

# INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, GUWAHATI

## Project-Report(Software Engineering) Online Examination System

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# Introduction

Online Examination System is a Multiple Choice Questions (MCQ) based examination system. It provides an easy to use environment for both Organisation and Students appearing for Examination. The main objective of Online Examination System is to provide all the features that an Examination System must have, with the "interfaces that don't Scare it'sUsers!".

# Disadvantages of existing system

- The existing systems are very time consuming.
- It is difficult to analyze the exam manually.
- Results are not precise as calculation and evaluations are done manually.
- Result processing after summation of exam takes more time as it is done manually

# Objective of proposed system

- Economic feasibility
- Time Flexibility
- Technical feasibility
- User-friendly interface
- Eco-Friendly System

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# Software Requirement Specification

**A software requirements specification (SRS)** is a detailed description of a software system to be developed with its functional and non-functional requirements. The SRS is developed based the agreement between customer and contractors.

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## 1. Introduction

- The following subsections of the SRS document provide an overview of the entire SRS.

### 1.1 Purpose

- The purpose of the project is to provide online facility to various organization to conduct online exams and to candidates to give online exams. Organization can enter and edit the questions along with the candidate list. Also they can view the result. Candidates can login and give their respective exams and view their score then and there.

### 1.2 Product Scope

- The website to conduct online examination is “**Online ExaminationSystem**”. This website provides facility to organizations to conduct online exams by providing a unique id to each organization. The organization provides questions along with positive (for correct attempt) and negative (penalty for wrong attempt) marks. Organization also enters the list of eligible candidates. All the information entered can be later edited by the organization.
- In turn candidate can login with their id, name and organization id to give the exams and can view their result then and there. organization can also view the result of their candidates.

### 1.3 References

- IEEE Recommended Practice for Software Requirements Specification- IEEE STD 830-1993.

### 1.4 Definition, Acronyms and Abbreviation

- HTML : Hyper Text Markup Language
- PHP : Hypertext Preprocessor
- JSP : Java Servlet Pages
- SQL : Structured Query Language
- NoSQL : Non Structured Query Language
- STD : standard
- IEEE : Institute of Electrical and Electronics Engineers
- macOS – Macintosh Operating System (Apple’s operating system)
- hrs - hours

## 1.5 Overview

- The rest of this SRS document describes the various system requirements, interfaces, features and functionalities in detail.

## 2. Overall Description

- In Online examination system organization can register to conduct an online test and view the records later. Candidate can give the test and their respective records, which include their marks for each test given by them, will be maintained separately. No student can take a particular exam more than once.

### 2.1 Product Perspective

- Following screens will be provided:-
  - There is a screen for displaying information menu regarding what options the *organization* will select while filling entries (like entering questions, editing questions, entering exam details, Student's user id and passwords).
  - There is a screen for displaying exam details to the candidates when they are taking exams.
  - There is a screen for displaying of results of candidates after taking the exam.

### 2.2 Product Functions

- The website will allow access only to authorized users with specific roles (organization - Register to conduct the exams, Candidates - Give the exams online) A summary of the major functions that the website will perform:
  - Provide facility to organization to register to conduct an online test.
  - Institutes can enter the number of questions, marks for correct attempt, marks for wrong (penalty) attempt, questions and answers and the list of eligible students.
  - Students can login and give the tests.

### 2.3 User Classes and Characteristics

- Educational level: Users should be comfortable with the English language.
- Experience: Users should have prior information regarding the online examinations.
- Skills: Users should have basic knowledge and should be comfortable using general purpose applications on computers.

## **2.4 Design and Implementation Constraints**

- User id and password for giving the exam will be provided just before the exam begins.
- For authenticity of candidate invigilator must cross check before entering the exam centre.
- Switching between any window other than the default launched window will lead to disqualification.
- An active internet connection is required for smoothly conducting the exam.

## **2.5 Assumptions and Dependencies**

- We assume that 24 hrs active internet connection and electricity is available

## **2.6 Limitations**

- The examinations can't handle subjective questions.
- One can't just sit at home and appear for the exam he must come to the examination center.

## **2.7 Outcome**

- Outcome of the project is that using this application various organization can conduct an online exam which will be objective type.
- At the end of the exam candidate can view the result.

## **3. Specific Requirements**

- This section provides software requirements to a level of detail sufficient to enable designers to design the system and testers to test the system

## 3.1 External Interface Requirements

### 3.1.1 User Interfaces

- **Organization Login Screen:** Fields available on this screen are:
  - Login Name
  - Password
- **Entering Questions:** Various Fields are:
  - Questions
  - Options (4)
  - Correct Answer
- **Exam Details Screen:** Various Fields are:
  - Exam Name
  - No. Of Questions
  - Time Limit
  - Marks for correct answer, marks(penalty) for wrong attempt
- **Candidate Login Screen:** Various Fields are:
  - Candidate ID
  - Password
  - Institute ID
- **Candidate Taking Exam Screen:** Various Fields are:
  - Display Of Question With Options
  - Control Buttons To switch questions
- **Result Displaying Screen:** Various Fields are:
  - No. Of Correct Questions
  - No. Of Incorrect Questions
  - No. Of Unattempted Questions.
  - Total Marks obtained

### 3.1.2 Hardware Interfaces

- Screen resolution of at least 800X600 is required for proper and complete viewing of screens. Higher resolution will be accepted.

### 3.1.3 Software Interfaces

- Any desktop operating system software (Linux, Windows, macOS)
- MySQL and NoSQL as the DBMS-for database.
- IDE (ECLIPSE) for developing code.

## 4 Functional System Requirements

This section gives a functional requirement that applicable to the online exam system. There are three sub modules in this phase.

- Candidate module
- Examiner module
- Administrator module.

The functionality of each module is as follows:

### 4.1 Candidate Module

- The candidate will login to the portal and take his examination. The candidate will get result immediately after the completion of the examination.

### 4.2 Examiner module

- The database is prepared and loaded into the software. The results will be displayed immediately after completion of the examination.

### 4.3 Administrator module

The administrator collects all the results after successful completion of the examination and sends to the headquarters as and when required.

## 5. Non-Functional Requirements

### 5.1 Performance Requirements

- Some performance requirements identified is listed below
  - The database shall be able to accommodate a minimum of 10000 records of students.
  - The software shall support use of multiple users at a time.
  - There are no specific performance requirements that will affect development.

### 5.2 Safety Requirements

- The database may get crashed at any certain time due to virus or operating system failure. Therefore it is required to take the database backup.

### 5.3 Security Requirements

- Some of the factors that are identified to protect the software from accidental or malicious access, use, modification, destruction, or disclosure are described below.
  - Assign certain functions to different modules.
  - Restrict communications between some areas of the program.
  - Check data integrity for critical variables.

### 5.4 Future scope

- If we add biometric feature of candidate to verify authenticity of candidate then the same would not be to be done manually. It is possible that user can attempt the exam from home as well.

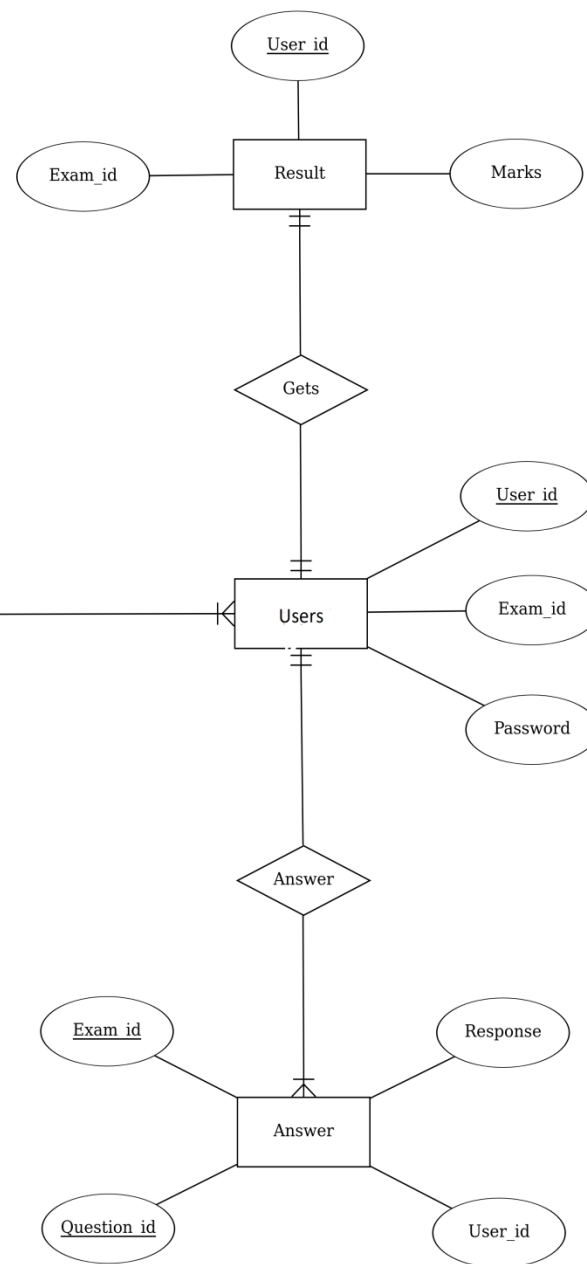
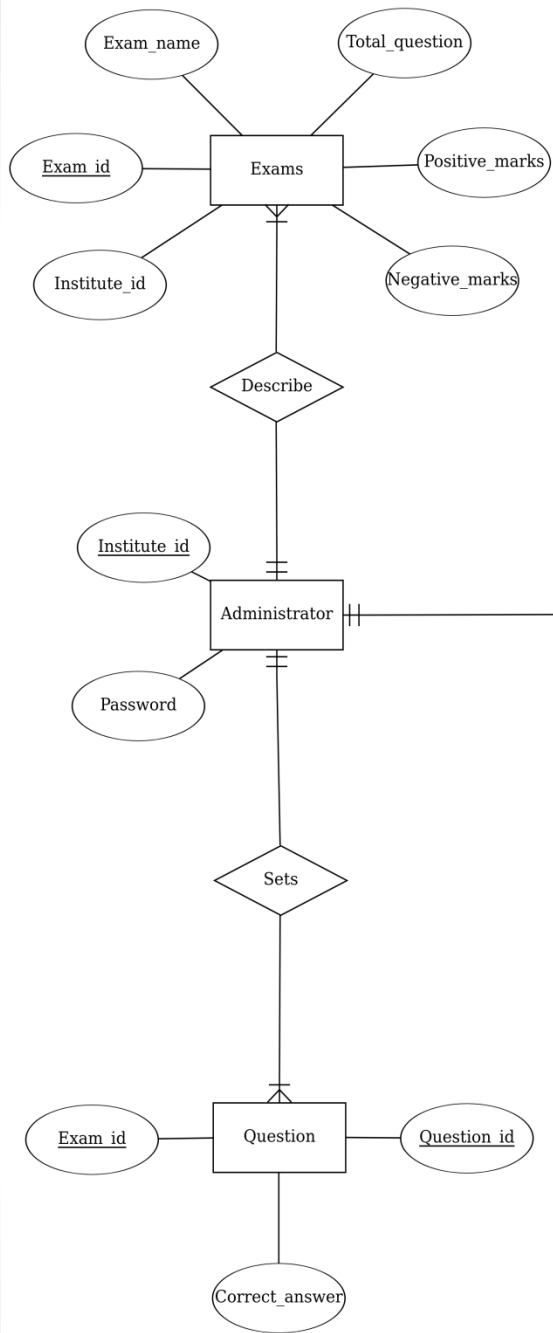
# Purpose of SRS

- It provides client a satisfaction as this is the first response to the client.
- It defines functional and non-functional requirement.
- It eliminates any confusion or misunderstanding on initial stage.
- It reduces development effort.

# Entity–Relationship Diagram



An entity–relationship model describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types and specifies relationships that can exist between entities.



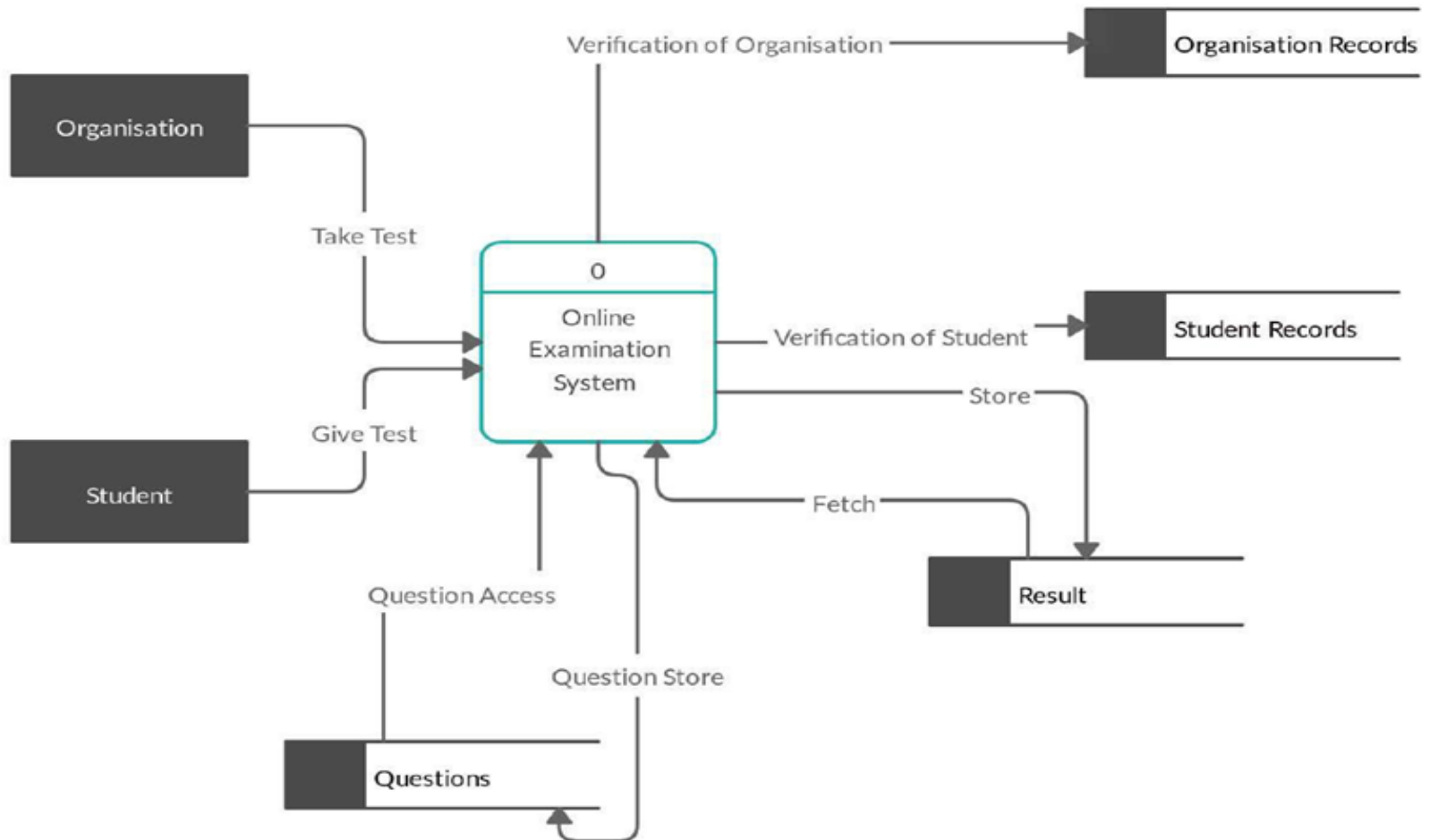
# Benefits Of Using Entity Relationship Diagrams

- Visual Representation: The most crucial benefit of ERD is that it offers a visual presentation of the layout.
- Effective communication: The clear representation of the data listed under proper headings and tables results in the effective flow of information and communication.
- Easy To Understand

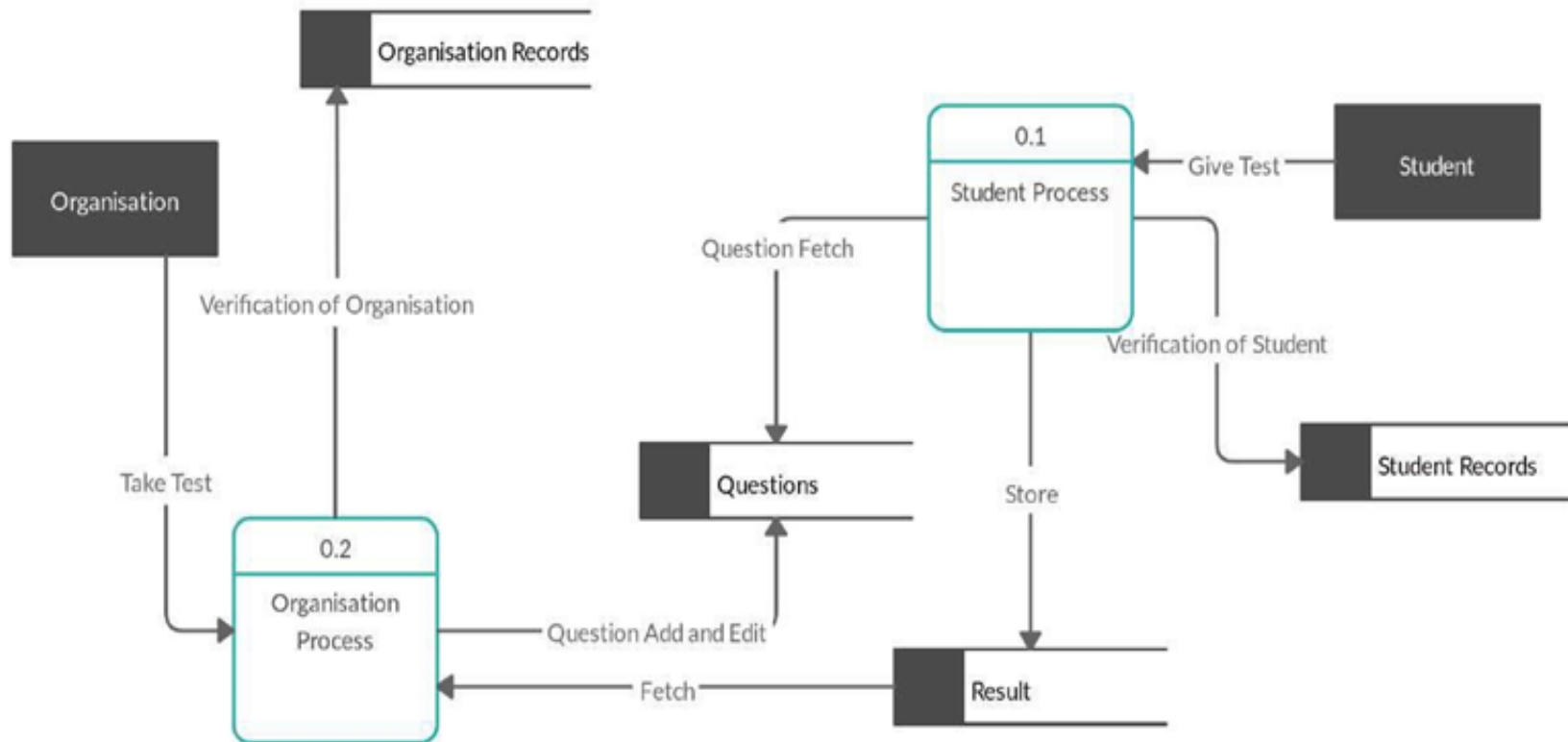
# Data Flow Diagram

A data-flow diagram is a way of representing a flow of a data of a process or a system. The DFD also provides information about the outputs and inputs of each entity and the process itself.

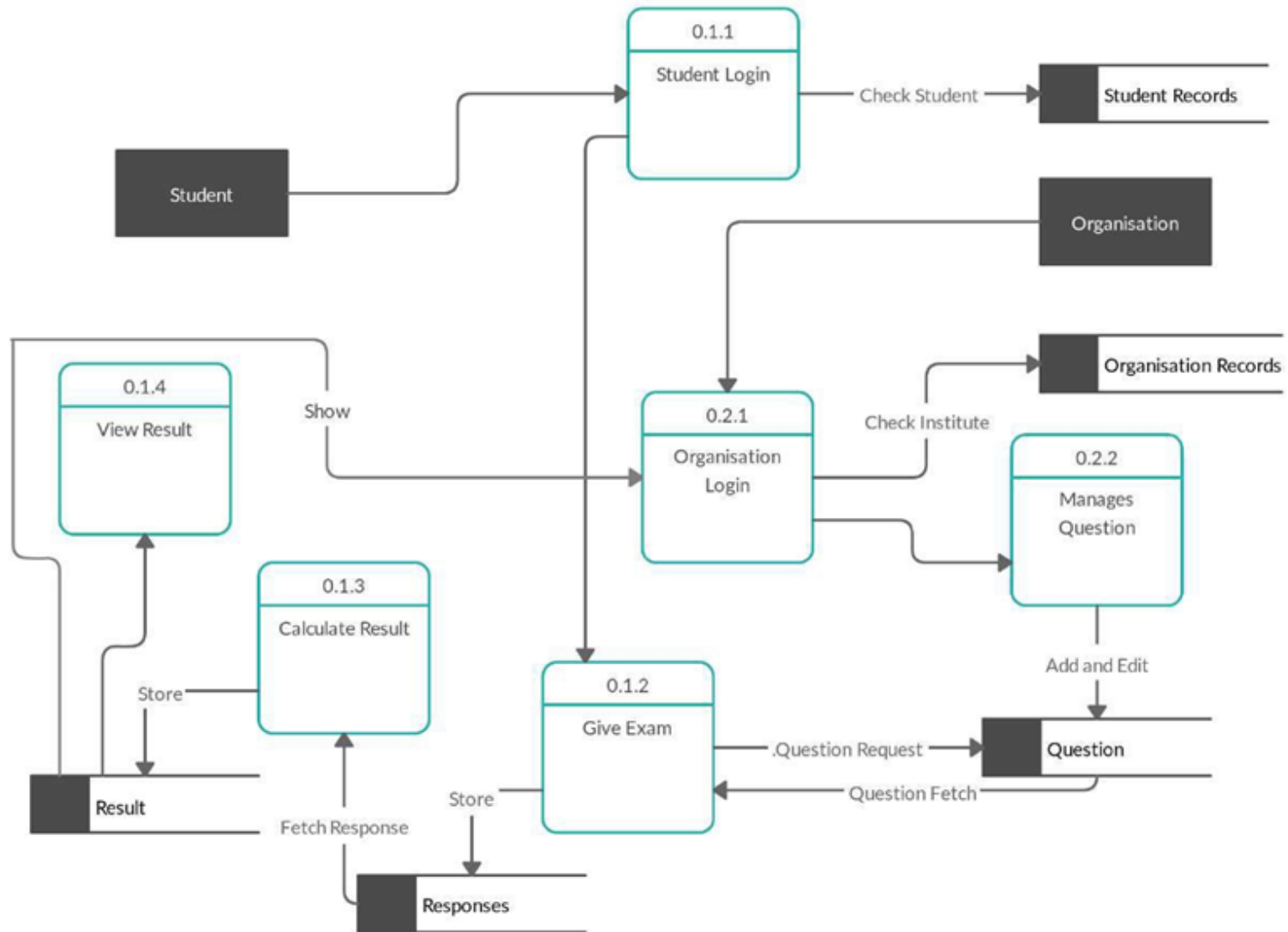
## Level 0(Context Diagram)



## Level 1(Overview Diagram)



## Level 2(Detail Diagram)



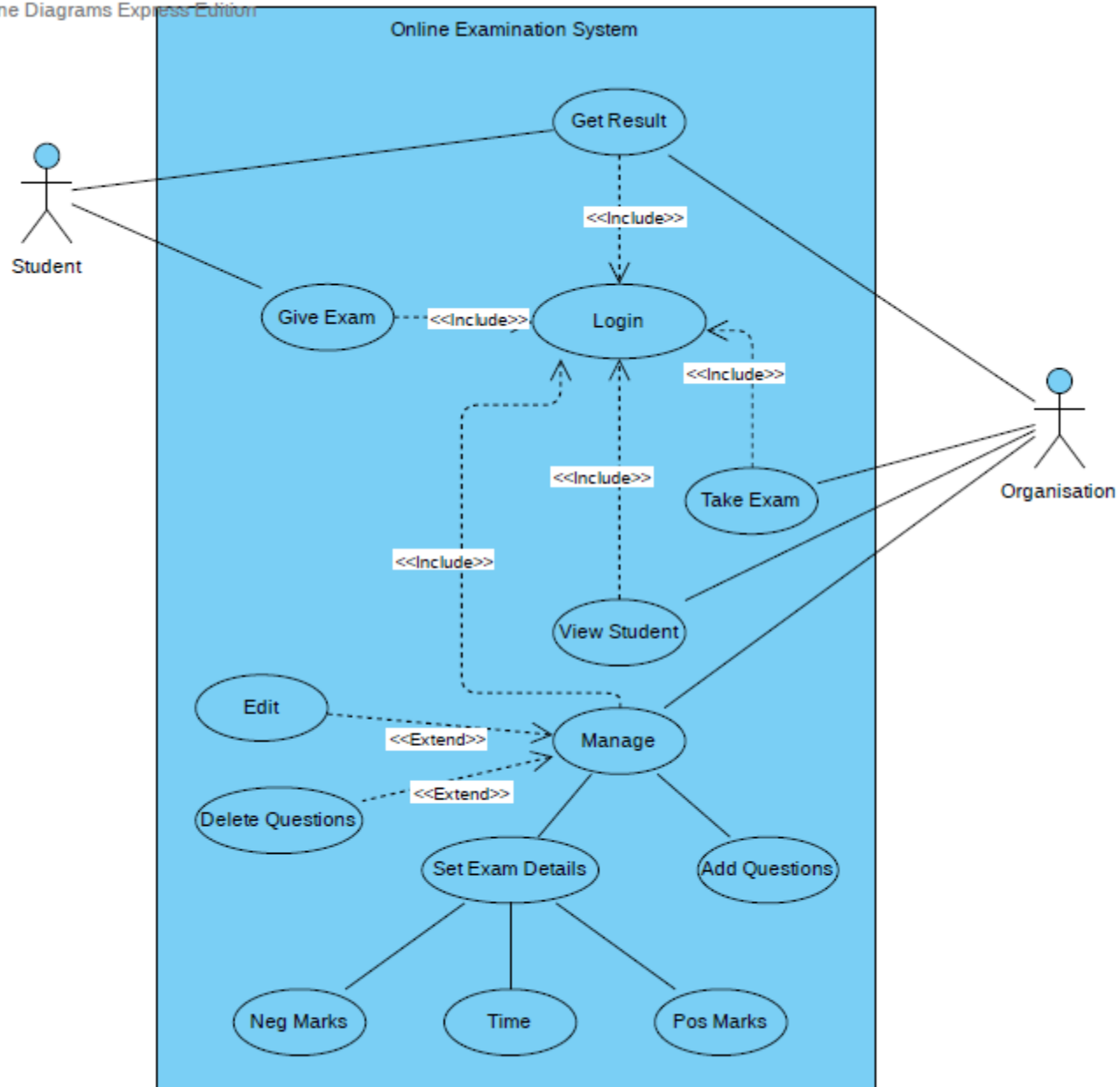


# Advantages of data flow diagram:

- It aids in describing the boundaries of the system.
- It is beneficial for communicating existing system knowledge to the users.
- A straightforward graphical technique which is easy to recognise.
- DFDs can provide a detailed representation of system components.

# Use Case Diagram

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved.



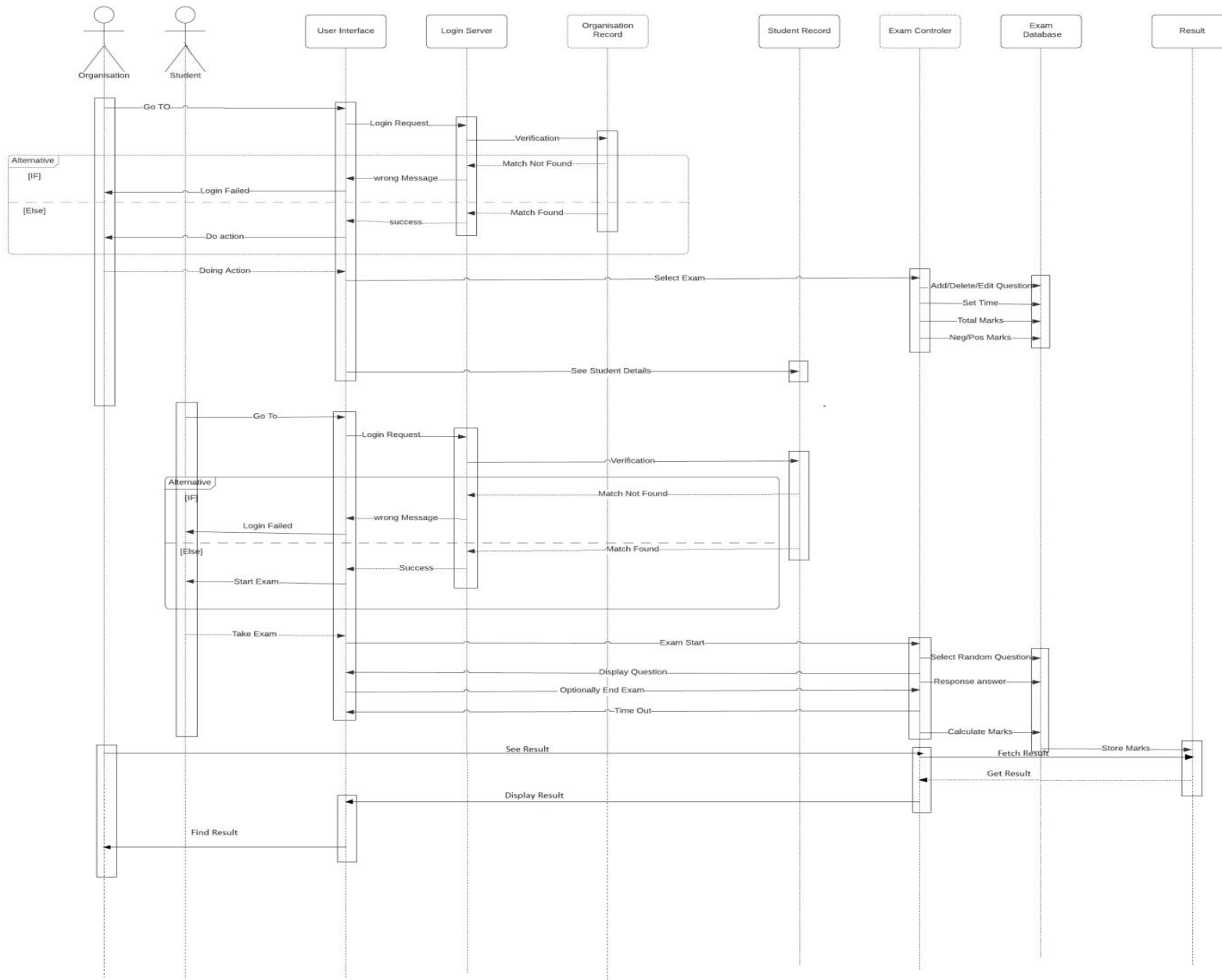
# Advantages

- Use case diagram help to capture the functional requirements of a system.
- Use case diagram are traceable.
- Use case diagram can serve as the basis for the estimating, scheduling, and validating effort.

# Sequential Diagram

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario.

# ONLINE EXAMINATION SYSTEM





# Advantages

- Easier to read.
- UML specification is more sequence diagram centric.
- Allows reverse engineering.

# Product Functionality

- The students will register their profile details to the organization conducting exam.
- The respective organization will give students details to the examination agency, which is basically our software, through a secure channel.
- The examination agency will register student details in their database and in this process will also make userid and password of respective student.
- The admin at the examination agency will be provided with date and time of start of exam by the organization conducting exam.
- At the examination center, the student will be given their respective userid and password.
- Student can log in to the software. Upon the designated date and time the admin will start the exam.
- The results of the exam will be declared as soon as the exam is over. Both student and admin can see the exam result.

# Technologies Used

- Front-End: HTML, CSS, JavaScript
- Back-End: JSP
- Database: MySQL
- Server: Apache Tomcat

# Limitations and Constraints

- Security Limitations:
  1. WebCam, MicroPhone is not integrated in our software.
  2. New Window (tab) can be opened while the exam is taking place.
- Resource Constraint:
  1. The number of users giving exam at same time depends upon the server capability.
  2. Sufficient number of invigilators must be present for the conduct of exam.