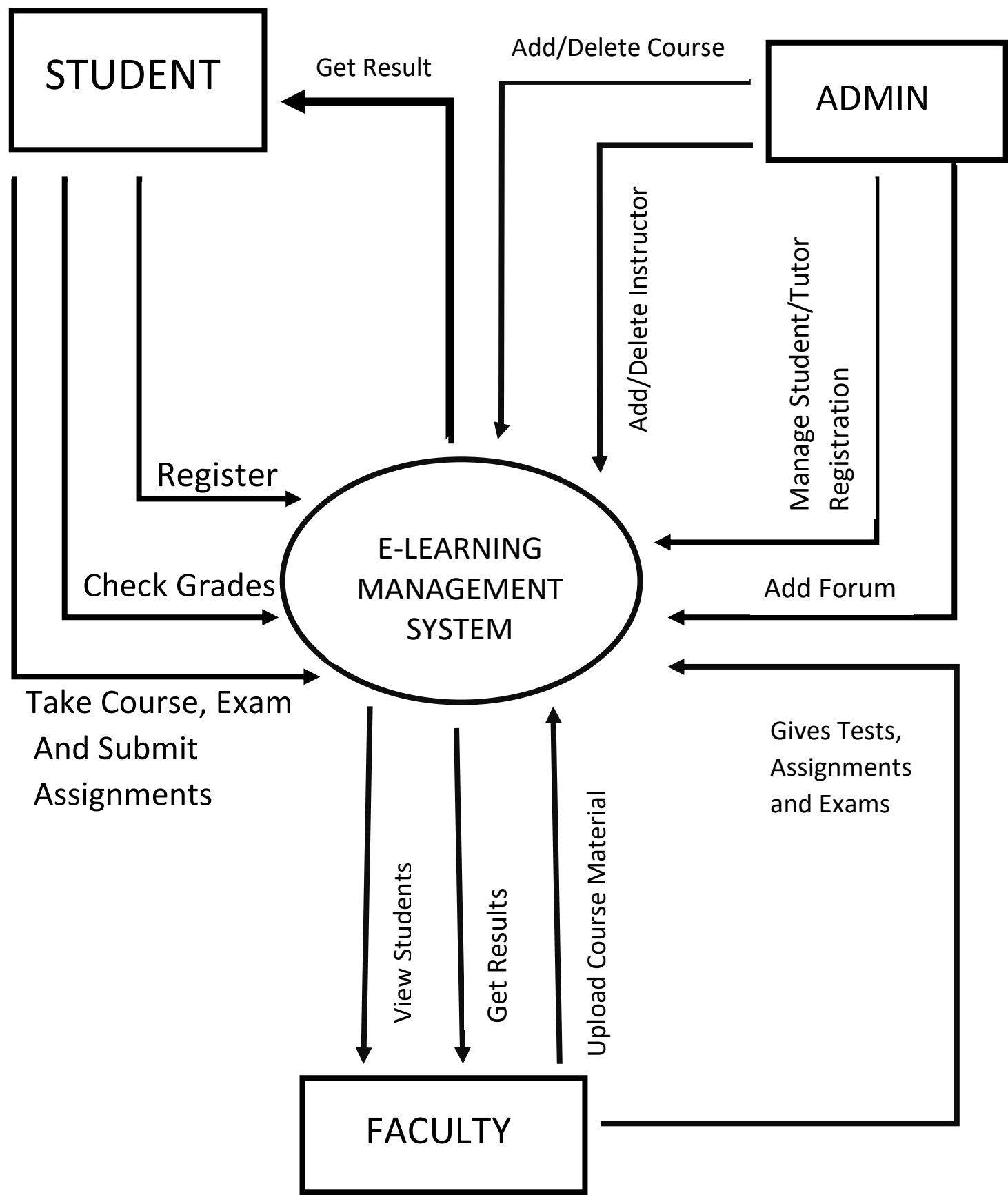
Project on E-learning Management System is to manage the details of Assignment, Student, TEACHER, QUIZ, and QUESTION. It manages all the information about Assignment, CLASS, QUESTION, and Assignment. The project is totally built at administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Assignment, Student, CLASS, and TEACHER. It tracks all the details about the TEACHER, QUIZ, and QUESTION.

3. Project Category:

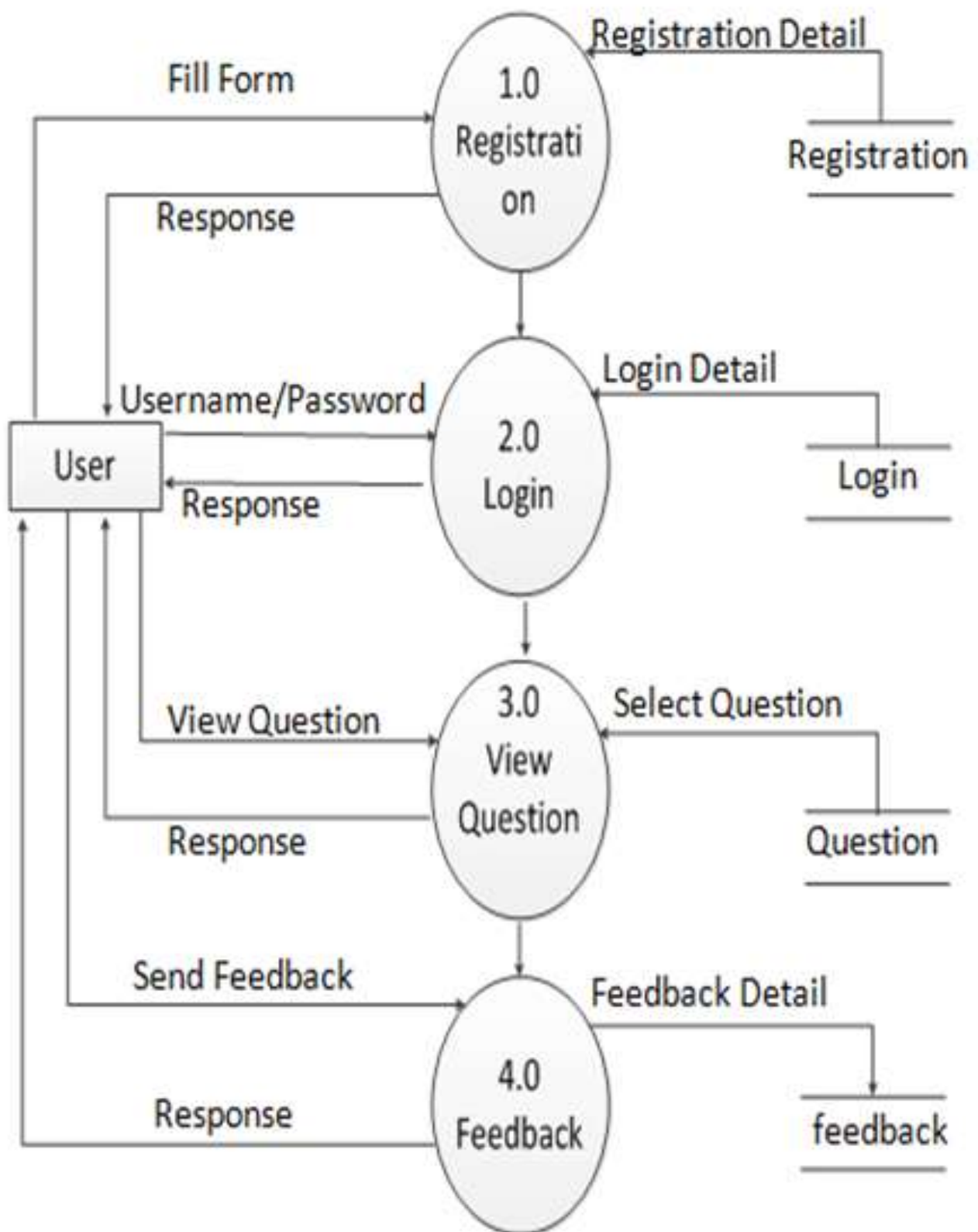
This project “**E-LEARNING MANAGEMENT SYSTEM**” falls in the category of Relational Database Management System (RDBMS) project. This project aims to provide improved functionality and better user interactive environment. With “**HTML,CSS,JS,jQuery,BootStrap**” as a Front End and JSP, Servlet and MySQL as a Back End.

HTML provides a structure of our site while CSS provides styling and JS for validation and jQuery for slider and animations or bootstrap providing the responsiveness, moodles and etc. While MySQL on the other hand, provides better functionality and effectiveness to the system while maintaining the database records. And JSP and Servlet act as a bridge between the front-end and the database. All the tables are being used in this project are inter-related and fully normalized, so this project “E-LEARNING MANAGEMENT SYSTEM” is a “Web Based Application Project” using Relational Database Management System (RDBMS).

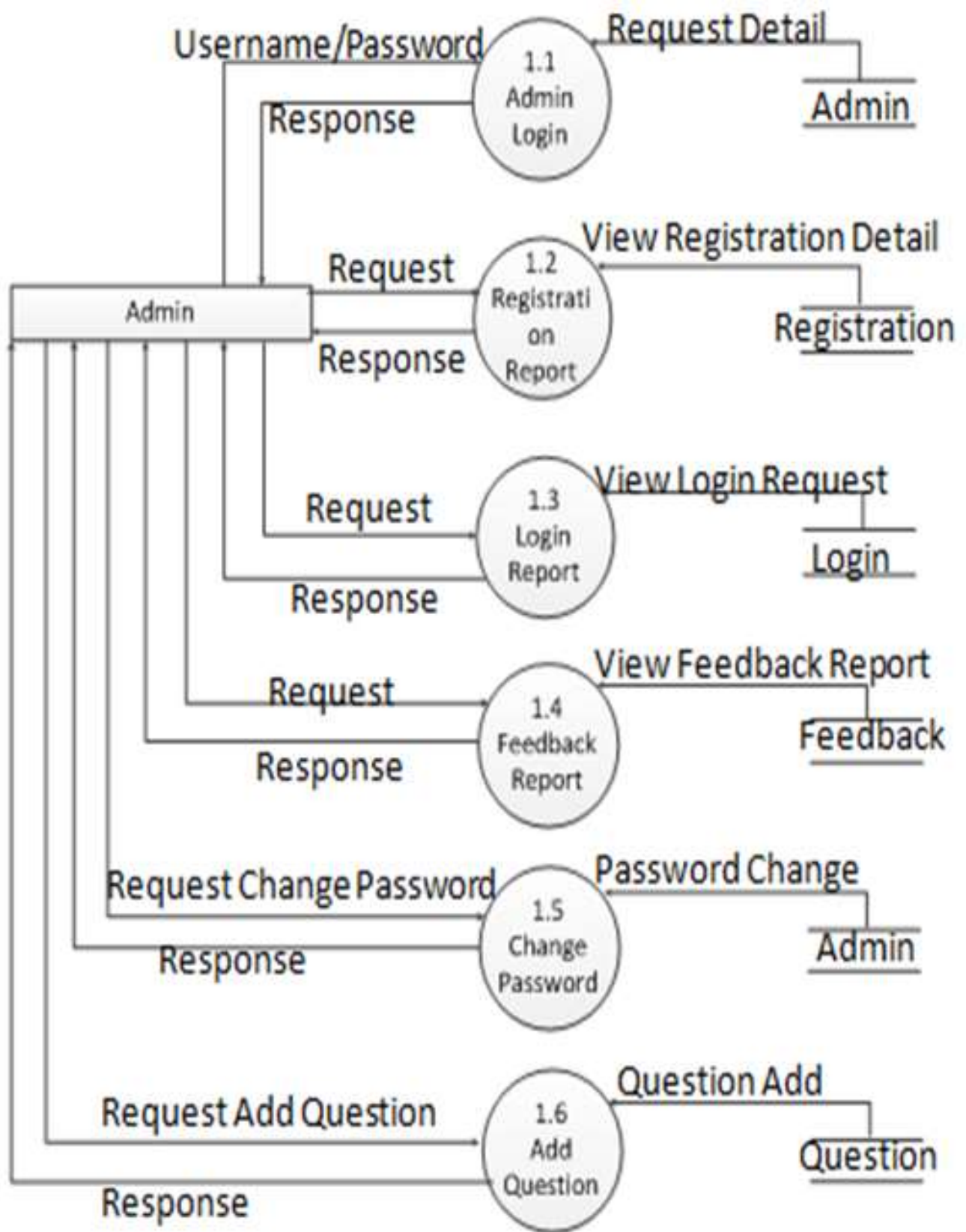
4. Analysis:



: - Zero Level DFD (CONTEXTUAL DIAGRAM)

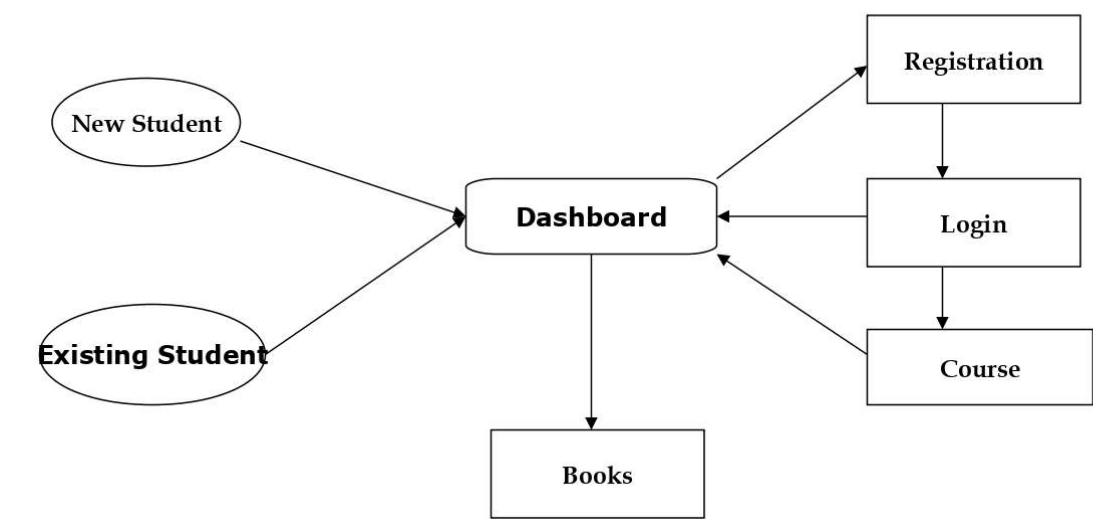


: - FIRST LEVEL DFD FOR USER

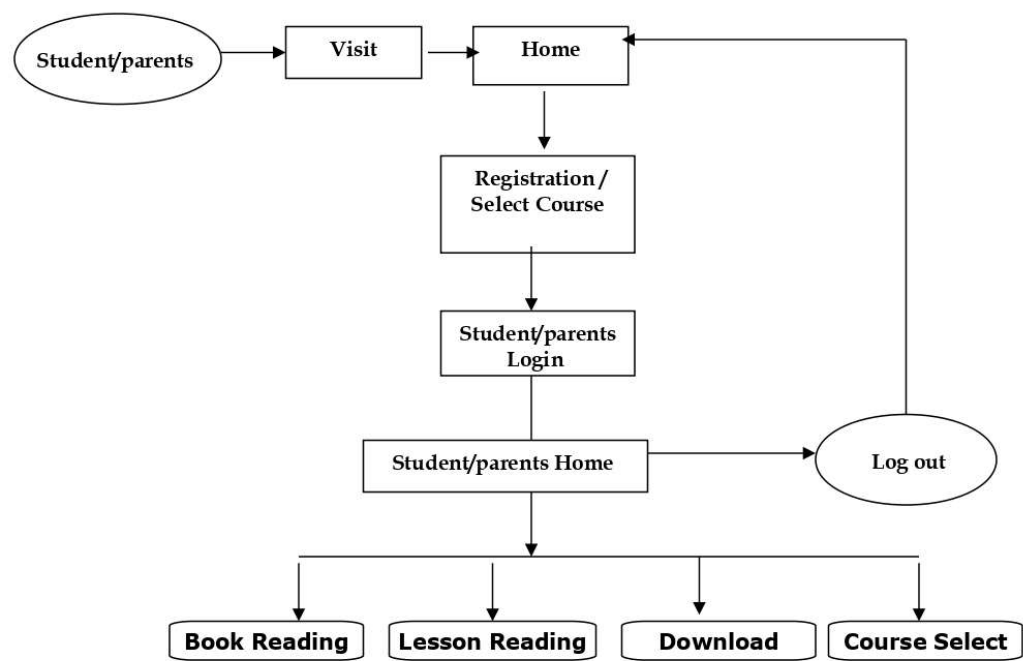


: - FIRST LEVEL DFD FOR ADMIN

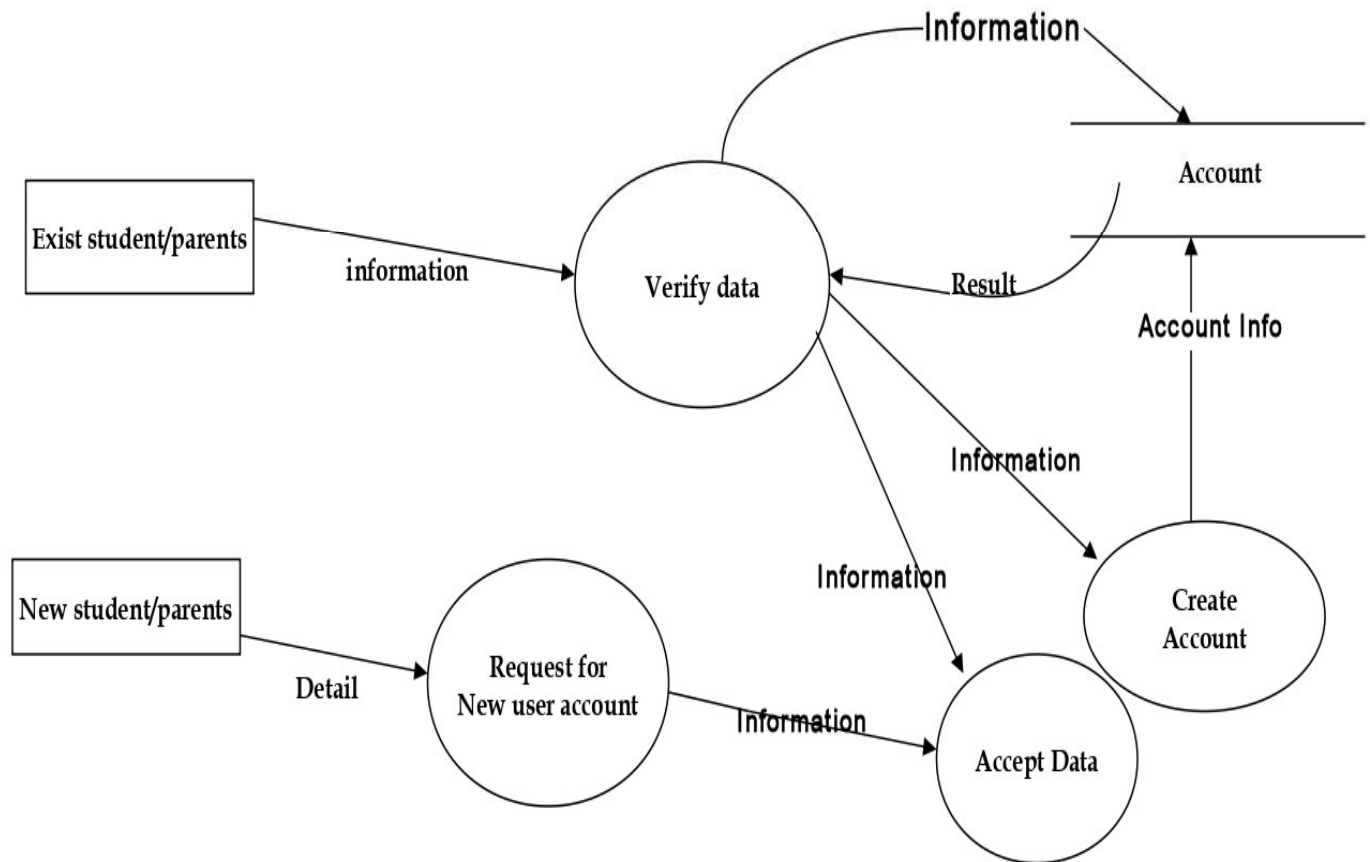
Student Data Flow Diagram



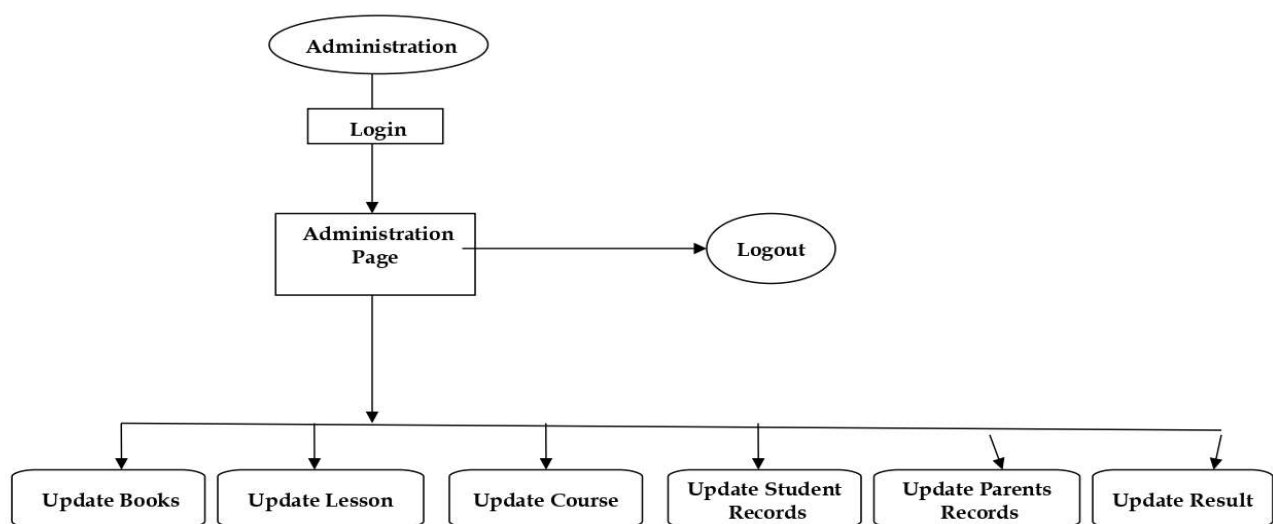
Registration Modules



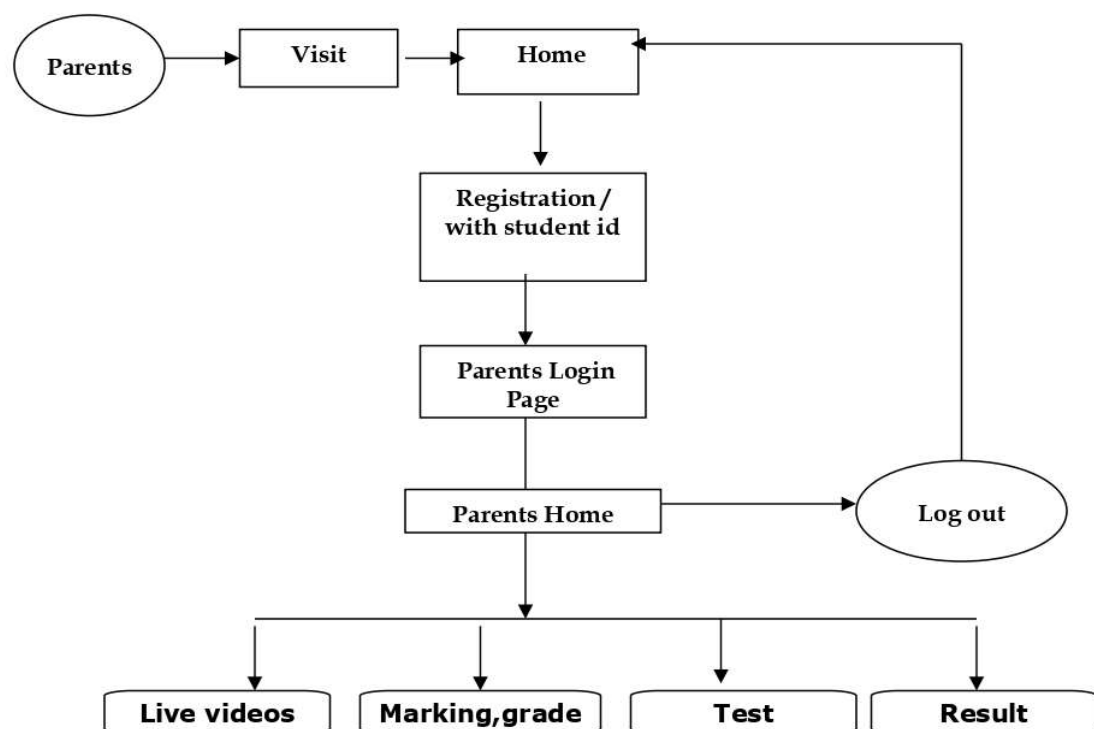
Student/Parents account Module



Administration Modules

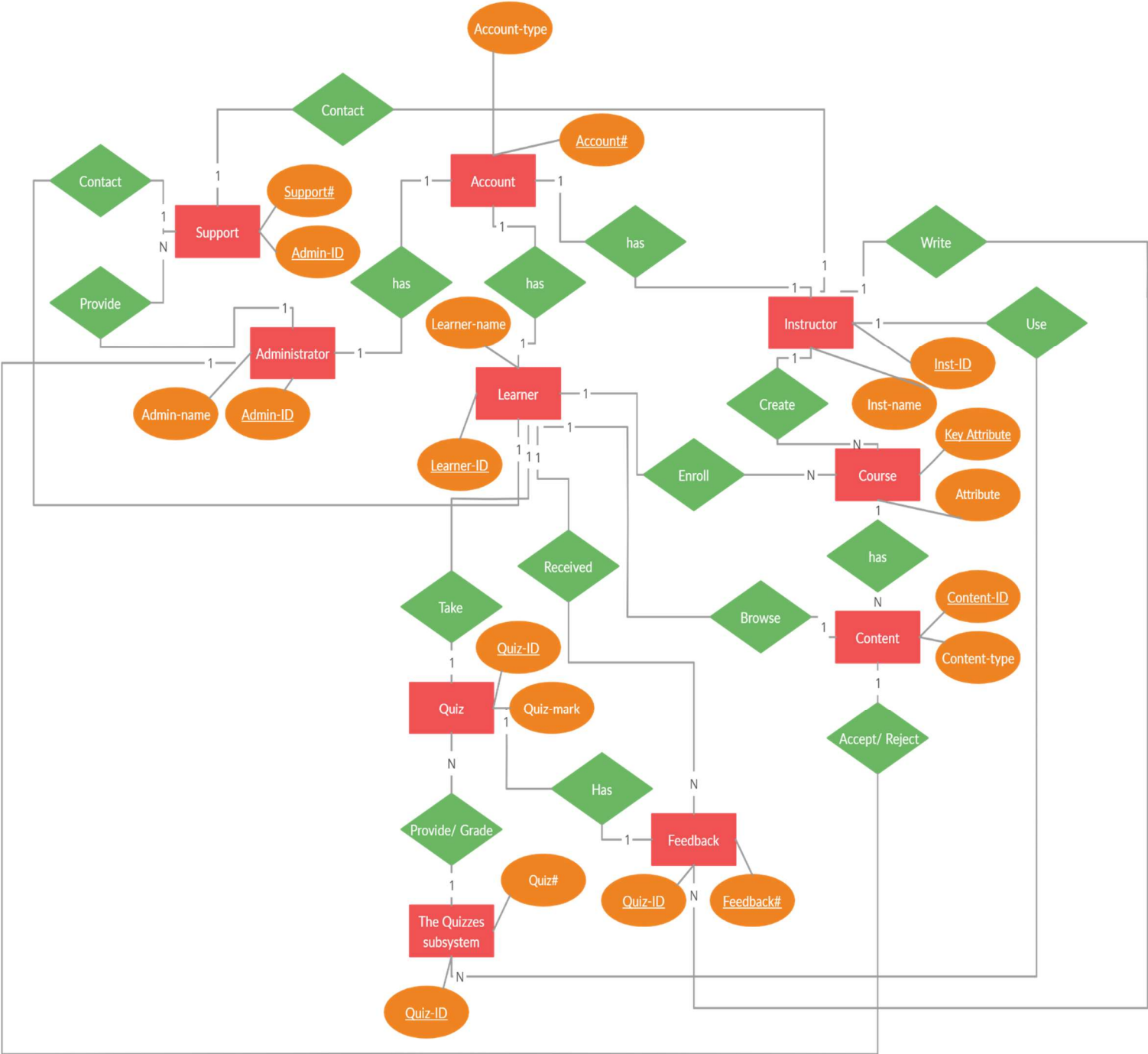


Parents Modules



: - SECOND LEVEL DFD

4.2 E-R Diagram



5. A complete structure

5.1 NUMBER OF MODULES AND THEIR DESCRIPTION

The E-learning management System Project Core functional elements:

Student management Module, Faculty management module, Developer/Admin management module.

1. Developer/Admin Management module

The system administrator will be able to perform the following functions:

- Edit his own profile (credentials and personal details).
- view the list of pending users and approve user registration with tutor or student permission
- Have privileges to activate or deactivate course or user, if and when required.
- Create, edit or delete department structure and add or remove programmes.
- Create, edit or delete course structure and assign learning resources.
- Define course activities (forum, quizzes, chat, assignments, etc.).
- Monitors users and oversees variety of department and course's activities.
- Trains department personnel and students to use the online web application.

2. Faculty Management Module

Can perform the following functions:

- Enable manual self-registration and redirection to guest user's dashboard.
- Access tutors' dashboard after admin approves registration.

- View and update his own profile (sign in credentials and personal details).
- View registered student and add or remove one or group of students to the course.
- View students' report and provide remarks.
- Create course and set a unique enrolment key.
- Create, edit or delete course structure and assign learning resources.
- Define course activities (forum, quizzes, assignments, etc.)
- Display teaching feedback.

3. Students management Module

The students are regular student or special student for short term training. The student users are permitted to perform following functions:

- Enable manual self-registration and redirection to guest user's dashboard.
- Access student's dashboard after admin approves registration.
- View and update his own profile (sign in credentials and personal details).
- View all the list of courses and their description.
- Subscribe to the courses after entering unique enrolment key and then view course's assigned content resources.
- Participate in discussion forum and chat.
- Test the knowledge of subject through attempting numerous quizzes.
- View grades and remarks from tutor.
- Provide feedbacks to tutor.

Other Sub Modules:

- Admin login: Admin is the one who administers the system by adding or removing e-books into and from the system respectively.
- User login: Students have to register themselves into the system to create an account. After registering successfully, they can then login into the system by entering 10 digit mobile number and their email id.
- Categories of books: The e-books are organized according to categories. Thus this classifies the books and students can view the list of references books available.
- View Videos: Students can watch videos with ease due to efficient streaming on cloud infrastructure
- Search option: Students can even search for books according to subjects and authors.
- Students can then download the required e-book on selecting it.
- Feedback form: Students can even provide their feedback into the system by filling up feedback form.

5.2 DATA STRUCTURES OF PROJECT

*AI = AUTO INCREMENT

*PK = PRIMARY KEY

*FK = FOREIGN KEY

Students		
Field_name	Data_Type	Constraints
Student_Id	VARCHAR(20)	Pk / AI
Student_Course	VARCHAR(20)	NULL
Student_Email	VARCHAR(20)	unique/not null
Date_of_joining	DATE	NULL
Student_Name	VARCHAR(20)	NULL
Student_fathername	VARCHAR(20)	NULL
Student_DOB	DATE	NULL
Student_mobile	VARCHAR(20)	NULL
Student_photo	blob	NULL
Student_Password	VARCHAR(20)	not NULL

COURSES		
Field_name	Data_Type	Constraints
REGISTRATION_ID	VARCHAR(20)	PK/AI
COURSE_name	VARCHAR(20)	NULL
COURSE_time	VARCHAR(20)	NULL
COURSE_type	VARCHAR(20)	NULL
course_description	VARCHAR(20)	NULL

COURSE_TUTOR		
Field_name	Data_Type	Constraints
Teacher_id	VARCHAR(20)	Pk/AI
Teacher_name	VARCHAR(20)	NULL
Teacher_Email	VARCHAR(20)	not null/unique
Teacher_qualification	VARCHAR(20)	NULL
Teacher_joining	DATE	NULL
Teacher_DOB	DATE	NULL
Teacher_photo	BLOB	NULL

Student_Course_ENROLLMENT		
Field_name	Data_Type	Constraints
Registration_id	VARCHAR(20)	PK/AI
Student_Id	VARCHAR(20)	FK
Course_joining_date	DATE	NULL
Course_type	VARCHAR(20)	NULL

Quiz		
Field_name	Data_Type	Constraints
REGISTRATION_id	VARCHAR(20)	F.K
QUIZ_ID	VARCHAR(20)	P.K
Quiz_total_number	VARCHAR(20)	NULL
Quiz_solution	VARCHAR(20)	NULL
Quiz_mark	VARCHAR(20)	NULL
Quiz_rank	VARCHAR(20)	NULL

SUPPORT		
Field_name	Data_Type	Constraints
TICKET_Id	VARCHAR(20)	PK/AI
student_name	VARCHAR(20)	NULL
student_id	VARCHAR(20)	NULL
Contact_time	date	NULL
Problem	VARCHAR(20)	NULL
student_id	VARCHAR(20)	FK

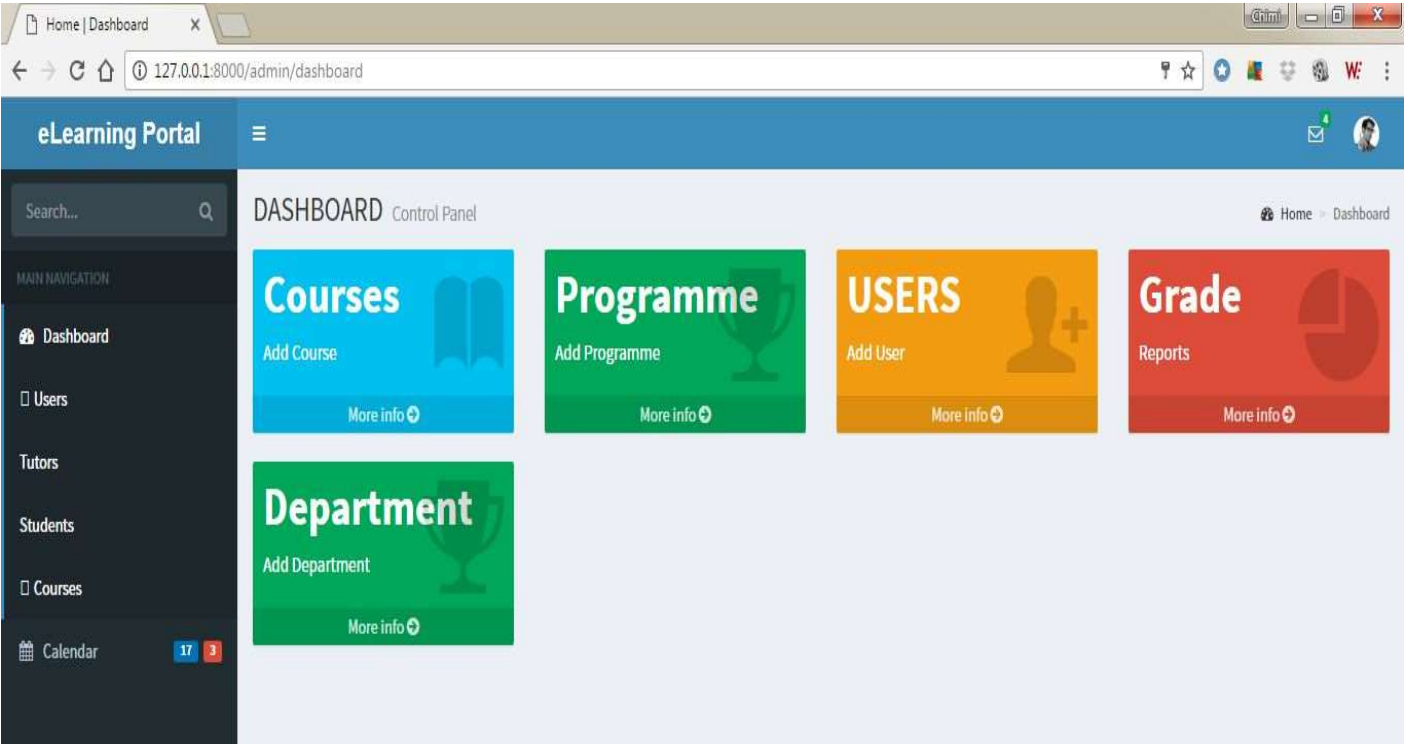
ADMIN		
Field_name	Data_Type	Constraints
ADMIN_ID	VARCHAR(20)	PK/AI
ADMIN_TYPE	VARCHAR(20)	NULL
ADMIN_Password	VARCHAR(20)	NOT NULL

5.3 PROCESS LOGIC FOR EACH MODULE

Here in the project there will be a number of modules and each module is based on respective process logic. The process logic will be both, batch process and on line processing for the respective modules and related tables. For different query purpose the logic will be online type. But different updating processes will be batched type.

Admin manages user and its role assignment. Admin can display the list of courses and its detail information. Admin enables tutor and student’s admission and support them in troubleshooting simple account usage problem. They monitor users and oversee variety of department and course’s activities. Admin trains department personnel and students to use the web application.

The admin dashboard providing management and administration of user, courses, programmes, department, results and the content resources is represents in Admin’s Dashboard. As shown here:



The system provides simplified course list with edit and delete action buttons. It does not require a person to be computer elite now to create and share learning materials. An individual does not need to remember the complex mechanism and thus, an individual unfamiliar with computer application can simply access public resources easily with one click of button.

An ER-diagram that provided the basis to implement normalized database structure for the e-learning system is presented above.

A use case diagram identifying three actors namely Admin, Tutor and Students is also presented above. The associated functionalities and the required processes to achieve goals are captured in this diagram.

The Course page includes general information such as hour per day commitment required to complete the course, at which semester is the course being taught and how many ECTs credit does the course have. It displays button to add the content to the course. Each content can be edited or deleted and the various resources (learning materials, forum, assignments, quizzes, etc.) can be assigned to the contents. Admin can view course page for all the courses. However Tutor has privilege to access this page for only the courses that he has created.

The contents do not particularly follow some content structure. It allows easily customizable course structure according to the interest of a university or institution. The course page can be implemented by the university with basic course structure that includes Syllabus, Lectures, Labs Tests, Assignments and Forum. The format to the course structure is unique to the needs of university or an institution. Thus, the system can be used by the schools, institution or the universities.

Planning and scheduling

PROJECT CONTROL SYSTEMS:

The purpose of controlling a project is to monitor the progress of the activities against the plans, to ensure that the goals are being approached and eventually achieved. Other aspects of control are to detect, as soon as possible, when deviations from the plan are occurring so that corrective action may be taken. Most project control techniques are based on breaking down the goal of the project into several Intermediate goals. Each Intermediate goal can turn be broken further. This process can be repeated until each goal can turn be broken further. This process can be repeated until each goal is small enough to be understood. We can plan for each goal individually – its resource requirements, assignments of responsibility, scheduling, etc.

Two general scheduling techniques are GANTT charts and PERT Charts as discussed below.

GANTT CHART:

A bar chart is perhaps the simplest form of formal project management. The bar chart also known as GANTT CHART is used almost exclusively for scheduling purpose and therefore controls only the time dimension of projects. Gantt chart is a project control technique that can be used for several purposes, including scheduling, budgeting and resource planning. A Gantt chart is a bar chart, with each bar representing an activity. The bars are drawn against a time line. The length of each bar is proportional to the length of time planned for the activity. Gantt chart can take different forms depending on their Intended use. They are best for resource scheduling. Gantt charts are useful for resource planning and scheduling. Gantt chart they show the tasks and their duration clearly. However they do not show Inter task dependencies plainly.

PERT CHART:

Unlike the bar chart, PERT can be both cost and a time management system. PERT is organized by events and activities or tasks. PERT has several advantages over bar charts and is likely to be used with more complex projects. One advantage of PERT is that it is a scheduling device that also shows graphically which tasks must be completed before others are begun. PERT enables the calculation of a Critical path. Each path and cost associated with each task along a path is calculated, and the path that requires the greatest amount of elapsed time is the Critical path. Calculation of the critical path enables project manager to monitor this series of tasks more closely. PERT controls time and cost during the project and also facilitates finding the right balance between completing a project on time and completing it within budget. PERT recognizes that projects are complex that some task must be completed before other can be started and that the appropriate way to manage a project is to be defined and control each task. Because projects often fall behind schedule, PERT is designed to facilitate getting back schedule. PERT is based in part on the premise that subjective estimates of the total completion time for a project are usually greatly inferior to the sum of subjective estimates for each task. The PERT chart gives a graphical representation of this information.

Advantages of PERT

- It forces the manager to plan.
- It shows an Interrelationship among the tasks in the project, in particular, clearly identifies the critical path of the project, thus helping to focus on it.
- It exposes all possible parallelism in the activities and thus helps in allocating resources.
- It allows scheduling and simulation of alternative schedule.
- It enables the manager to monitor and control the project.

Despite these advantages, PERT is just a tool, and its use does not automatically guarantee the success of the project. Gantt chart can be derived automatically from PERT charts.

The charts are shown in figure A (Gantt chart) and B (PERT Chart).

GANTT CHART

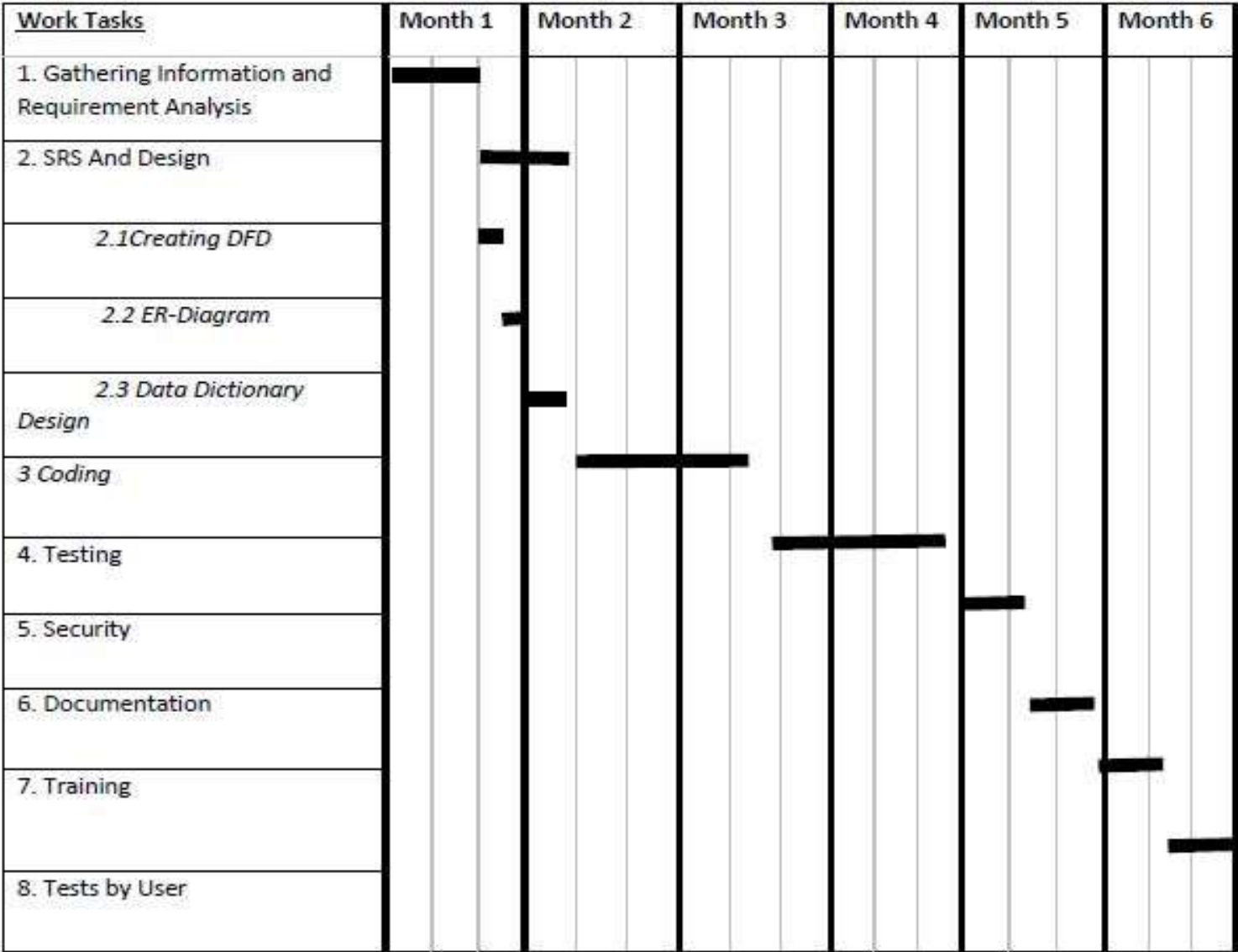


Figure A: - GRANTT CHART

PERT CHART

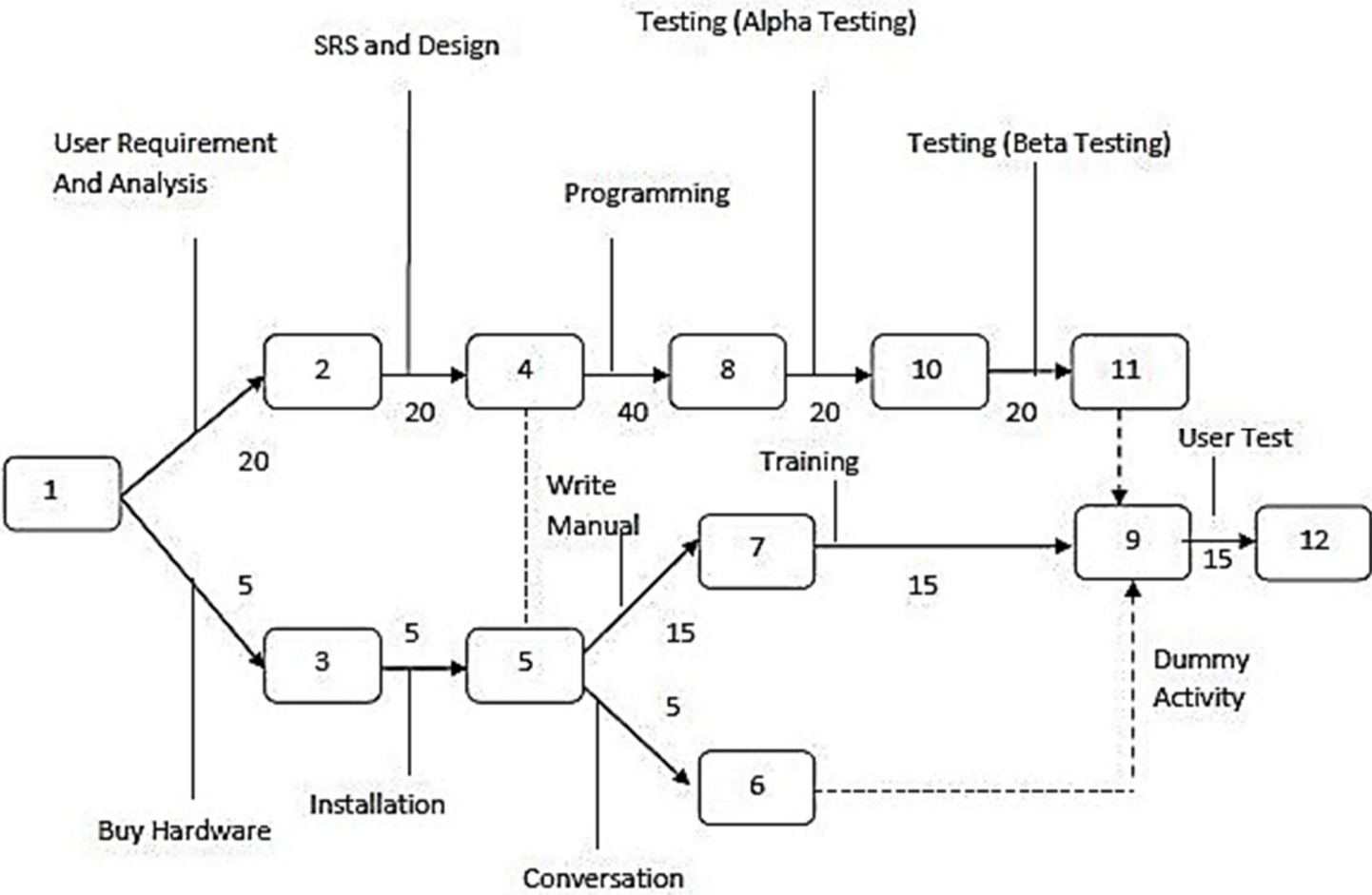


Figure B: - PERT CHART

SOFTWARE ENGINEERING APPROACH:

The field of software engineering is related to the development software in systematic manner unlike simple programs which can be developed in isolation and there may not be any systematic approach being followed. As there is large difference between programming and software engineering. As it provides models that lead to the production of well documented software in a manner that is predictable. For a mature process, it should be possible to determine in advance how much time and effort will be required to produce the final product. To develop successful software, I have to follow some models, which act as guidelines.

The model I have used is Waterfall Model or Classic Life Cycle. In this model first of all the existed system is observed. Then customer requirements are taken in consideration then planning, modelling, construction and finally deployment.

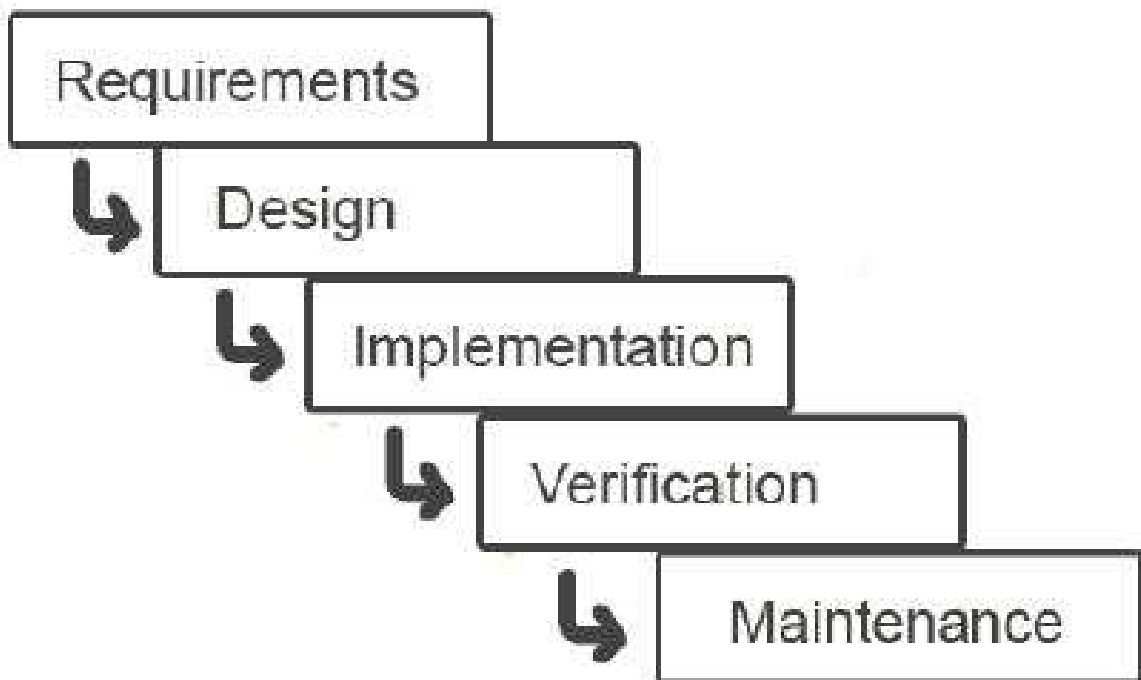


Fig 1:- Waterfall Model

SYSTEM ANALYSIS AND DESIGN:

System Analysis:

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information about the E-Learning Management System to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system are identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action. A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem areas are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The proposal is reviewed on user request and suitable changes are made. This is loop that ends as soon as the user is satisfied with proposal. Preliminary study is the process of gathering and interpreting facts, using the information for further studies on the system. Preliminary study is problem solving activity that requires intensive communication between the system users and system developers. It does various feasibility studies. In these studies a rough figure of the system activities can be obtained, from which the decision about the strategies to be followed for effective system study and analysis can be taken.

Existing System of E-Learning Management System:

In the existing system the exams are done only manually but in proposed system we have to computerize the exams using this application.

- Lack of security of data.
- More man power.
- Time consuming.
- Consumes large volume of pare work.
- Needs manual calculations.
- No direct role for the higher officials

Proposed System of E-Learning Management System:

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

- Security of data.
- Ensure data accuracy's.
- Proper control of the higher officials.
- Minimize manual data entry.
- Minimum time needed for the various processing.
- Greater efficiency.
- Better service.
- User friendliness and interactive.
- Minimum time required.

System Design of E-Learning Management System

In this phase, a logical system is built which fulfils the given requirements. Design phase of software development deals with transforming the clients's requirements into a logically working system. Normally, design is performed in the following in the following two steps:

1. Primary Design Phase:

In this phase, the system is designed at block level. The blocks are created on the basis of analysis done in the problem identification phase. Different blocks are created for different functions emphasis is put on minimising the information flow between blocks. Thus, all activities which require more interaction are kept in one block.

2. Secondary Design Phase:

In the secondary phase the detailed design of every block is performed.

The general tasks involved in the design process are the following:

1. Design various blocks for overall system processes.
2. Design smaller, compact and workable modules in each block.
3. Design various database structures.
4. Specify details of programs to achieve desired functionality.
5. Design the form of inputs, and outputs of the system.
6. Perform documentation of the design.
7. System reviews.

User Interface Design

User Interface Design is concerned with the dialogue between a user and the computer. It is concerned with everything from starting the system or logging into the system to the eventually presentation of desired inputs and outputs. The overall flow of screens and messages is called a dialogue.

The following steps are various guidelines for User Interface Design:

1. The system user should always be aware of what to do next.
2. The screen should be formatted so that various types of information, instructions and messages always appear in the same general display area.
3. Message, instructions or information should be displayed long enough to allow the system user to read them.
4. Use display attributes sparingly.
5. Default values for fields and answers to be entered by the user should be specified.

5.4 TESTING AND DEBUGGING:

Testing is the process of executing the program with the intent of finding errors and it establishes confidence that the program does what it is supposed to do. It can be done in many ways:

Unit Testing: It is testing of individual module. Before initiating unit testing, it must be ensured that the code is peer previewed.

Integration Testing: It is performed after all the software units are combined together. The objective here is to test the software interfaces. Project team conducts the integration testing. Before entering integration testing, it may be ensured that code review and unit testing have been performed on the individual software modules.

System Testing: The software is compiled as product and then it is tested as a whole. This can be accomplished using one or more of the following tests:

- **Functionality testing** - Tests all functionalities of the software against the requirement.
- **Performance testing** - This test proves how efficient the software is. It tests the effectiveness and average time taken by the software to do desired task. Performance testing is done by means of load testing and stress testing where the software is put under high user and data load under various environment conditions.
- **Security & Portability** - These tests are done when the software is meant to work on various platforms and accessed by number of persons.
- **Regression Testing:** Whenever a software product is updated with new code, feature or functionality, it is tested thoroughly to detect if there is any negative impact of the added code. This is known as regression testing.

Input Data and Validation of Project on E- Learning Management System

- All the fields such as course , facility type are validated and does not take invalid values
- Each form for course, student ,quiz cannot accept blank fields
- Avoiding errors in data
- Controlling amount of input
- Integration of all the modules forms in the system
- Preparation of the test cases
- Preparation of the possible test data with all the validation checks
- Actual testing done manually
- Recording of all the reproduced error
- Modification done for the error found during testing
- Prepared the test result scripts after rectification of the errors
- Functionality of the entire module forms.
- Validations for user input
- Checking of the coding standards to be maintained during coding
- Testing the module with all the possible test data
- Testing of the functionality involving all type of calculation etc.

5.5 REPORT GENERATION:

Any project or program is required what input it is giving. It is the input, which matters the most and any managements, which is decided for computerization of pay bills for their organization. Spending some money on it does the project designing of the organization. So a cost analysis is also involved to see what benefits the organization can get out of the project.

The Input of the project “ **E-LEARNING MANAGEMENT SYSTEM** ” has a Main Page containing the list of Different Forms i.e. admin/developer form, Teacher/faculty form, student form, login form, new user form, personal information form, reporting form, feedback form and many other forms. The Project also includes the Topic description of the Courses offered by Faculty/Admin and per course Fee/cost description, transaction report(s) of individual student and Teacher. The Current system has been made so versatile that any School/University/Organization can implement it.

Any project or program is required on what output it is giving. Output is compulsory for any organization for management to take the decision for computerization of their organization. Spending money on it, the organization needs in what respect the project can be benefited, which is possible by viewing the output. So a cost analysis is also involved to see what benefits the organization to give the output of the project.

The System has the facility to view different reports. It also contains the pages, which display the list of courses offered by our faculty/admin, their performances etc. which is the outputs of the project and our web Application also able to generates these types of records as follows :

- On different Pages it generates the report on course, student, quiz and etc.
- Provides filter reports on faculty assignment, course type etc.
- You can easily export pdf for the course, quiz, assignment and etc.
- Application also provides excel export for student, faculty, course type etc.
- You can also export the report into csv format for course, student and etc.

6. TOOLS, SOFTWARE & HARDWARE REQUIREMENTS

We have a wide range of options of languages. From these options we can choose appropriate platform/ tools and languages for development of the project. Some of these are as follows:-

Project Category: Web-Based Application

SOFTWARE REQUIREMENTS:

IDE: Eclipse oxygen or higher, VS Code.

Front End: HTML, CSS, JavaScript, Bootstrap, jQuery

Programming Language: JAVA

Back End: JSP, Servlet

RDBMS: MySQL 8.0 or Higher

Server: Apache Tomcat 8.0 or Higher

Browser: Chrome, Firefox etc. (latest version)

Operating System: Windows, Linux, UNIX etc.

HARDWARE REQUIREMENTS:

Processor: Intel Pentium, Core duo or more

RAM: 2GB or more

Cache: 512 KB

Hard-disk: 50 GB hard disk recommended

Monitor : Normal Monitor

Mouse : Normal Mouse

Keyboard : Normal Keyboard

7. Are you doing this project for any Industry/Client?

Ans. NO.

8. FUTURE SCOPE AND ENHANCEMENT OF PROJECT

In a nutshell, it can be summarized that the future scope of the project circles around maintaining information regarding:

- We can add printer in future.
- We can give more advance software for E-learning Management System including more facilities
- We will host the platform on online servers to make it accessible worldwide
- Integrate multiple load balancers to distribute the loads of the system
- Create the master and slave database structure to reduce the overload of the database queries
- Implement the backup mechanism for taking backup of codebase and database on regular basis on different servers

The above mentioned points are the enhancements which can be done to increase the applicability and usage of this project. Here we can maintain the records of Assignment and Student. Also, as it can be seen that now-a-days the players are versatile, i.e. so there is a scope for introducing a method to maintain the E-learning Management System. Enhancements can be done to maintain all the Assignment, Student, TEACHER, QUIZ, and QUESTION.

We have left all the options open so that if there is any other future requirement in the system by the user for the enhancement of the system then it is possible to implement them. In the last we would like to thanks all the persons involved in the development of the system directly or indirectly. We hope that the project will serve its purpose for which it is develop there by underlining success of process.

BIBLIOGRAPHY

Websites

- <https://www.mysqltutorial.org/>
- <https://www.tutorialspoint.com/>
- <https://javatpoint.com/>
- <https://W3schools.com/>
- <https://edureka.co/>

Books

- Black book Core and Advance java
- Head First (JAVA)
- HTML & CSS: Design and Build Web Sites
- Head First SQL: Your Brain on SQL
- SQL Bible, 2nd Edition (Paperback)
- Java The Complete Reference, 11th Edition - Herbert Scheldt