

# **E-COACH**

## **Software Requirement Specification Document**

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## **TABLE OF CONTENTS**

- 1. INTRODUCTION**
  - 1.1 Purpose**
  - 1.2 Document Convention**
  - 1.3 Intended Audience and Reading Suggestions**
  - 1.4 Project Scope**
  - 1.5 References**
- 2. OVERALL DESCRIPTION**
  - 2.1 Product Perspective**
  - 2.2 Product Features**
  - 2.3 User Classes and Characteristics**
  - 2.4 Operating Environment**
  - 2.5 Design and Implementation Constraints**
  - 2.6 Assumptions and dependencies**
- 3. SYSTEM FEATURES**
  - 3.1 Functional Requirements**
- 4. EXTERNAL INTERFACE REQUIREMENTS**
  - 4.1 User Interface**
  - 4.2 Hardware Interface**
  - 4.3 Software Interface**
  - 4.4 Communication Interface**
- 5. NON FUNCTIONAL ENVIRONMENT**
  - 5.1 Performance Requirements**
  - 5.2 Safety Requirements**
  - 5.3 Security Requirements**
  - 5.4 Software Quality Attributes**

## **1.INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this document is to build an online system which will facilitate educational institutions by providing them proper tools to enjoy virtual presence. It also provides multiple institutions on single platform to students.

### **1.2 DOCUMENT CONVENTIONS**

This document uses the following conventions: -

ER	Entity Relationship
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### **1.3 INTENDED AUDIENCE AND READING SUGGESTIONS**

This project is a web application will promote online education and will unleash new talent and will play a major role in enhancement of knowledge. This has been implemented under the guidance of college professors. This project is useful for the educational institutions as well as the students and educators.

### **1.4 PROJECT SCOPE**

The purpose of this project is to provide a platform to various institutions who want to move to online educations however stuck because of lack of technical knowledge or funding. This project will be a great asset for those students who want to get the best education in this COVID hit world.

### **1.5 REFERENCES**

- Fundamentals of database systems by ramezelmars and shamkantb.navathe
- <http://www.tutorialsspace.com/Software-Engineering/SE-2nd-Unit/02-Requirement-Engineering-Phases-Feasibility-Study.aspx>
- <https://trainingindustry.com/articles/leadership/coaching-in-the-time-of-covid-19/>
- <https://timesofindia.indiatimes.com/city/kochi/entrance-coaching-industry-struggles-to-stay-afloat/articleshow/84328300.cms>
- <https://indianexpress.com/article/india/a-long-recess-6446348/>

## **2. OVERALL DESCRIPTION**

### **2.1 PRODUCT PERSPECTIVE**

**Our centralized database system stores the following information:-**

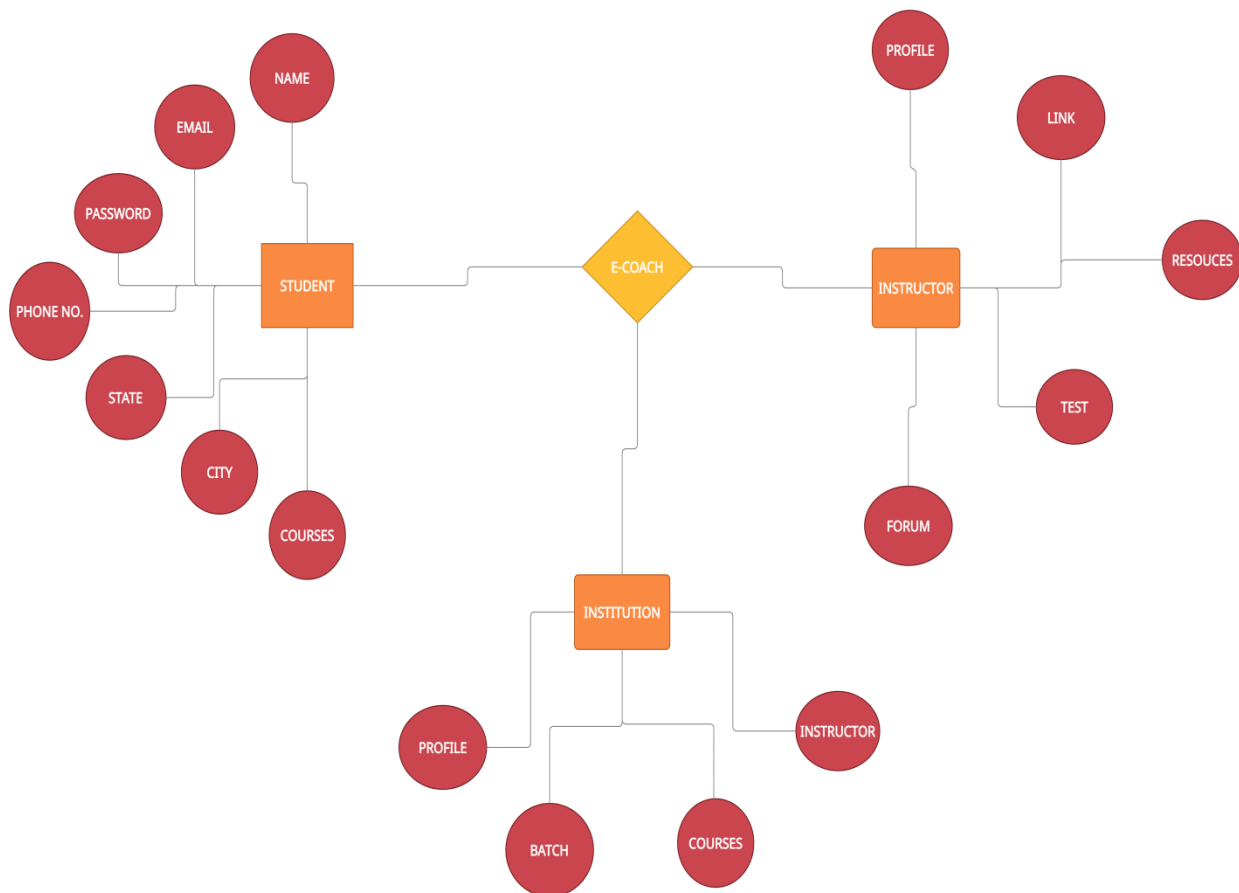
**2.1.1 Institution Details:** It includes the name and various credentials along with the courses, their batches and the instructor assigned.

**2.1.2 Student Details:** It includes the credentials of the students along with the courses he/she is enrolled and his status in it.

**2.1.3 Instructor Details:** It includes the credentials of the instructor, the institution and various resources and tasks performed by him in conduction of course.

### **2.2 PRODUCT FEATURES**

The major features of the database system are shown below using An ER model:-



## **2.3 USER CLASS AND CHARACTERISTICS**

The Student will be able to perform the operations of searching institution, enrolling in a particular course and then attending it. He/ She will be getting all the updates regarding that course through instructor.

The Institution can easily add, update or delete a particular course. The Institution will decide the batch and will schedule it accordingly. The will also assign the instructor to a particular course.

The Instructor will be assigned a particular course by the institute. After that conducting the course properly will be under instructor. The instructor will provide all the resources , take test, solve doubts on forum and will also share the link for the class.

## **2.4 OPERATING ENVIRONMENT**

Operating environment for E-Coach is as listed below:-

Central Database

Client/ Server System

Operating System: Any operating system which support latest web browsers

Database: Relational Database

Platform: Java

## **2.5 DESIGN AND IMPLEMENTATION CONSTRAINTS**

The database consists of various tables of student, institution and instructor also some more additional tables for batches, courses is also added will store the data of the various batches and the courses. The tables are accessed using the primary keys mainly id's which will smoothen the Data transfer and request, response process.

## **2.6 ASSUMPTION DEPENDENCIES**

Let us assume that this is a central database and is used in the following application.

As there are multiple student and multiple institutions and instructors so the request and response process will be much feasible in a central database and will also facilitate in case of data redundancy.

### **3. SYSTEM FEATURES**

- **Description and Priority**

- A platform that allows educators to make their virtual presence and also for to students get proper education and resources.
- As past couple of year have been tough for various small educational institution due to inadequate resources to reach students. Many marvelous educators have to stop just because of lack of proper resources.
- The Students also confused about various platform and have to give their valuable time to other unnecessary things.
- E-Coach aims to provide an opportunity for those educators who want to teach and the students who want to learn and achieve success.

- **Stimulus Response Sequence**

1. Educator can make their profile and add various courses, facilities just by following some simple steps.
2. Students can search various institutions and educators on website.
- 3.The student can go through various institutions and decide the best for him.
- 4.The enrolled students will be allowed to join the classes scheduled by institution.
- 5.The students can join multiple institutions and can choose multiple instructors by single Id.
- 6.The Educators can share various resources with the students and can also analyse their performance based on their results in tests. Also, personal attention can be provided to instructor.

- **FUNCTIONAL REQUIREMENTS**

- 1) Ability to users to **register** themselves for the website so they can avail the facilities that are provided by the website. Unique username/email and passwords shall be provided to each user for authentication. Using these credentials, a user can **login** to the website.
- 2) Functionality to the registered student for selecting their desired courses. Also provide the user the functionality to manipulate courses themselves.
- 3) The student should be able to specify course type before posting.
- 4) Functionality for students to enroll in courses.

- 5) Functionality to studentfor searching courses related to particular keyword search query from the list.
- 6) All the courses that a studenthas enrolled on the website should displayed on student's profile that is uniquely identified the username of the user.
- 7) Institutions can add courses and created batches for those courses. Student would join these batches.
- 8) Trainers would be assigned to batch that they will be teaching. Trainer would be able to share all the relevant resources with the student.
- 9) Students can ask their queries regarding the course on a forum, where trainers as well as fellow students can participate to resolve the queries.

Other system features include:

### **CENTRALIZED DATABASE:**

A **centralized database** (sometimes abbreviated **CDB**) is a database that is located, stored, and maintained in a single location. This location is most often a central computer or database system, for example a desktop or server CPU, or a mainframe computer. In most cases, a centralized database would be used by an organization (e.g. a business company) or an institution (e.g. a university.) Users access a centralized database through a computer network which is able to give them access to the central CPU, which in turn maintains to the database itself.

### **CLIENT/SERVER SYSTEM**

The term client/server refers primarily to an architecture or logical division of responsibilities, the client is the application (also known as the front-end), and the server is the DBMS (also known as the back-end).

A client/server system is a distributed system in which,

- Some sites are client sites and others are server sites.
- All the data resides at the server sites.
- All applications execute at the client sites.

## **4. EXTERNAL INTERFACE REQUIREMENTS**

### **4.1 USER INTERFACES**

- Front-end: HTML,CSS, JavaScript, JQuery, Ajax
- Back-end:Java (Enterprise Edition)
- Database: MySQL

### **4.2 HARDWARE INTERFACES**

- Windows, LINUX
- Browser – Chrome, Mozilla Firefox, Opera Mini, Microsoft Edge

### **4.3 SOFTWARE INTERFACES**

Following are the software used for E-Coach:

<b>Software used</b>	<b>Description</b>
Operating system	We have chosen Windows operating system for its best support and user-friendliness.
Database	To save the student , institution and instructor data and records we have chosen MySQL database.
Java	To implement the project, we have chosen Java language for its more interactive support.

### **4.4 COMMUNICATION INTERFACE**

This project supports all types of web browsers. We are using simple electronic forms for choosing courses and providing resources etc.



## **5. NONFUNCTIONAL REQUIREMENTS**

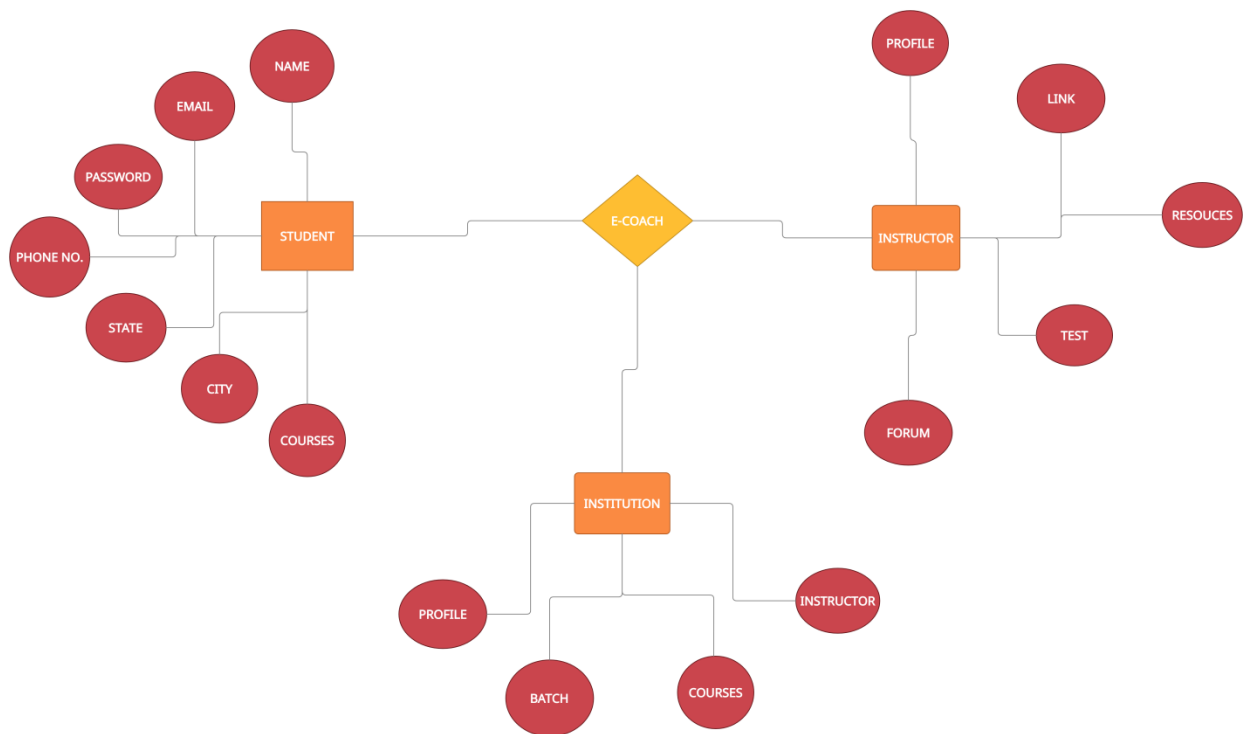
### **5.1 PERFORMANCE REQUIREMENTS**

The steps involved to perform the implementation of E-Coach database is listed below.

#### **E-R DIAGRAM**

The E-R Diagram constitutes a technique for representing the logical structure of a database in a pictorial manner. This analysis is then used to organize data as a relation, normalizing relation and finally obtaining a relation database.

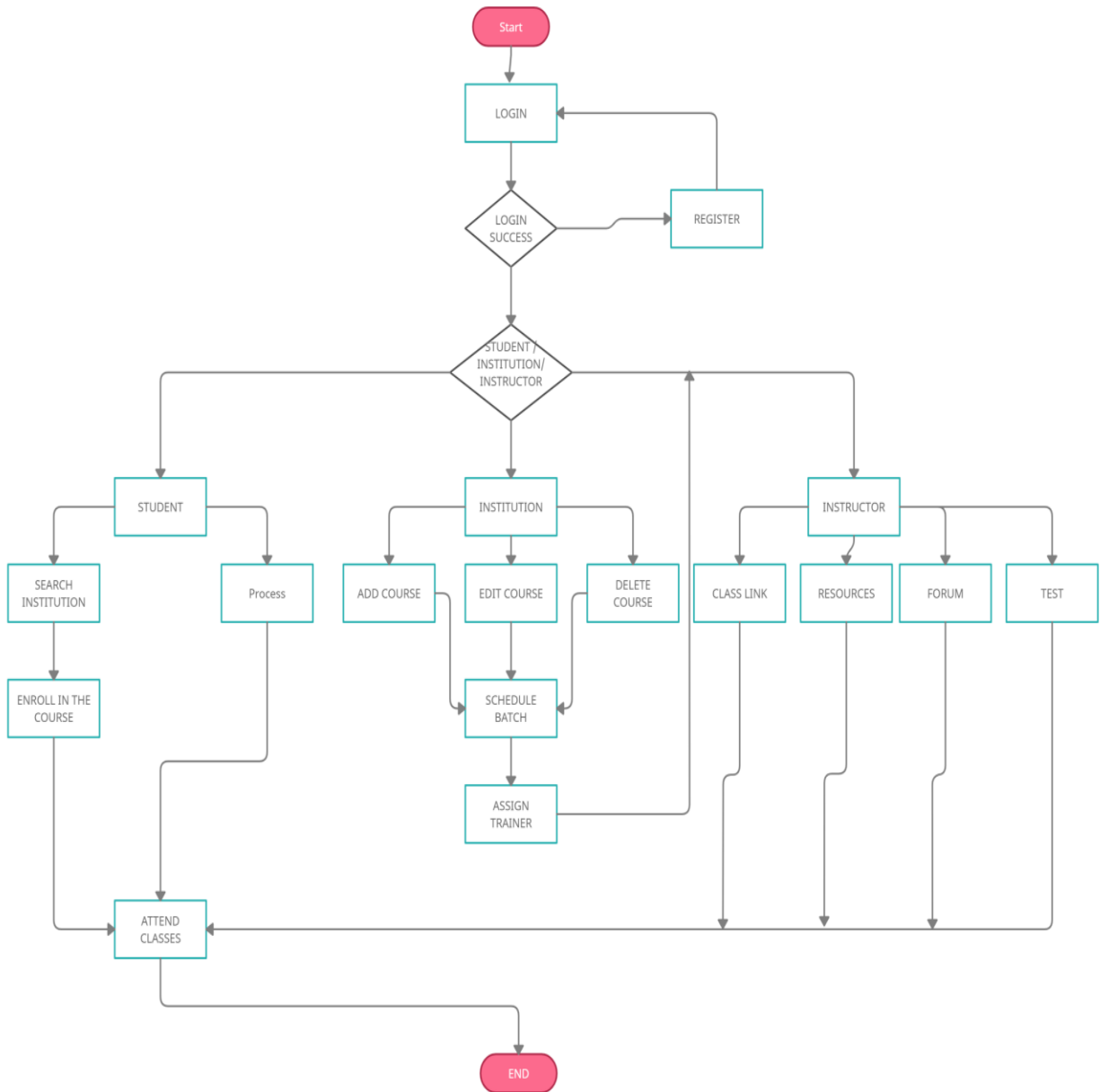
- **ENTITIES:** Which specify distinct real-world items in an application.
- **PROPERTIES/ATTRIBUTES:** Which specify properties of an entity and relationships.
- **RELATIONSHIPS:** Which connect entities and represent meaningful dependencies between them.



*the diagram shows the ER diagram of E-Coach database*

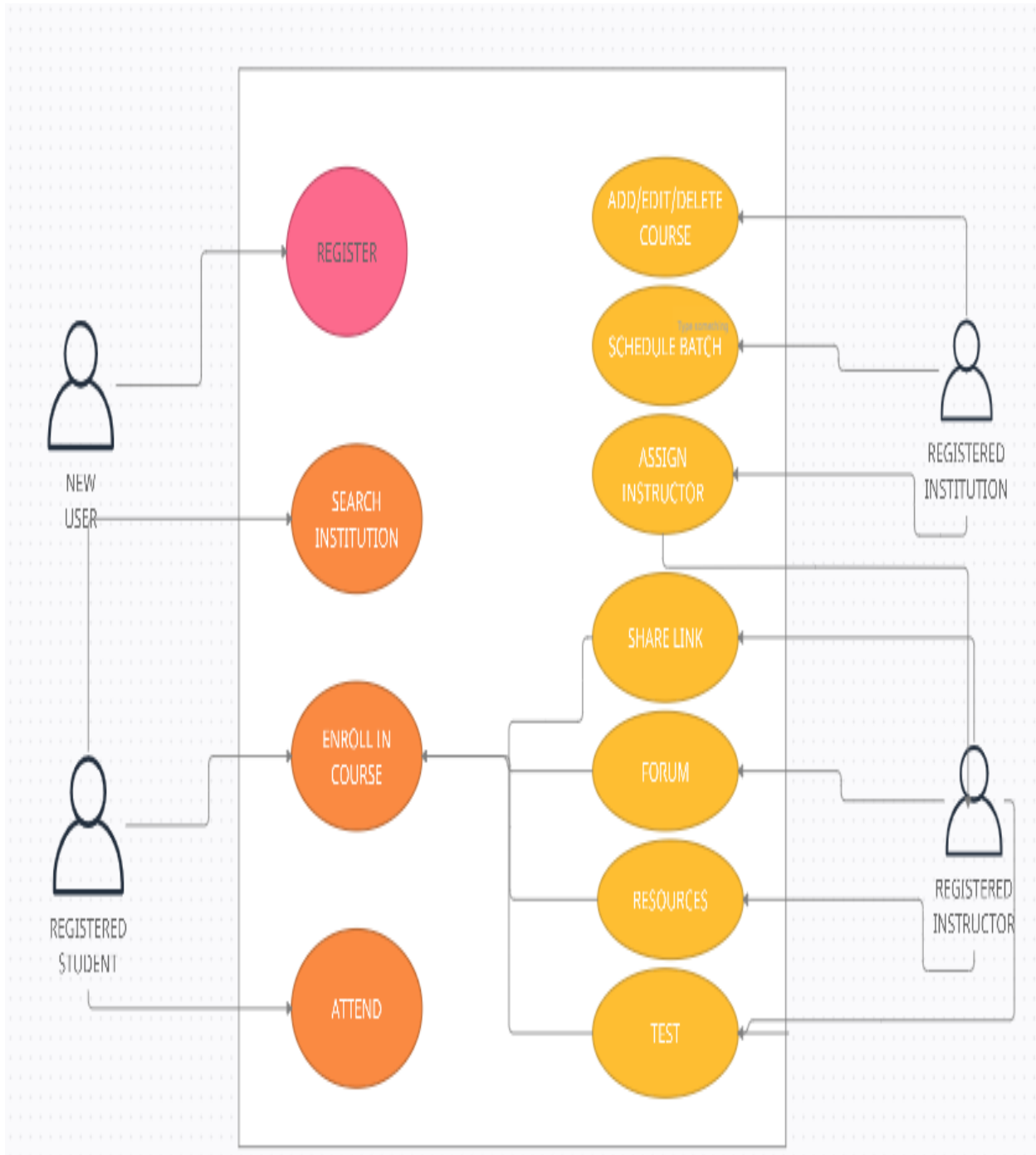
## FLOWCHART

A flowchart is a visual representation of the sequence of steps and decisions needed to perform a process. Each step in the sequence is noted within a diagram shape. Steps are linked by connecting lines and directional arrows.



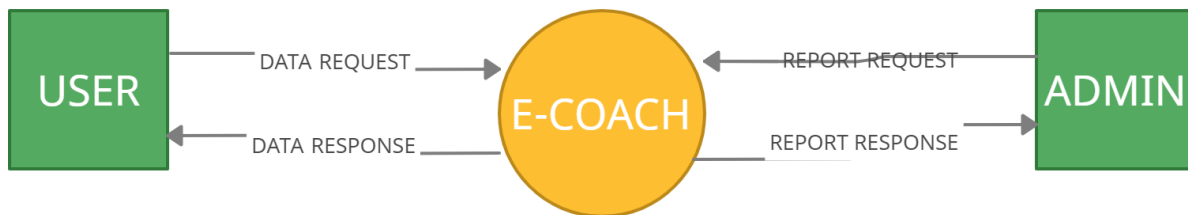
## USE CASE DIAGRAM

In the Unified Modeling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system.



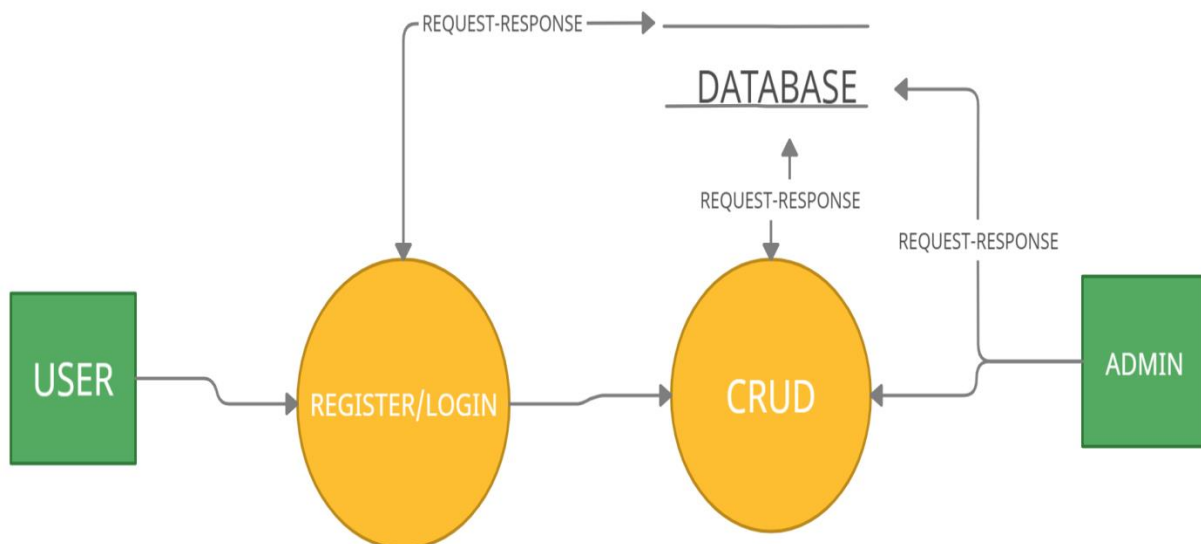
### **DATA FLOW DIAGRAM (LEVEL-0)**

It is also known as fundamental system model, or context diagram represents the entire software requirement as a single bubble with input and output data denoted by incoming and outgoing arrows.



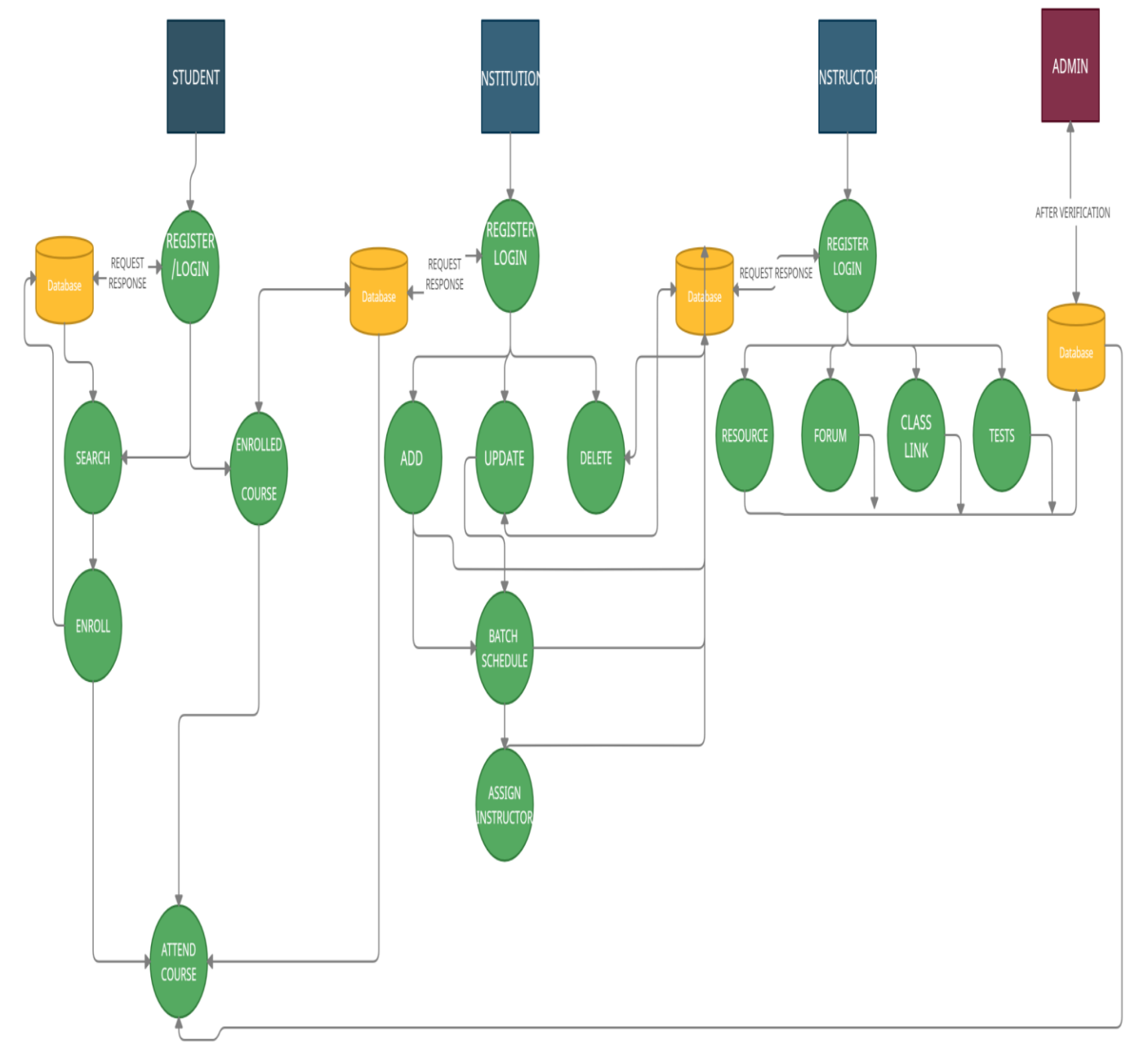
### **DATA FLOW DIAGRAM (LEVEL-1)**

In 1-level DFD, a context diagram is decomposed into multiple bubbles/processes. In this level, we highlight the main objectives of the system and breakdown the high-level process of 0-level DFD into sub processes.



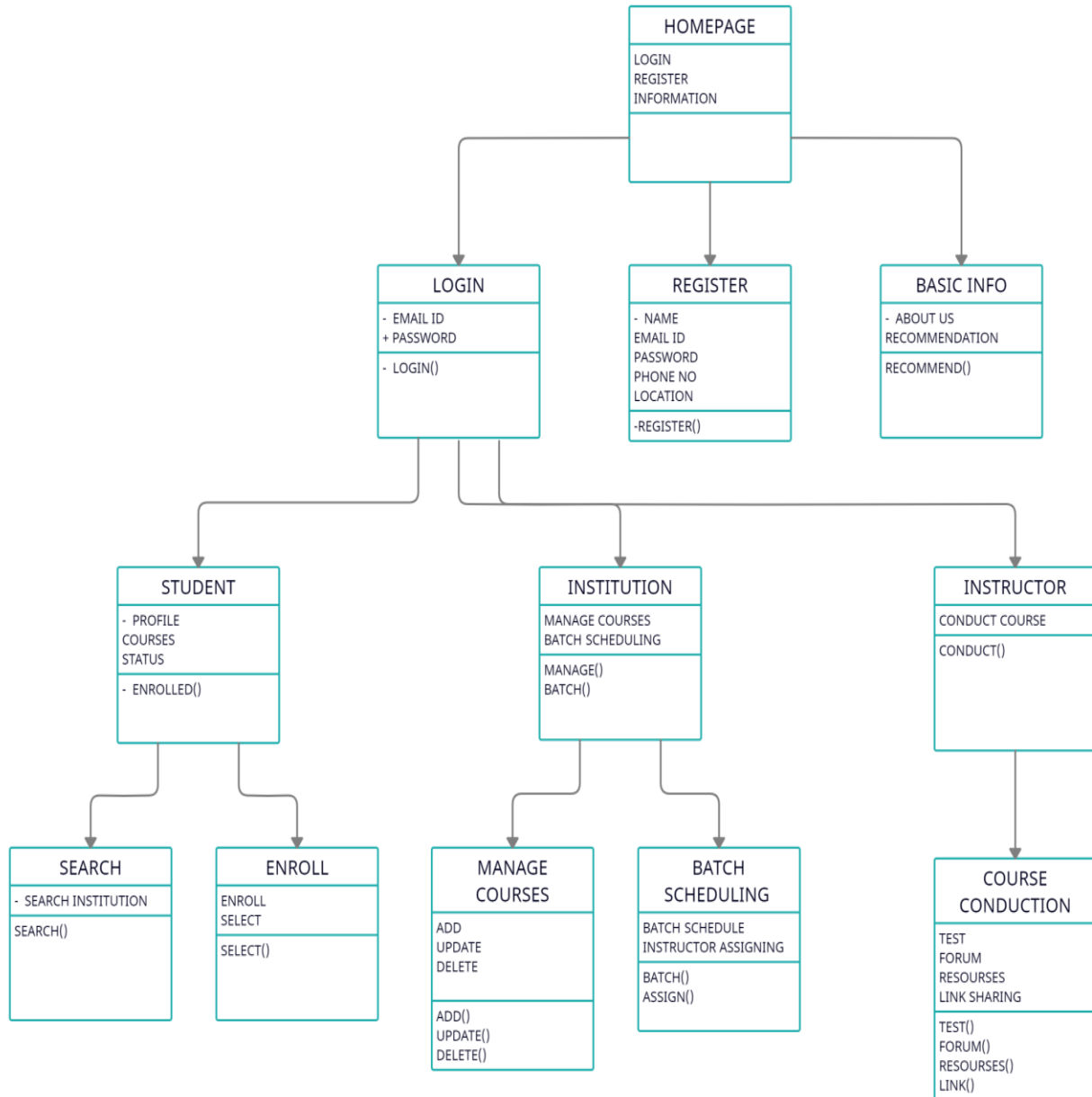
## DATA FLOW DIAGRAM (LEVEL-2)

2-level DFD goes one process deeper into parts of 1-level DFD. It can be used to project or record the specific/necessary detail about the system's functioning.



## CLASS DIAGRAM

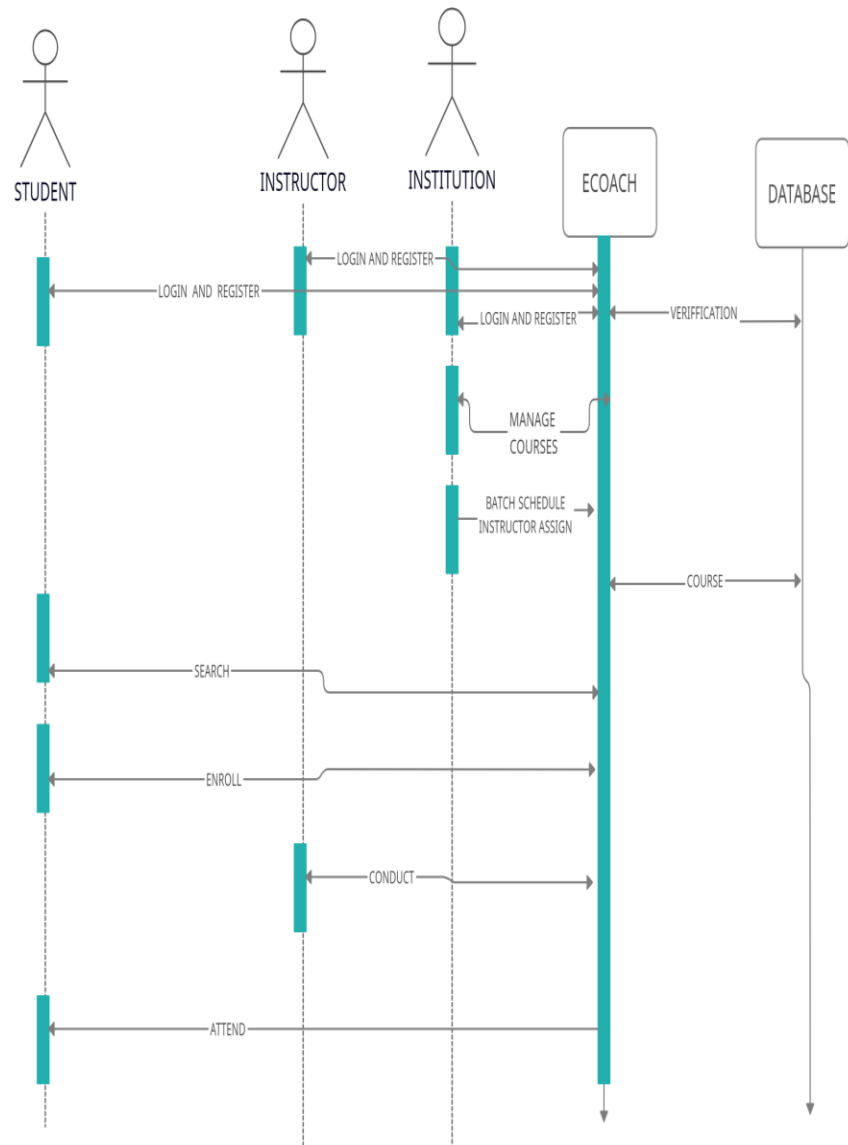
Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application.



## SEQUENCE DIAGRAM

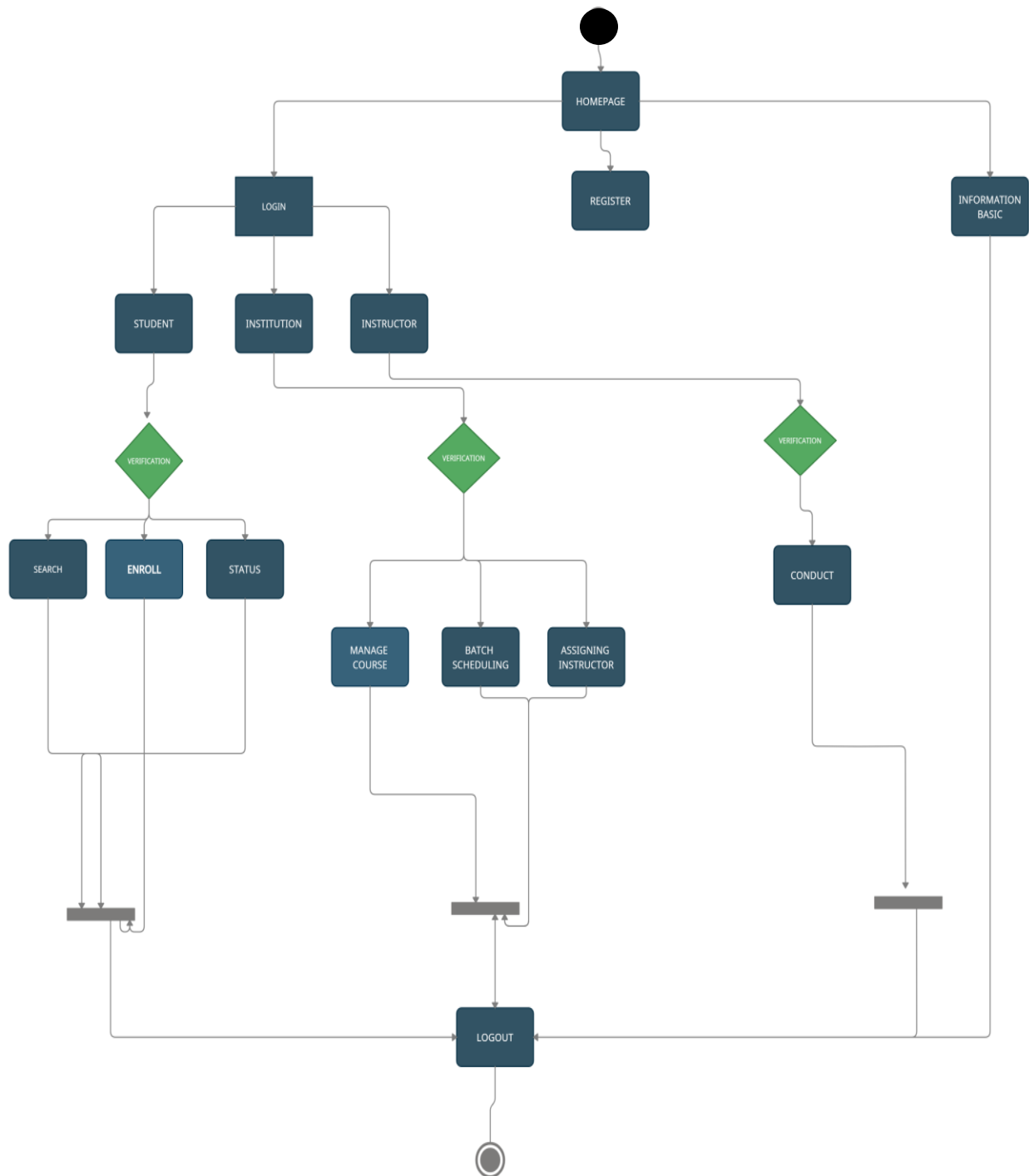
A sequence diagram simply depicts interaction between objects in a sequential order i.e. the order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram. Sequence diagrams describe how and in what order the objects in a system function. These diagrams are widely used by businessmen and software developers to document and understand requirements for new and existing systems.

«message»



## ACTIVITY DIAGRAM

An activity diagram is a behavioral diagram i.e. it depicts the behavior of a system.  
An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed.





## **NORMALIZATION:**

The basic objective of normalization is to reduce redundancy which means that information is to be stored only once. Storing information several times leads to wastage of storage space and increase in the total size of the data stored.

If a database is not properly designed it can give rise to modification anomalies. Modification anomalies arise when data is added to, changed or deleted from a database table. Similarly, in traditional databases as well as improperly designed relational databases, data redundancy can be a problem. These can be eliminated by normalizing a database.

Normalization is the process of breaking down a table into smaller tables. So that each table deals with a single theme. There are three different kinds of modifications of anomalies and formulated the first, second and third normal forms (3NF) is considered sufficient for most practical purposes. It should be considered only after a thorough analysis and complete understanding of its implications.

## **5.2 SAFETY REQUIREMENTS**

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage (typically tape) and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

## **5.3 SECURITY REQUIREMENTS**

Security systems need database storage just like many other applications. However, the special requirements of the security market mean that vendors must choose their database partner carefully.

## **5.4 SOFTWARE QUALITY ATTRIBUTES**

- **AVAILABILITY:** The Courses should be available of a particular subject and institutions on the mentioned time.
- **CORRECTNESS:** The Course and batch should lead to correct instructor and correct resources.
- **MAINTAINABILITY:** The Institution should properly maintain the courses. The admin should also take care of database.
- **USABILITY:** The management of the user and hi data should be done properly to avoid unnecessary delays and abnormalities.