YPC eMaterial

A

Project report

On

“Study Material”

Motto: Provide eMaterial for free

As a Partial Fulfilment for The Software Engineering, Under the Fifth & Sixth Semester Curriculum for The Diploma of COMPUTER ENGINEERING.

YPC eMaterial

Gujarat Technical University

Submitted To

Department of Computer Engineering

VPMP POLYTECHNIC, Gandhinagar.

Prepared by:

Yuvrajsinh Zala 206540307140

Paras Shah 206540307045

Chiragsinh Vaghela 206540307115

Internal Guide: **Preeti Gajjar**

YPC eMaterial

V.P.M.P. POLYTECHNIC

DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that Mr. **Chiragsinh Vaghela** of **20CE2** class, Enrolment No. **206540307115** has satisfactorily completed his term work in PROJECT-I (3350706) for the term ending in November 2022.

Date:

Sign of Internal Guide **Sign of H.O.D**

V.P.M.P. POLYTECHNIC

DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that Mr. **Yuvrajsinh Zala** of **20CE2** class, Enrolment No. **206540307140** has satisfactorily completed his term work in PROJECT-I (3350706) for the term ending in November 2022.

Date:

Sign of Internal Guide **Sign of H.O.D**

V.P.M.P. POLYTECHNIC

DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that Mr. **Paras Shah** of **20CE2** class, Enrolment No. **206540307045** has satisfactorily completed his term work in PROJECT-I (3350706) for the term ending in November 2022.

Date:

Sign of Internal Guide **Sign of H.O.D**

Acknowledgment

Many People have helped to make this project work possible. It is my pleasure to acknowledge and thank them for their valuable co-operation at various stages of this work.

First and foremost, I like to offer my gratitude to The Almighty God to send me his blessings and to give me an opportunity to reach up to this level.

I would like to express my intense feeling of gratitude towards my Guide **Mrs. Preeti Gajjar** for his extremely good suggestions, guidance and constant inspiration.

Then I would like to express my sincere thanks to my Head of Department **Mrs. Kiran Jha** and our Principal **Dr. Prakash Patel** for their valuable and timely co-operation.

I express my obligations and thanks to all the faculty members of C.E. Department as well as my parents for the kind support and motivation that they offered me during my work.

Yuvrajsinh Zala	206540307140
Paras Shah	206540307045
Chiragsinh Vaghela	206540307115

INDEX

Introduction

Education systems have drastically changed during 2020 as it was imperative to keep teachers and students safe. The traditional method has been losing its relevance faster than ever. The meaning of this new-age education is getting broader by the day, and people are starting to understand its significance. It is engaging, flexible, and most importantly, fun.

What is E-Learning?

E-Learning is the employment of technology to aid and enhance learning. It can be as simple as High School students watching a video documentary in class or as complex as an entire university course provided online. E-Learning began decades ago with the introduction of televisions and over-head projectors in classrooms and has advanced to include interactive computer programmes, 3D simulations, video and telephone conferencing and real-time online discussion groups comprised of students from all over the world. As technology advances, so does e-learning, making the possibilities endless.

Introduction to Current System

This type of learning is a form of education over the internet and in a remote setting. You get to indulge in an education method in an entirely virtual environment. Even though its

adoption was rapid during the pandemic, this learning method predates the virus.

It was first introduced when the internet came into existence. Online education was a distance learning method amongst higher education students.

Today, it enables students to learn, irrespective of geography. You could engage with any institution or look for academic E-learning opportunities. Indeed, online learning is a way for students to learn at their own pace and flexibility. This internet-based learning environment connects diverse backgrounds and brings together different perspectives.

Introduction to E-Learning

"E-Material" is a web application that will be used for accessing materials of various subjects of various branches. The web application is built using HTML, CSS and JavaScript. User can access materials in form of pdf, ppts etc.

About Project

- This app provides material Free of cost.
- Provides material of various subjects and for various branches.
- Materials include chapter pdfs, subject papers etc…
- Does not require to create any account.
- Provides name of the various books and reference to it.
- User can download this material at anytime and anywhere.
- User can know who uploaded the Material.
- User can search its required Material by using subject code.

Objectives

- The main purpose of this app is to provide materials for various branch and various subject for free of cost.
- Highlights imp topics for exam.
- Highlights imp topics for practical.
- Provide a platform where any user can access material or download it without any special requirement.
- Provides some of the best author's reference books.

Problem Definition & Benefits

Problems Faced by Students in Online Classes:
Below we have provided the problems faced by students in online classes and online learning and solutions for online learning problems.

Problems: -

1) Adaptability Issues in Online Learning.
2) Technical Issues in Online Learning.
3) Computer Knowledge Challenge in Online Learning.
4) Time Management Problem in Online Learning.
5) Self-Motivation Challenge in Online Learning.
6) Distraction Issues in Online Learning.
7) Online Learning Challenges – Learning Style.
8) Communication Issues in Online Learning.
9) Virtual Engagement Challenge in Online Learning.
10) Feedback Issue During Online Class.

Solution: -

1) Flexibility.

2) Free of costs.

3) More Free Time.

4) Increased Courses Variety.

5) Career Advancement Opportunities.

6) Increased Collaboration.

7) Personalized Education.

8) Enhanced Time Management Skills.

9) Immediate Feedback.

10) Repeated Access to Course Materials.

1.1 Scope of The Projects

The objective of this application is to develop a system that effectively manages all the materials related to the various subjects. The purpose is to maintain a centralized database of all Subjects related information. The goal is to support various functions and processes necessary to manage the data efficiently.

1.2 Existing System

This existing system is not providing secure registration and profile management of all the users properly. This system is not providing on-line help. This system doesn't provide tracking of user's activities and their progress.

This manual system gives us very less security for saving data and some data may be lost due to mismanagement. This system is providing E-Learning through internet. This system is not providing proper Notes and information.

1.3 Feasibility Study

A feasibility study is a high-level capsule version of the entire System analysis and Design Process. The study begins by classifying the problem definition. Feasibility is to determine if it's worth doing. Once an acceptance problem definition has been generated, the analyst develops a logical model of the system. A search for alternatives is analysed carefully. There are 3 parts in feasibility study.

1.3.1 Operational Feasibility

Operational feasibility is the measure of how well a proposed system solves the problems and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes. To ensure success, desired operational outcomes must be imparted during design and development. These include such design-dependent parameters as reliability, maintainability, supportability, usability, predictability, disposability, sustainability, affordability and others. These parameters are required to

be considered at the early stages of design if desired operational behaviors are to be realized. A system design and development require appropriate and timely application of engineering and management efforts to meet the previously mentioned parameters. A system may serve its intended purpose most effectively when its technical and operating characteristics are engineered into the design. Therefore, operational feasibility is a critical aspect of systems engineering that needs to be an integral part of the early design phases.

1.3.2 Technical Feasibility

This involves questions such as whether the technology needed for the system exists, how difficult it will be to build, and whether the firm has enough experience using that technology. The assessment is based on outline design of system requirements in terms of input, processes, output, fields, programs and procedures. This can be qualified in terms of volume of data, trends, frequency of updating in order to give an introduction to the technical system. The application is the fact that it has been developed on windows XP platform and a high configuration of 1GB RAM on Intel Pentium Dual core processor. This is technically feasible. The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs

of the proposed system. It is an evaluation of the hardware and software and how it meets the need of the proposed system.

1.3.3 Economic Feasibility

Establishing the cost-effectiveness of the proposed system i.e., if the benefits do not outweigh the costs, then it is not worth going ahead. In the fast-paced world today there is a great need of online social networking facilities. Thus, the benefits of this project in the current scenario make it economically feasible. The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It includes quantification and identification of all the benefits expected. This assessment typically involves a cost/benefits analysis.

REQUIREMENT ANALYSIS

Hardware Requirements:

Processor:
1 gigahertz (GHz) or faster processor or SoC

RAM:
1 gigabyte (GB) for 32-bit or 2 GB for 64-bit

Hard disk space:
16 GB for 32-bit OS or 20 GB for 64-bit OS

Graphics card:
DirectX 9 or later with WDDM 1.0 driver

Display: 800 x 600

Software Requirements:

Windows:

Windows XP, Windows 7, Windows 8, Windows 10 or later.
An Intel Pentium 4 processor or later that's SSE3 Capable.

Mac:

OS X El Capitan 10.11 or later.

Linux:

64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, Fedora Linux 32+

Browser:
Google chrome latest version, Microsoft Edge, Internet Explorer

Documentation: MS-Office

FRONT END OF SYSTEM

Introduction to Front-End

- HTML is the standard markup language for Web pages. With HTML you can create your own website.

- As its name suggests, HTML is a Markup Language which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.

- HTML was created by Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995.

- HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists,

and so forth to facilitate the sharing of scientific information between researchers.

¬ HTML is being widely used to format web pages with the help of different tags available in HTML language.

¬ **Advantages:**

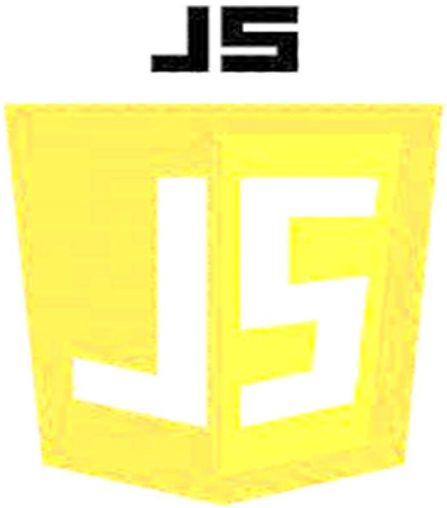
- It is easy to learn and use.
- Html is free and simple to edit.
- Html is light weighted.

- CSS - "Cascading Style Sheet"
- CSS is used to control the style of a web document in a simple and easy way.

- CSS describes how HTML elements are to be displayed on screen, paper, or in other media.

- CSS saves a lot of work. It can control the layout of multiple web pages all at once. External stylesheets are stored in CSS files.

- Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.
- **Advantages:**
  - CSS is lighter, fast and responsive creative technique.
  - It allows the separation of style and layout from the content of the document.

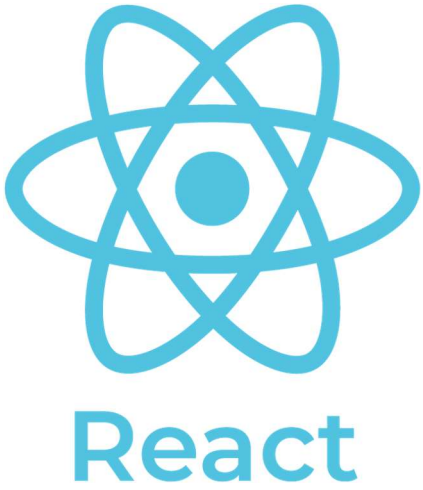


- JavaScript is the programming language of HTML and the Web.
- JavaScript is easy to learn.
- JavaScript is high-level, often just-in-time compiled, and multi-paradigm.
- It has curly-bracket syntax, dynamic typing, prototype-based object orientation, and first-class functions.
- **Advantages:**
  - JavaScript is a client-side language.
  - Extended functionality to web pages.
  - Easy to debug and test.
  - Platform independent.
  - Event-Based Programming language.

Introduction to Back-End

- Back-end refers to the server-side of the application.
- It constitutes everything that happens behind the scenes.
- It generally includes a web server that communicates with a database to server request that the front-end presents.
- It is the brain of the website that is never visible to the end users.
- We are using MY-SQL as our backend.

- MySQL is a database.
- MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses.
- The data in MySQL is stored in database objects called tables.
- A table is a collection of related data entries and it consists of columns and rows.
- MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company.
- MYSQL works on many languages like PHP, C, C+, PERL, JAVA etc.
- MySQL is customizable. The open-source GPL (General Public License) license allows programmers to modify the MySQL software to fit their own specific environments.



- **ReactJS** is a simple, feature rich, component-based JavaScript UI library.

- It can be used to develop small applications as well as big, complex applications.

- ReactJS provides minimal and solid feature set to kick-start a web application.

- React community compliments React library by providing large set of ready-made components to develop web application in a record time.

- React community also provides advanced concept like state management, routing, etc., on top of the React library.

¬ **Features:**

- Solid base architecture
- Extensible architecture
- Component based library
- JSX based design architecture
- Declarative UI library

¬ **Advantage:**

- Easy to learn
- Easy to adept in modern as well as legacy application
- Faster way to code a functionality
- Availability of large number of ready-made components
- Large and active community

¬ **Applications:**

- Facebook, popular social media application
- Instagram, popular photo sharing application
- Netflix, popular media streaming application

System Analysis and Design

Software development life cycle:

- A software development life cycle (SDLC) model is a conceptual framework describing all activities in a software development project from planning to maintenance.

- This process is associated with several models, each including a variety of tasks and activities.

- Software development is a cumbersome activity requiring proper identification of requirements, their implementation, and software development.

- However, the activities do not end there. After the distribution of the software, proper maintenance has to be provided in a timely manner.

- This term is also known as software development process model.

¬ Phase 1:

Planning

In the planning phase Project goals are determined and a high-level plan for the intended project is established.
Planning is the most fundamental and critical organizational phase.

¬ Phase 2:

Analysis

In the analysis phase end user business requirements are analysed and project goals converted into the defined system functions that the organization intends to develop.

¬ Phase 3:

Design

In the design phase we describe the desired features and operations of the system. This phase includes business rules,

pseudo-code, screen layouts, and other necessary documentation.

¬ Phase 4:

Implementation

During implementation, the project team creates the actual product. Product implementation can be an exciting phase for the customer, because their idea for the project becomes something tangible. Project developers begin building and coding the software.

¬ Phase 5:

Testing

In the testing phase, all the pieces of code are integrated and deployed in the testing environment.

Testers then follow Software Testing Life Cycle activities to check the system for errors, bugs, and defects to verify the system's functionalities work as expected or not, often.

¬ Phase 6:

Maintenance

In the maintenance phase, any necessary enhancements, corrections, and changes will be made to make sure the system continues to work and stay updated to meet the business goals.

It is necessary to maintain and upgrade the system from time to time so it can adapt to future needs.

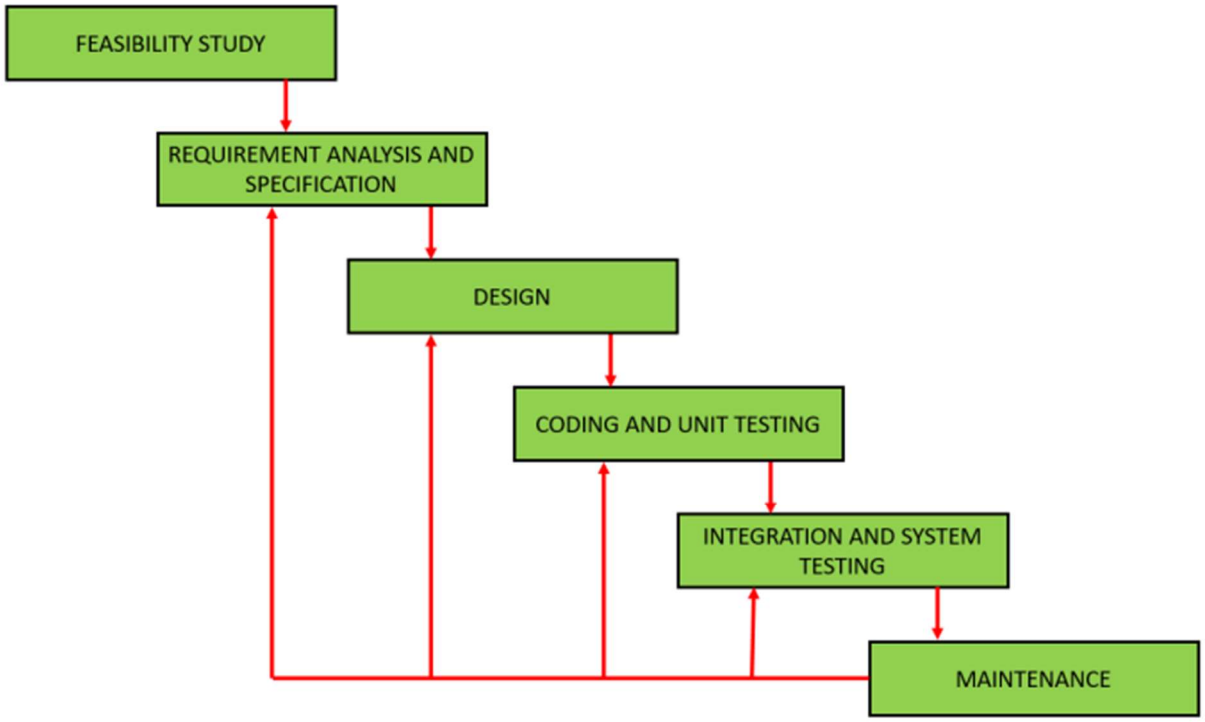
Identifies activities of system

Iterative Waterfall Model:

- Iterative Waterfall Model is the extension of the Waterfall model.
- This model is almost same as the waterfall model except some modifications are made to improve the performance of the software development.
- The iterative waterfall model provides customer's feedback paths from each phase to its previous phases.
- There is no feedback path provided for feasibility study phase, so if any change is required in that phase then iterative model doesn't have scope for modification or making corrections.
- Iterative waterfall allows to go back on the previous phase and change the requirements and some modification can done if necessary.
- This model reduces the developer's effort and time required to detect and correct the errors.

Phase of Iterative Waterfall Model:

- Feasibility Study.
- Requirement analysis and specification.
- Design.
- Coding and Unit testing.
- Integration and system testing.
- Maintenance.



Advantages of iterative Waterfall Model:

- Iterative waterfall model is very easy to understand and use.
- This is a simple to make changes or any modifications at any phase.
- By using this model, developer can complete project earlier.
- Customer involvement is not required during the software development.
- This model is suitable for large and complex projects.

Disadvantages of iterative Waterfall Model:

- This model is not suitable if requirements are not clear.
- It can be more costly.

- There is no process for risk handling.
- If modifications are required repeatedly then it can be more complex projects.

Feasibility Study:

1. Technical Feasibility:
   - It supports all web browsers on the internet.
   - Internet: Minimum 512 Kbps or higher speed or bandwidth 2G, or latest speed or mobile data or any shared network will support.

2. Economic Feasibility:
   - The simple Android smartphone also support the webapp so no need to spend money for heavy device.
   - The economic issue will not be raised as website does not require money to develop.
   - New updated browser will require in case of future expansion of the system.

3. Operational Feasibility:
   - The system has easy interface for upload details.
   - User can easily operate this webapp so it is feasible for them.
   - User can access this website from any device.

Data Dictionary

- Data dictionary is a read only set of tables that provides information about the database.
- The definition of all schema objects in the database.
- How much space has been allocated for, and is currently used by, the schema objects.
- Defaults values for columns.
- The names of oracle user.
- So, the passive data dictionary has to be manually updated to match the database. This needs careful handling or else the database and data dictionary are out of sync.
- A Data Dictionary is a collection of names, definitions, and attributes about data elements that are being used or captured in a database, information system, or part of a research project.

- It describes the meanings and purposes of data elements within the context of a project and provides guidance on interpretation, accepted meanings and representation.

- A Data Dictionary also provides metadata about data elements.

- The metadata included in a Data Dictionary can assist in defining the scope and characteristics of data elements, as well the rules for their usage and application.

Data dictionary for User Registration

Field name	Data type	Field size	Example	Description
u_id	Integer	5	01	User's ID
u_fname	Varchar	10	Chiragsinh	First name
u_sname	Varchar	10	Vaghela	Surname
dob	Date		1876/03/14	Date of birth (YYYY/MM/DD)
pwd	char	20	*********	Password of user
telNo	Integer	10	9876543210	Phone number of user

Data dictionary for Material

Field name	Data type	Field size	Example	Description
m_id	Integer	5	01,02,03	Material id
b_name	Varchar	10	Computer, civil	Branch name
sem_id	Integer	5	1^{st},2^{nd}, etc	Semester
sub_id	Integer	10	3350706	Subject code
m_loc	Varchar	60	Link	Location of material(path)

ER Diagram

❖What is ER Diagram?

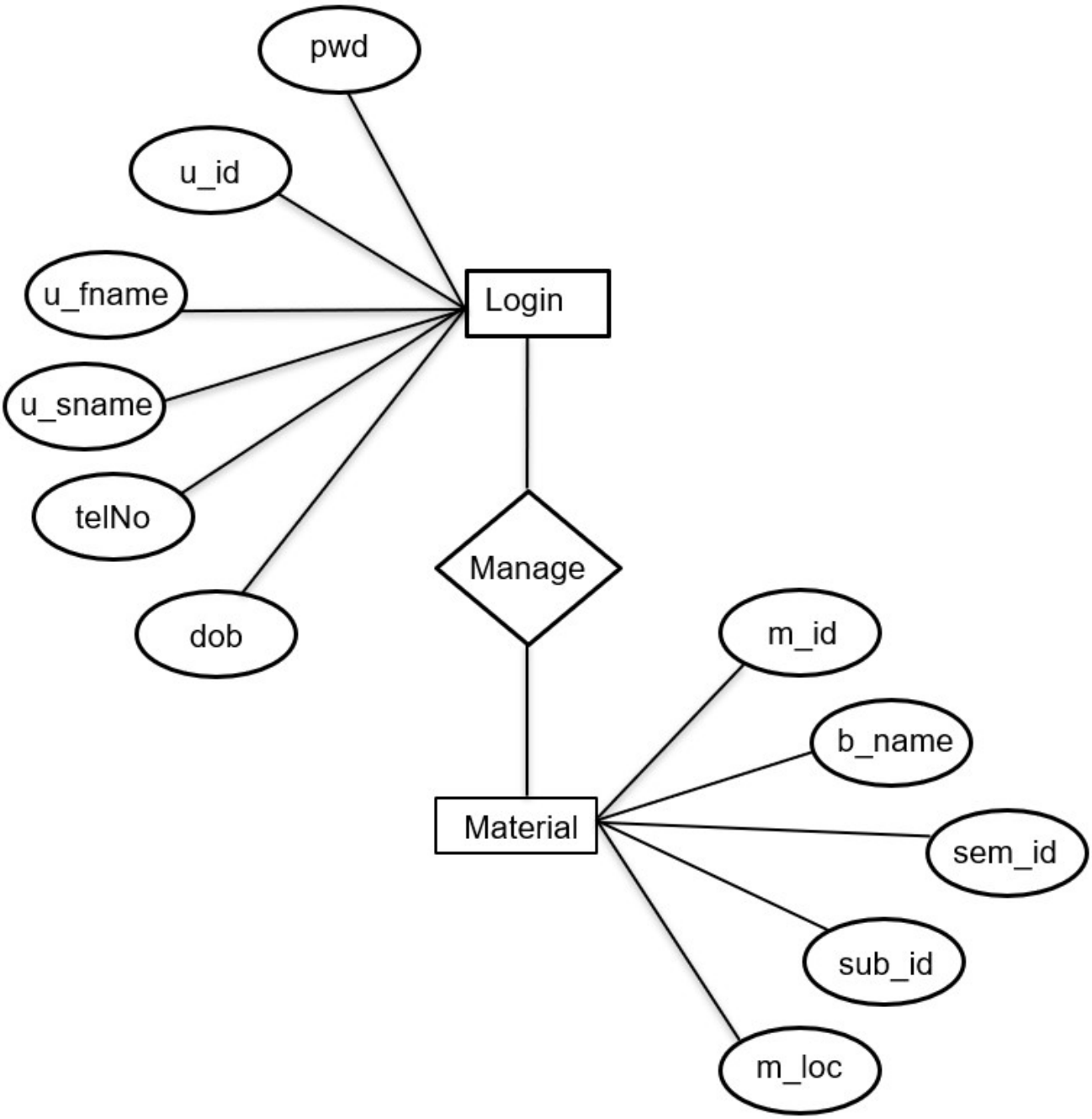
- ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database.

- In other words, ER diagrams help to explain the logical structure of databases.

- ER diagrams are created based on three basic concepts: entities, attributes and relationships.

- ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.

ER Diagram


pwd
u_id
u_fname
u_sname
telNo
dob
Login
Manage
Material
m_id
b_name
sem_id
sub_id
m_loc

- ER Diagram represents a set of real-world entities and the logical relationships among them.

- This diagram depicts entities the relationships between them and the attributes pictorially in order to provide a high-level description of conceptual data models.

- Once an ER Diagram is created the information represents by it is stored in the database.

- ER Diagram includes data objects and entities, data attributes, relationships, cardinality and modality.

❖Types of relationship

1. One-to-one:
   - When only one instance of an entity is associated with the relationship, only one instance of each entity should be associated with the relationship. It depicts one-to-one relationship.

2. One-to-many:
   - When more than one instance of an entity is associated with a relationship, only one instance of entity on the left and more than one instance of an entity on the right can be associated with the relationship. It depicts one-to many relationships.

3. Many-to-one:
   - When more than one instance of entity is associated with the relationship, one instance of an entity on the left and only one instance of an entity on the right can be associated with the relationship. It depicts many-to-one relationship. Relationship

4. Many-to-many:
   - more than one instance of an entity on the left and more than one instance of an entity on the right can be associated with the relationship. It depicts many-to-many relationship.

Context Diagram

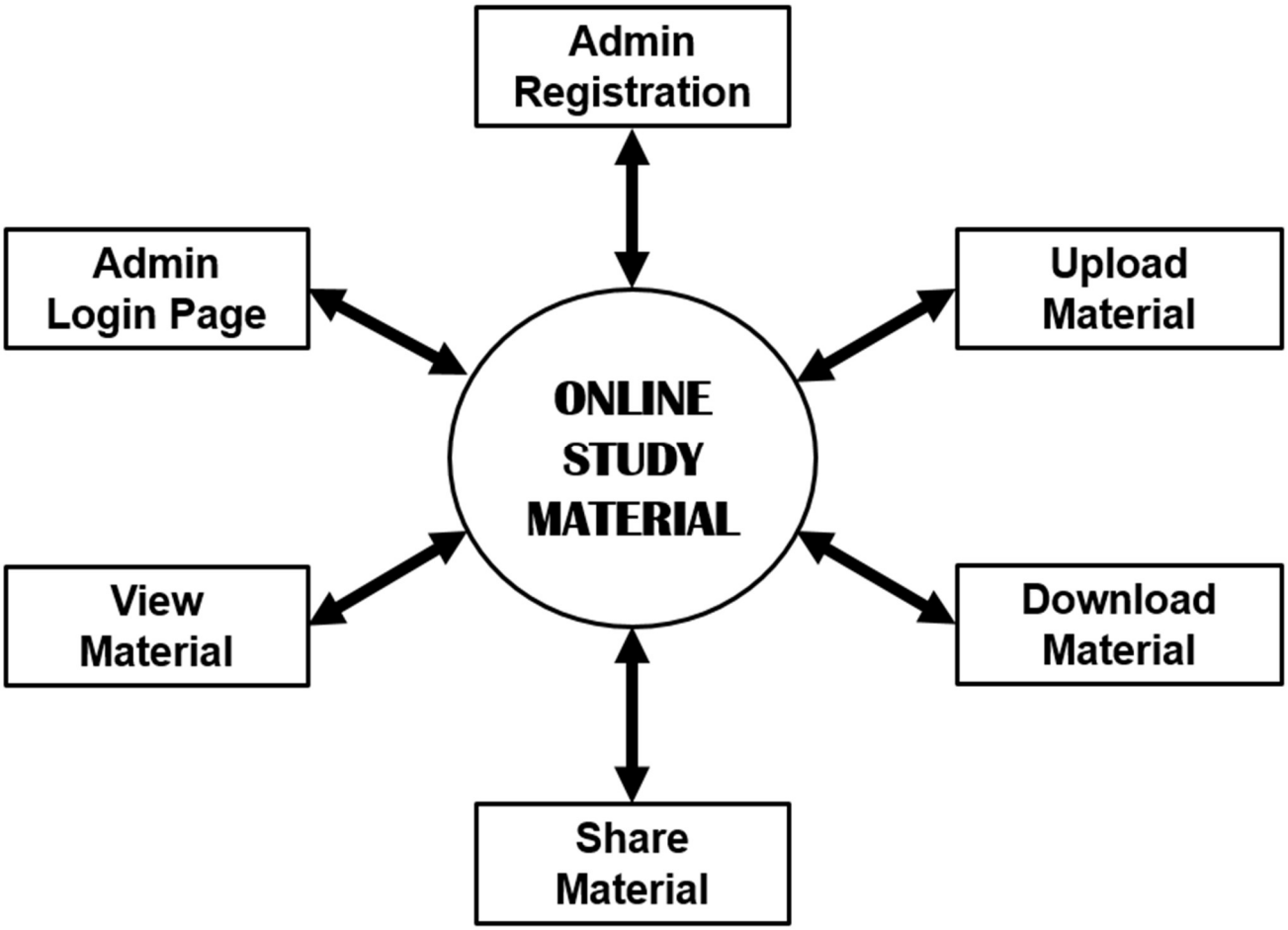
❖What is a Context Diagram?

- Also referred to as the Level O Data Flow Diagram, the Context diagram is the highest level in a Data Flow Diagram.

- It is a tool popular among Business Analysts who use it to understand the details and boundaries of the system to be designed in a project.

- It points out the flow of information between the system and external components.

Context Diagram



Data Flow Diagram (DFD)

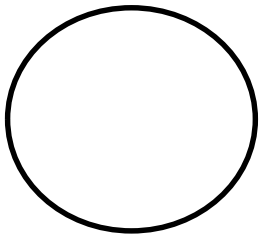
The DFD is a hierarchical graphical model of a system that shows the different processing activities or function that the system performs and the data interchange among these functions.

Each function is considered as a processing station that consumes some input data and produces some output data.

Symbols of DFD

- External Entity: External entities are sources and destination of the system.

- Function: A function is represented using circle. This symbol is called a process or a bubble.



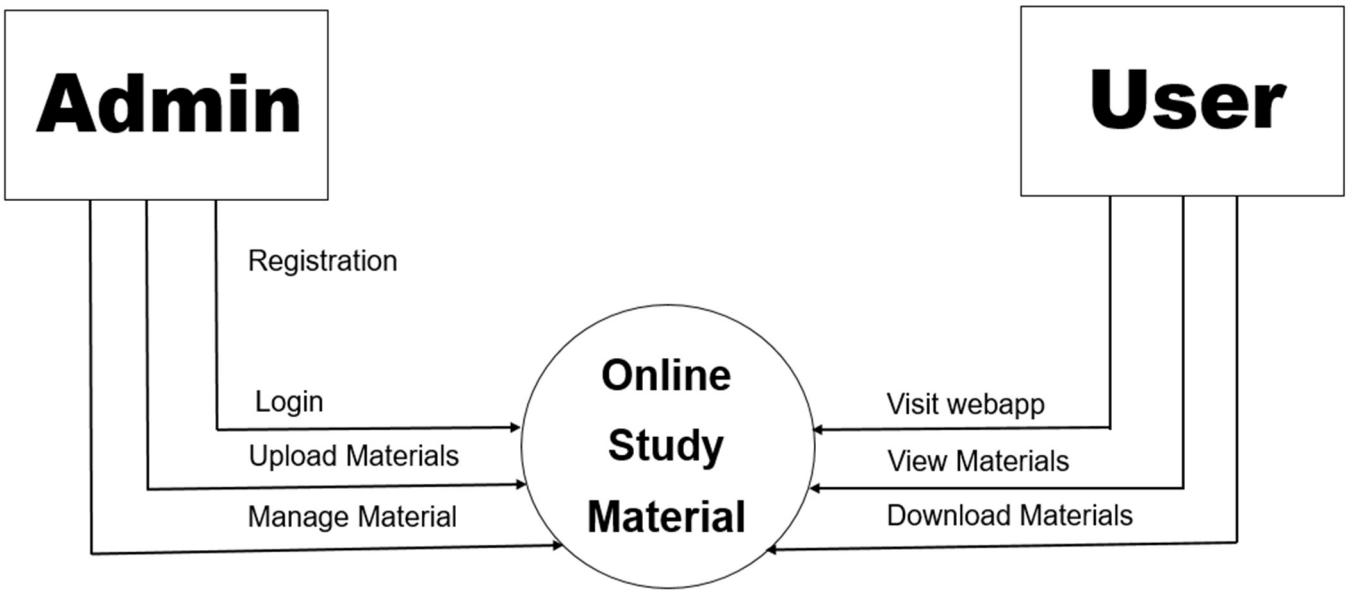
- Data Flow: A directed arc or an arrow is used as a data flow symbol.

- Data Store: A data store is represented using two parallel lines. It represents a logical file.

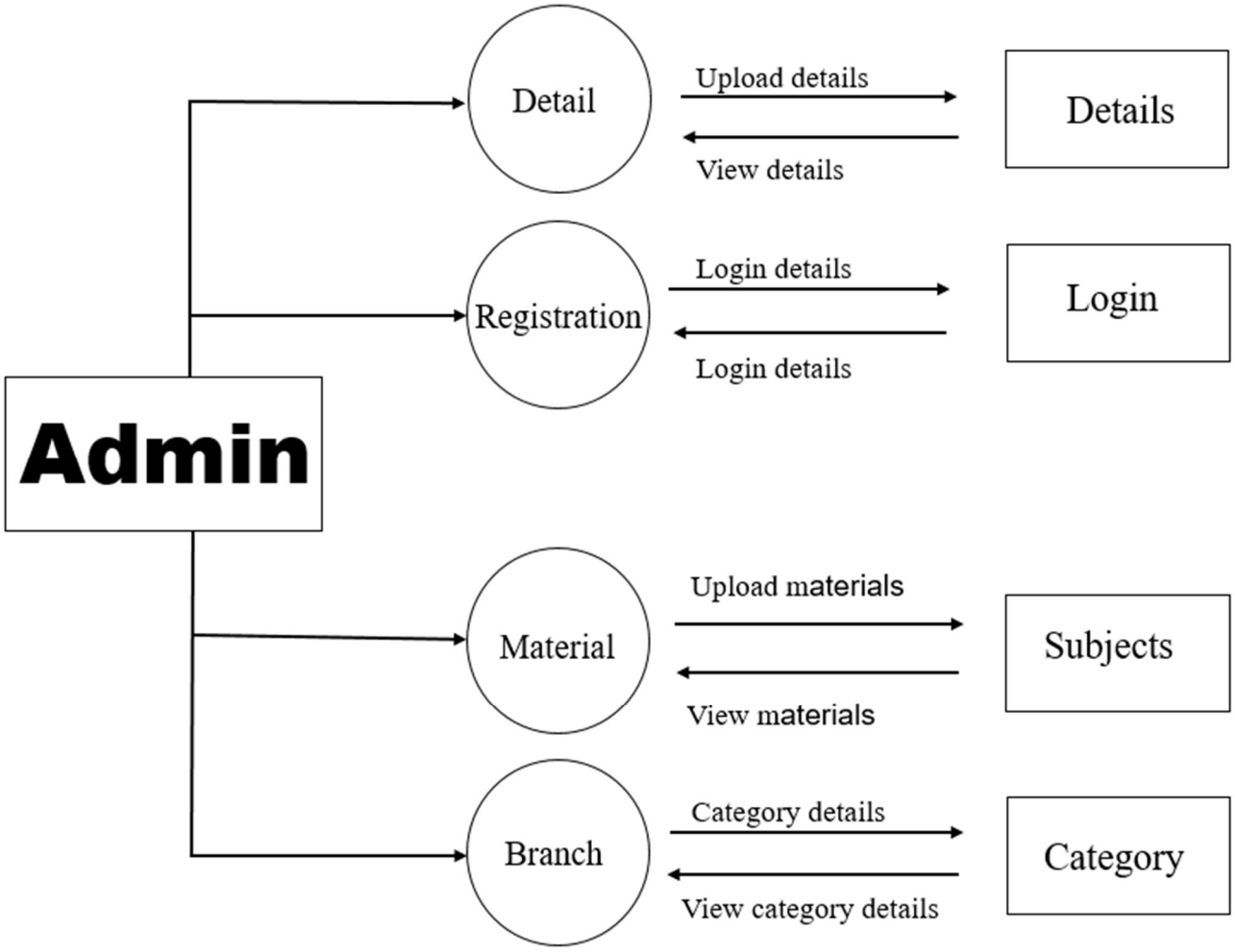
❖What is Data Flow Diagram(DFD)?

- The flow of data of a system or a process is represented by DFD.
- It also gives insight into the inputs and outputs of each entity and the process itself.
- DFD does not have control flow and no loops or decision rules are present.
- Specific operations depending on the type of data can be explained by a flowchart.
- Data Flow Diagram can be represented in several ways.
- The DFD belongs to structured-analysis modelling tools.

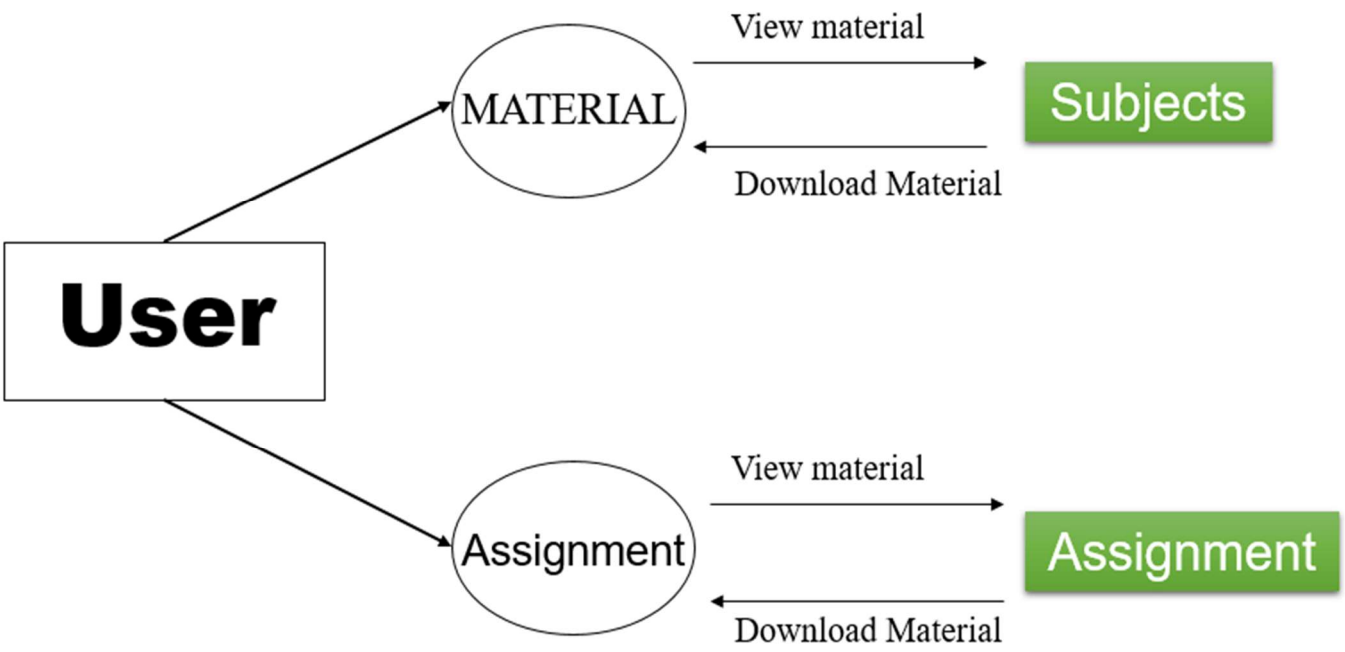
DFD Level - 0


Admin
User
Registration
Login
Upload Materials
Manage Material
Online
Study
Material
Visit webapp
View Materials
Download Materials

DFD level 1 of Admin



DFD level 1 of Student



Future Scope

- Build a mobile app with provision of Account synchronization.
- User will able to see all uploaded materials from particular author.
- The main purpose of education is to achieve upward mobility. Online courses certification programs have been able to provide inexpensive education to the masses and also save time, energy and money.
- Electronic-learning through certified online courses provides a wide range of courses that caters to the core interests of the student, thus creating a fertile arena for future advancement.

Bibliography

❖**Reference links:**

- www.wikipedia.org
- www.w3schools.com
- www.javascript.com
- reactjs.org
- html.spec.whatwg.org
- https://www.mysql.com

❖**Reference Books:**

- JavaScript:
  by E. Balagurusamy
- HTML & CSS:
  The Complete Reference Thomas Powell
- The Road to Learn ReactJs
  by Robin Wieruch
- Murach's MySQL
  By Joel Murach