"E-EXAM"
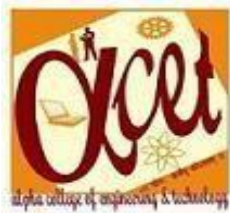
A PROJECT REPORT

Submitted by

FLORID MACLEAN (170510107017)

In fulfillment of the subject PROJECT- I (2170001)

Of

BACHELOR OF ENGINEERING

In

COMPUTER ENGINEERING

ALPHA COLLEGE OF ENGINEERING AND TECHNOLOGY, GANDHINAGAR

Gujarat Technological University, Ahmadabad.

2020-2021

CERTIFICATE

Date: 31/03/2021

This is to certify that the Project Work entitled **"E-EXAM"** has been carried out by *FLORID RAJESH MACLEAN (17051107017)* under my guidance in partial fulfillment of the degree of Bachelor of Engineering *in Department of Computer Engineering* 8th Semester of Gujarat Technological University, Ahmadabad during the academic year 2020-2021.

Internal Guide
Prof. Ajaykumar T. Shah
Department of Computer Engineering

Head of Department
Prof. Ajaykumar T. Shah
Department of Computer Engineering

ACKNOWLEDGEMENT

We have a great pleasure in presenting this report on **E-EXAM** and to express our regard towards those who have dreamt of having memorable events.

We are highly indebted to our internal guide **Prof. Ajaykumar T. Shah** for their guidance and constant supervision as well as for providing necessary support in the project. Without him willing disposition, spirit of accommodation, frankness, timely clarification, encouragement and above all faith in us, this project could not have been completed in due time.

We would also like to thank our Head of Computer Department **Prof. Ajaykumar T. Shah** for his kind co-operation and support.

At the same time, I would also like to thank our honorable principal and the entire staff members of my department for the cooperation and help whenever we asked for.

We are also grateful to all my colleagues for helping us with all their resources and knowledge they could, as when required.

With sincere regards,
FLORID MACLEAN (170510107017)

ABSTRACT

E-EXAM

This project is aimed at developing a web based & central recruitment process system for the HR group for a company. I am developing "responsive career" in Python. This system includes online interview, online examination, quick result, feedback, latest news of the company. This system is used by Final year student, Placement officer, HR Manager. This project "responsive career " is an online website in which candidate can register themselves & then attend the exam like written test, GD, Personal interview. Based on the outcome of the exam the candidate will be short listed for fresher, the exam will be conducted online and proper time duration for exam will be given. I am providing of the facility of aptitude test, technical test and group discussion online. Users have to connect their phones while giving exam for video recording. When there is 5-10 minutes left, there will be time reminder. Once the exams ends or the time ends the video clip will send to the company along with the result .The video is a proof that the user hasn't cheated. Video will be stored on the company's server and automatically deleted after 5 to 6 days .It gives fast results to student so, students who passed the exam can get informed through message. "Responsive career" have wide scope of the website where students can appear aptitude exam at home or any place. This "HR management system" will exam automatically on given time and as well as finish the exam than the system will release results on exact time which decided by HR to the user/students. This website provides whole Human Resource cycle management.
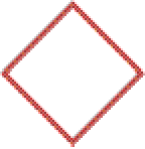
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LIST OF SYMBOLS

→	Connector Symbol	**The connector symbol** is represented by arrowed lines that show the directional flow, or control flow, of the activity. An incoming arrow starts a step of an activity; once the step is completed, the flow continues with the outgoing arrow.
⬭	Terminator (Terminal Point, Oval)	Terminators show the start and stop points in a process. When used as a Start symbol, terminators depict a *trigger action* that sets the process flow into motion.
◇	Decision Symbol	**The decision symbol** is a diamond shape; it represents the branching or merging of various flows with the symbol acting as a frame or container.
●	Start Symbol	**The Start Symbol** represents the beginning of a process or workflow in an activity diagram. It can be used by itself or with a

		note symbol that explains the starting point.
◉	End Symbol	**The End Symbol** represents the completion of process or workflow.
	Join Symbol	**The join symbol, or synchronization bar,** is a thick vertical or horizontal line. It combines two concurrent activities and re-introduces them to a flow where only one activity occurs at a time.
	Fork Symbol	**A fork** is symbolized with multiple arrowed lines from a join. It splits a single activity flow into two concurrent activities.
	Process Symbol	Flowchart Process object is used to illustrate a process, action or an operation.
Actor	Actor Symbol	**Actor** specifies a role played by a user or any other system that interacts with the subject.

LIST OF ABBREVIATIONS

Abbreviations	Description
RAM	Random access memory
API	Application programming interface
CLR	Common language runtime
SDLC	Software Development Life Cycle
SQL	Structured Query Language
HTTP	Hypertext Transfer Protocol
LAN	Local Area Network
UI	User Interface
PK	Primary Key
FK	Foreign Key

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Introduction

1.1 Summary

1.2 Purpose: Goals & Objectives

1.3 Scope

1.4 Current System scenario

1.5 Innovation in System

1.6 Technology and Literature review

1.7 Features

INTRODUCTION

1.1   Project Summary:

The project described within this document is an online examination system designed with the specific goal of reducing the student's stress for exam paper work, and time saving. Responses by the candidates will be checked automatically and instantly. Being an integrated online examination system it will reduce paper work. The result will be shown immediately to the participating students reducing the anxiety. It can generate various reports and graphs for evaluation purpose almost instantly when and where required. It will also send mail notifications to the students about the detailed description of tests, their results and other information through small message transfer protocol.

The system is designed for educational institutes like colleges and private institutes to conduct logic tests of their students on a regular basis. Design to facilitate administrates and user friendly interface complete and secure information is provided to user scope.

1.2   Purpose: Goals & Objectives

The purpose of online examination simulator is to take online examination exam in efficient manner and no time wasting for checking the paper. The main objective of online examination simulator is to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves lot of time but also gives fast results.

For students they give papers according to their convenience and time and there is no need of using extra thing like paper, pen, etc.

1.3   Scope:

"E-EXAM" has wide scope of the website where students can appear aptitude exam at home or any place. This "E-EXAM" will exam automatically on given time and as well as finish the exam than the system will release results on exact time which decided by Admin to the user/students. This website provides whole Human Resource cycle management.

Scope of this project is very broad in terms of other manually taking exams.
Few of them are:

- This can be used in educational institutions as well as in corporate world.
- Can be used anywhere any time as it is a web based application (user Location doesn't matter).
- No restriction that examiner has to be present when the candidate takes the test.

1.4 Current System Scenario

- Web Application

1.5 Innovation in System

- Regular updates
- Live surveillance on candidate
- Quick result

1.6 Technology and Literature review

In my project I have used the most popular programming language "python" at front the end and used the "SQL Database" at the backend.

1.6.1 Common Language Runtime

The Common Language Runtime (CLR), a process known as pycharm interpreter converts compiled code into machine instructions which the computer's CPU then executes. The CLR provides additional services including memory management, type safety, exception handling, garbage collection, security and thread management. All programs written for the Django framework, regardless of programming language, are executed by the CLR. All versions of the Django framework include CLR.

1.6.2 Introduction about Technology

Technology can be a powerful tool for transforming learning. It can help affirm and advance relationships between educators and students, reinvent our approaches to learning and collaboration, shrink long-standing equity and accessibility gaps, and adapt learning experiences to meet the needs of all learners.

Our schools, community colleges, and universities should be incubators of exploration and invention. Educators should be collaborators in learning, seeking new knowledge and constantly acquiring new skills alongside their students. Education leaders should set a vision for creating learning experiences that provide the right tools and supports for all learners to thrive.

1.6.3   Introduction about the Software

Along with the hardware, used in the system it requires software to make a system as well as to run a system with the computer hardware. Collection of different types of hardware into a specific type can form a computer but it cannot execute different process on its own. For

Efficient and proper working of any system software must be installed. This software may be in the form of operating system or application software. To make the system one also needs to use software.

To make the advanced student management web Application Window up to date, I too have used certain software. This is listed below. The software used in the proposed system is the latest versions of them and can give up-to-date and perfect result of every process in the system. This software Comprises operating system and application software used in the system.

1. Python:

Python is an interpreter, high-level and general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

Python was created in the late 1980s as a successor to the ABC language. Python 2.0, released in 2000, introduced features a like list comprehensions and garbage collection system with reference counting.

2. PyCharm:

PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python language. It is developed by the Czech company JetBrains. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems (VCSes), and supports web development with Django as well as data science with Anaconda.

PyCharm is cross-platform, with Windows, macOS and Linux versions. The Community Edition is released under the Apache License, and there is also Professional Edition with extra features – released under a proprietary license.

3. Microsoft SQL Server 2008

Microsoft SQL Server is a Relational database management system developed by Microsoft. AS a database server, it is a software product with the primary function of storing and retrieving data as requested by other software application-which may run either on the same Computer or on another computer across a network (including the internet). For Online Crime Management Application We uses SQL Server 2008 as storing the data. Microsoft SQL Server 2008 as our database and it has so many features which is ideal for our dot net based application.

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1.7 FEATURS

- Time saving
- Easy to examine
- Make process easy to use.

Chapter:-2

Project Management

Project Management

2.1 Project Planning & Project Scheduling

2.2 Feasibility study

2.3 Risk Management

2.4 System Estimation

2.1 Project Planning & Project Scheduling

2.1.1 Project Development Approach

- Planning the work or objectives:
- SQL database
- Django framework
- Pycharm interpreter
- Online exam management

SDLC - Agile Model

Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross functional teams working simultaneously on various areas like −

Planning

Requirements Analysis

Design

Coding

Unit Testing and

Acceptance Testing

At the end of the iteration, a working product is displayed to the customer and

Important stakeholders

Agile model believes that every project needs to be handled differently and the Existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release. Iterative approach is taken and working software build is delivered after each iteration. Each build is incremental in terms of features; the final build holds all the features required by the customer.

2.1.2 Project Plan

Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure Project planning is often used to organize different areas of a project, including project plans, workloads and the management of teams and individuals.

2.1.3 Schedule Representation

- SQL database
- One time inquires
- Provide online exam
- Provide user-friendly UI

2.2   Feasibility study

2.2.1Technical feasibility

Technical feasibility is concerned with specifying equipment's & software that will successfully support the required task.

- **Hardware Requirements:**
  1. Graphics card :Minimum 2GB DDR4 or above
  2. Processor: Minimum 1 GHz; Recommended 2GHz or more
  3. Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
  4. Hard Drive: Minimum 32 GB; Recommended 64 GB or more.
  5. Memory (RAM): Minimum 1 GB; Recommended 4 GB or above.

- **Software Requirements:**
  1. Android OS
  2. Chrome
  3. Pycharm
  4. Xammp server
  5. Dreamweaver

2.2.2   Economic Feasibility study:-

So far as the economic feasibility concerned the department is able to buy all computer equipment and software. In this the other cost are also include like cost of maintenance.

2.2.3   Operational Feasibility study:-

There is required to check the system will operationally perform powerful or not. It will consider the extent the proposed system will fulfill requirement. There is whether the proposed system covered all aspect of working system and whether it has considerable improvement. This feasibility includes checking the system is performing the required function properly. This includes the interface of the system with user. The development of this system will reduce the most of manual workload. It is helpful for preparing fast and accurate report and transactions for organization.

2.2.4   Schedule Feasibility:

Projects are initiated with specific deadline. We need to evaluate whether the deadlines are or desirable. Time is the one of the critical factor in the development of any system but this kind of feasibility is hardly perfect in any system.

2.2.5   Implementation Feasibility:

Under the study of Implementation feasibility, we've got to draw the figure to the certain issues, like:

- Is it possible to run the portal within the given environment?
  Will organization management and users support for the web portal? Will proposed system cause any harm to the operations of the organization.

2.3 Risk Management

Risk analysis and management are a series of steps that help a software team to understand and manage uncertainty. Many problems can plague a software project. A risk is a potential problem—it might happen, it might not. But, regardless of the outcome, it's a really good idea to identify it, assess its probability of occurrence, estimate its impact, and establish a contingency plan should the problem actually occur.

Figure-2(a) Risk Management Techniques

2.3.1 Risk Identification

During the project plan we have considered all the proactive which we have think we will face during the project period. Here I have listed the risks which we have considered during the project plan:

- Possibility that the components are not available during the project period.
- Possibility that software purchased was not compatible.
- Possibility that the hardware resources are not available during the project period.
- Possibility that Ethernet connection between robot controller and computer may not occur, to which we have to make the connection might not available.
- Possibility that software inter-compatibility may not be there.

2.3.2   Risk Analysis

Risk	Probability	Effects
Software components which should be reused contain defects limit functionality.	Moderate	Serious
Change of requirements which require proposal of major design rework.	High Moderate	Serious
Scheduling slippage: The time required for the development of software is underestimated, so schedule slippage will occur.	High	Serious
The size of software is underestimated	High	Tolerable
Power failure	High	Tolerable
Inexperienced team member	Medium	Tolerable

Table-2.1 Risk Management

A project can get affected by a large variety of risks. In order to be able to systematically identify the important risk which might affect the project it is necessary to categorize risks into different classes which we will discuss in next section. During Risk analysis process, each identified risk is considered in turn and judgment is made about the probability and the seriousness of the risk.

2.3.3   Risk Planning

Risk planning process is considered when each of the key risk has been identified. Risk reduction Strategy is used as abatement procedure. This involves planning ways to contain the damage due to a risk.

| Risk	Management
Requirement changes	Derive the traceability information to access requirements change impact and maximize the information hiding
Power Failure	To reduce the risk, UPS facility is used for backup storage.
Schedule risk	To reduce this risk, we are going to complete our project according to our schedule.
Performance	Investigate Database which can effectively process.

Table-2.2 Risk Planning

2.4 System Estimation

2.4.1 Effort Estimation and Cost Analysis

Once the basic size of the project has been determined, the estimate can be produced based on the specific attributes of the project in question. Examples of the attributes that can affect the outcome of the estimate include the following:

- The rate at which project requirements may change,
- The Experience of the development team with this kind of project,

The process or methods used to develop the project ranging from Agile to linear sequential model.
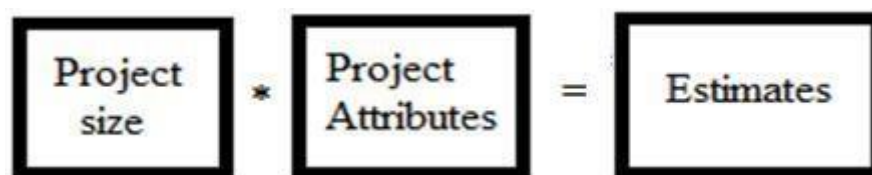
Figure-2(d) Software-Estimating Principle

Figure shows Software-estimating principles.

- The specific activities that will be performed during development.
- The number of increments, iterations, or —sprints‖ that will be used.
- The programming language or languages utilized.
- The presence or absence of reusable artifacts. The development tool suites used to develop the project.

2.4.2   Cost Analysis

- Cost-benefit analysis is a term that refers both to:
- A formal discipline used to help appraise, or assess, the case for a project or proposal, which itself is a process known as project appraisal and
- An informal approach to making decisions of any kind.

WHAT IS COST ANALYSIS?

A cost-benefit analysis is necessary to determine economic feasibility. The Primary objective of the cost-benefit analysis is to find out whether it is economically worthwhile to invest in the project. If the return on the investments is good, then the project is considered economically worthwhile.

Cost-benefit analysis is performed by first listing all the costs associated with the project. Costs consist of direct costs and indirect costs. Benefits can be broadly classified as tangible benefit and intangible benefits. Tangible benefits are directly measurable and intangible are not.
The sum of all costs is compared with the sum of all the savings (tangible and intangible).

It is not always easy to assign money value to intangible benefits. It is arrived at by discussion amongst users of the system.

Chapter :- 3

System Analysis & Requirement Study

System Analysis & Requirement Study

3.1   User Characteristics

3.2   Hardware and Software Requirements

3.3   Constraints

3.4   Study of Current System

3.5   Requirements of New System

3.6   Requirements Validations

3.1 User Characteristics

- Great Interpersonal Skills.
- Leadership Skills
- Flexibility
- Energetic
- Creative and Innovative
- Good Time Management Skills
- Superior Organizational Skills

3.2 Hardware and Software Requirements

3.2.1 Hardware Requirements

- Processor: Minimum 1 GHz; Recommended 2GHz or more.
- Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
- Hard Drive: Minimum 32 GB; Recommended 64 GB or more.
- Memory (RAM): Minimum 1 GB; Recommended 4 GB or above.
- Graphics card :Minimum 2GB DDR4 or above

3.2.2 Software Requirements

People often ask what browser they should use. There is no single answer for this. Use whichever browser works best on your computer. However, we recommend downloading Firefox and/or Chrome in addition to having Internet Explorer.

- Chrome
- pycharm
- xammp server
- dreamweaver

3.3   Constraints

3.3.1 Regulatory Policies:

- It is assumed that user is aware of rules and regulations.
- It is assumed that user is well familiar with this system.

3.3.2 Reliability Requirements:

The smooth functionality of the website mainly depends on the speed of the hardware and then on the speed of the internet.

This will greatly reduce the appeal of the website and also the user will waste a lot of use fulltime, energy and resources.

3.3.3 Criticality of the application:

System Reliability deals with the functional reliability, availability and maintainability of a complex entity of interconnected technical elements.

3.3.4 Safety & Security Consideration

Without logging in, a user cannot access other facilities of the application. For Safety of user authentication we use session. When a user logs-off his session is destroyed so other user cannot access his/her data from the same system. All the data transfer over Internet is use HTTP protocol.

3.4   Study of Current System

The present system is a manual classroom examination; however, due to covid-19, there are several strategies regarding taking an online exam still It needs more crucial improvements that are taken by many educational institutions like colleges, universities, etc.

- Ineffectiveness of online exams
- Low bandwidth issue
- Monitoring candidate for insufficient time
- Taking snapshots after several intervals
- Login issues
- Logout randomly
- Server issue
- Delaying loading question
- Cheating cases are at the urge
- Student activity do not monitor
- Inefficiency in exam question

3.5   Requirements of New System

New system will be completely online web based system. So there are no such related issues, which we have mentioned earlier. To implement this entirely new project to the real world would be helpful to redundant the vigility in the student community and the one who perform better gets his/her justice by scoring according to their task response.

Using this arrangement, it will help candidate to remedy the login-logout issue. This is because, in the current scenario, examinee faces such issue than that person would be come under investigation regarding the copy case. So that is one of the major cause, nowadays students are facing.

Apart from this proposed system monitor the candidate continuously through artificial intelligence (AR) or by computer itself. By doing this, candidate would be more serious and let they feel under serious examination and do not take it lightly, copying answers from the textbook also. In result, so many other causes related invigilation would be plummeted.

In this course, teachers/professors can manage the questions as well as its types and structure. They can easily add or remove or edit such things without having prior knowledge of using this system.

Admin such as GTU/GU/any independent institute can get benefited by this as they can control the whole system at fingertips.

It contains these following areas of accessibility:

- Control over the whole system
- Managing some credentials
- Allowing permission to the individual

Requirement Analysis:

The description of the service and the constraints are the requirements of the system and the processes involved in the requirement engineering are:

- Finding out
- Analyzing
- Documenting and
- Checking these services and constraints
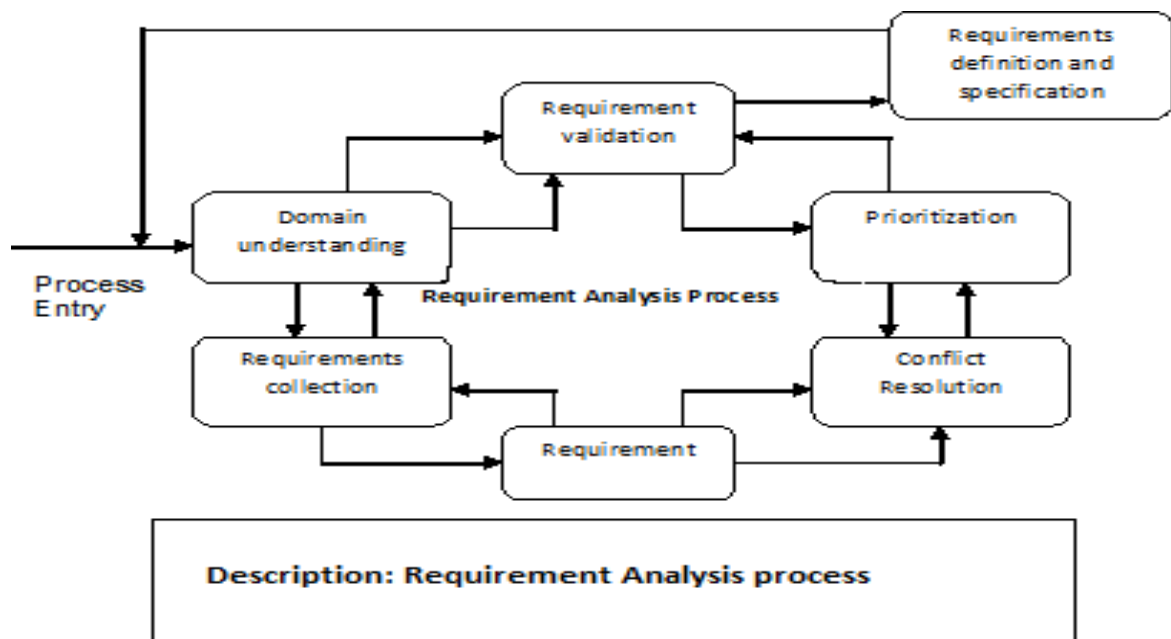
Figure-3(a) Requirement Analysis Process

The process activities are explained as:

Domain Understanding:

Analysis must develop their understanding of the application domain. We spent some initial time for the domain understanding, like visiting some APMC market and some existing online website system to becoming aware of management system, etc.

We take help from some experts and gathering some information, which help us to understand what to build, and what are advantages and disadvantages of that. We consider user as a point of view and developed user-friendly system. We also take help from some websites and other portals.

Requirement Collection:

The conclusion of domain understanding should be resulted into the bulk of information and from that, we tried to carry out the requirements as given in this section later.

Classification:

Requirements are classified as follows:

- The main requirements are
    1) User requirements
    2) System requirements
- Above requirements can be further classified as below:
    1) Functional requirements
    2) Non-functional requirements
    3) Domain requirements

3.6   Requirements Validations

Requirements validation is concerned with showing that requirements actually define the system that student wants. If this validation is inadequate, errors in the requirements will be propagated to the system design and implementation.

Requirements are checked discover if they are complete, consistent and in accordance with what students, candidate, teachers, professors, admin, universities, colleges, and other users want from the projected system.

There are several aspects of the requirements, which must be checked:

- Validity:

    A user may think that a system is needed to perform certain functions. However, further thought and analysis may identify additional or different functions that are required.

- Consistence:

    Any one requirement should not conflict with any other.

- Completeness:

    The definition should include all functions and constraints intended by the system user.

Chapter:-4

System Design

System Design

4.1 Flow Chart

4.2 Data Flow Diagram

4.3 Activity Diagram

4.4 Use Case Diagram

4.5 Sequence Diagram
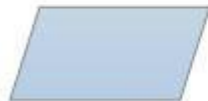
4.6 Class Diagram

4.7 Data Dictionary

4.8 E-R Diagram

4.1 Flow Chart

"The flowchart is a means of visually presenting the flow of data through an information processing systems, the operations performed within the system and the sequence in which they are performed."

Flowcharts use special shapes to represent different types of actions or steps in a process. Lines and arrows show the sequence of the steps, and the relationships among them. These are known as flowchart symbols.

The type of diagram dictates the flowchart symbols that are used. For example, a data flow diagram may contain an Input/output Symbol (also known as an I/O Symbol), but you wouldn't expect to see it in most process flow diagrams.

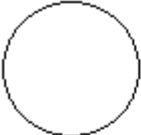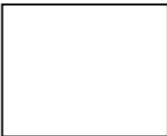| Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

Table 4.1 Flow Chart Symbols

Over the years, as technology has evolved, so has flowcharting. Some flowchart symbols that were used in the past to represent computer punch cards, or punched tape, have been relegated to the dustbin of history.
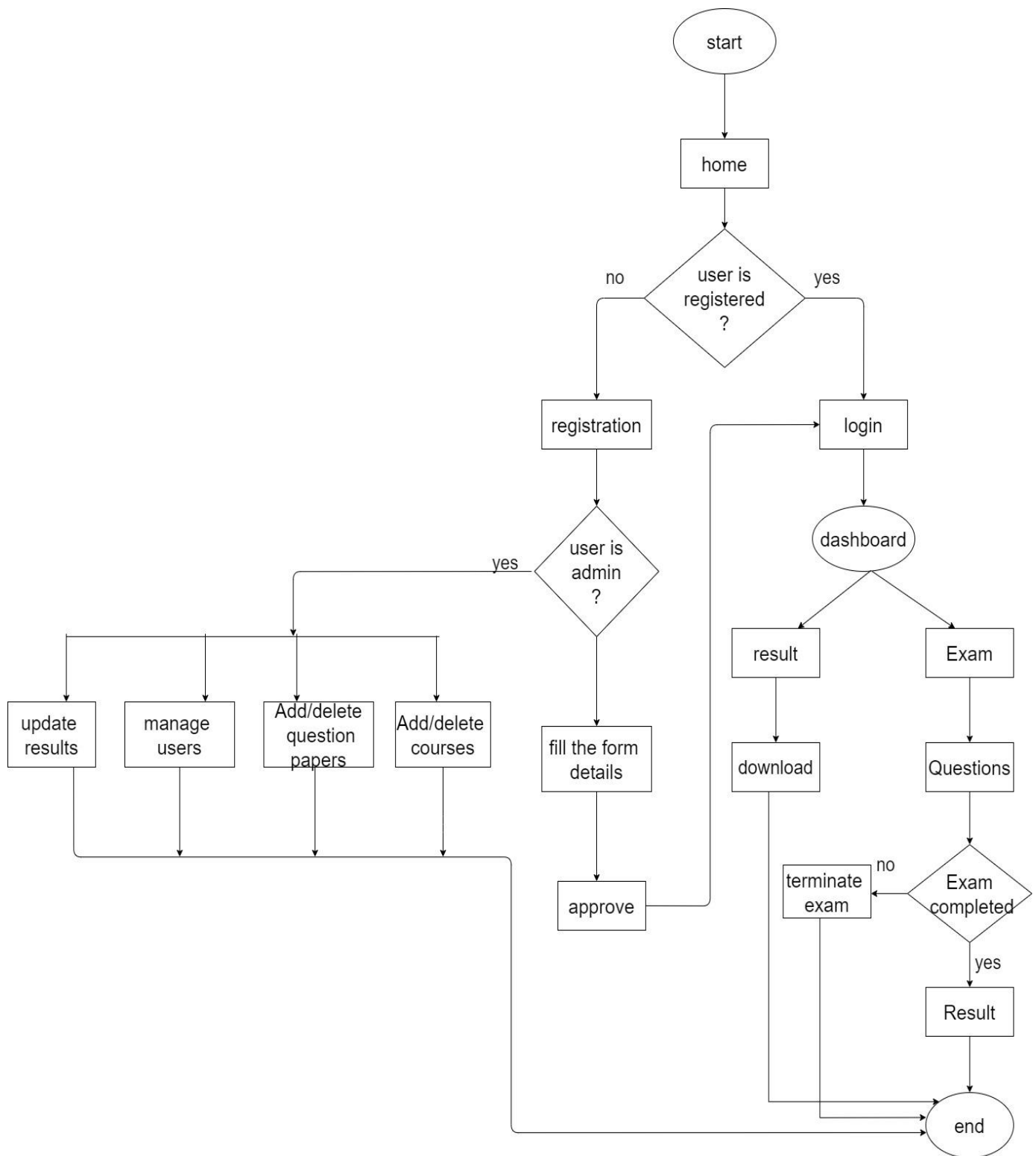
Figure 4(a). Flowchart Diagram

4.2 Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi- level DFDs that dig progressively deeper into how the data is handled.

| Symbol	Meaning
Process	Single process: A circle is used to represent the entire system.
(arrow)	Data flow: An arrow is used to represent the flow of data between the process and external entities.
External entity	External entity: A square or rectangle represents any person or organisation that sends data to or receives data from the system.
Data store	Data store: An open rectangle represents the location where data is stored. It could be a filing cabinet, hard disk.

Table 4.2 DFD Symbols

They can be used to analyses an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually "say" things that would be hard to explain in words, and they work for both technical and nontechnical audiences, from developer to CEO. That's why DFDs remain so popular after all these years.

While they work well for data flow software and systems, they are less applicable nowadays to visualizing interactive, real-time or database-oriented software or systems.
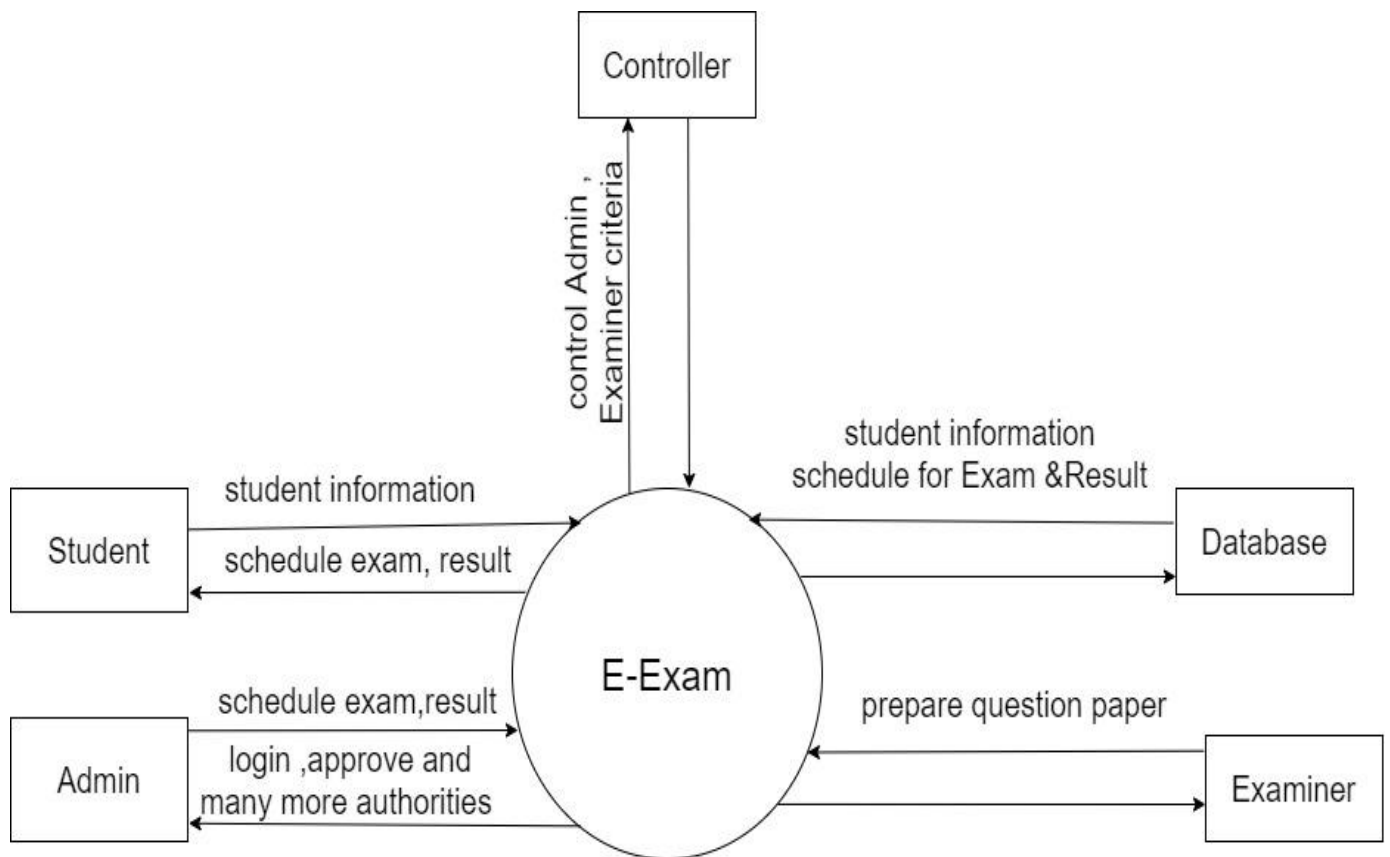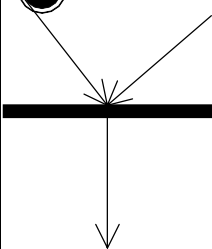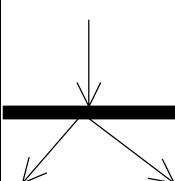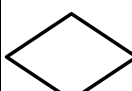
Figure 4(b).DFD Level-0 Diagram
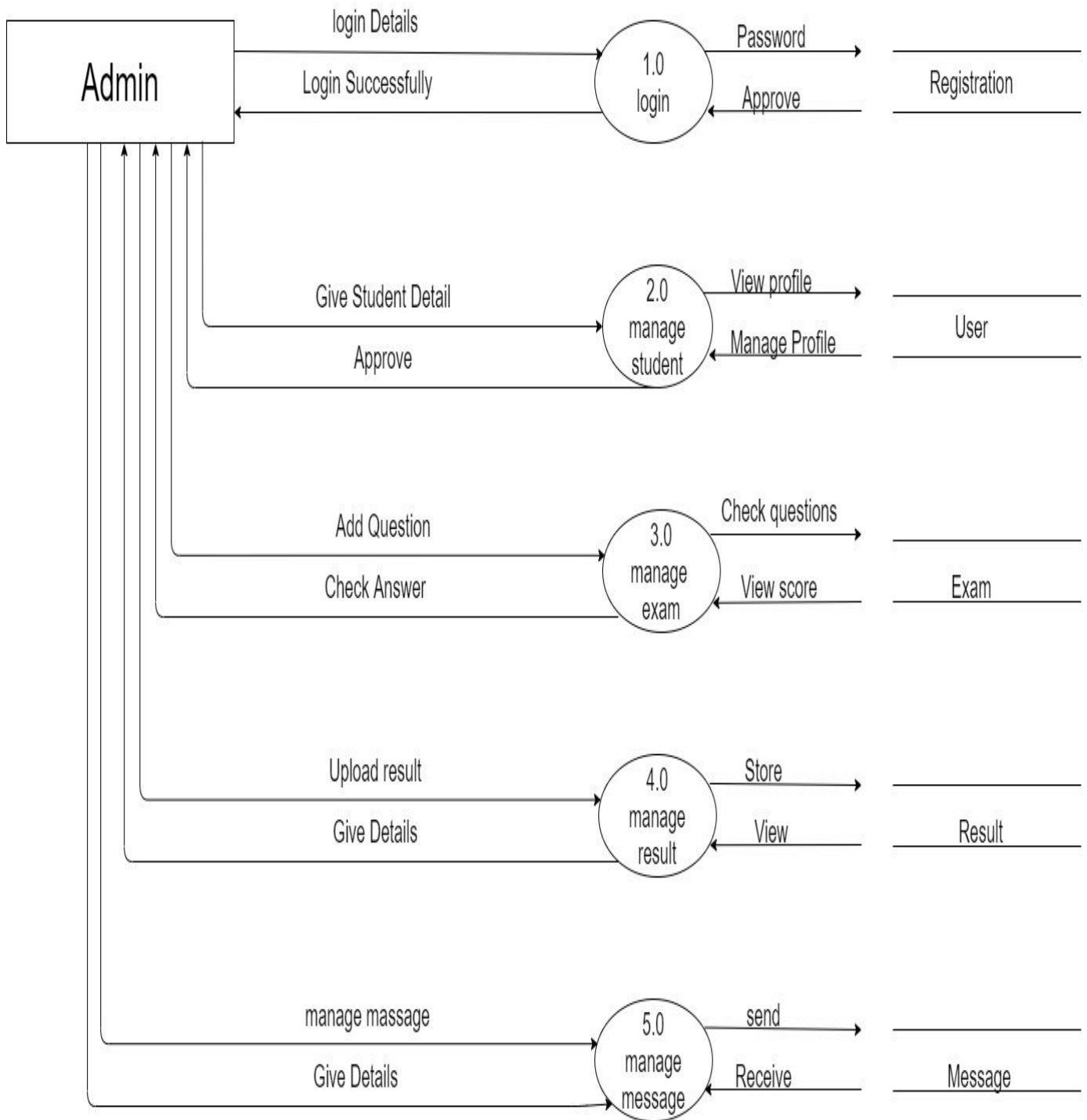
Figure 4(c). DFD Level-1 Diagram

4.3 Activity Diagram

An Activity Diagram is a graphical representation of the "flow" of data through an information system, modeling its process aspects. Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

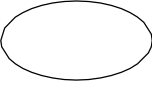| No.	Name	Symbols	Description
1.	Action states		Activity symbols are the basic building blocks of the activity diagram and usually have a short description of the activity they represent.
2.	Initial state		Filled circle followed by arrow represent the initial state
3.	Final state		Arrow pointing to filled circle nested inside another circle represent the final action states
5.	Join		Join combines two concurrent activities back into a flow where only one activity is happening at a time
6.	Fork		Fork splits one activity flow into two concurrent activities
9.	Object flow		Object flow is the activity edge that can have object or data passing at single place
10.	Branching/Decision node		Diamond represent decision with alternate path. outgoing alternate should be labeled with condition.

Table 4.3 Basic activity diagram symbols and nota
Figure 4(d). Admin Activity Diagram

4.4 Use Case Diagram

A **use case diagram** in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor.

Roles of the actors in the system can be depicted.

Sr. No.	Name	Symbol	Description
1	Use case		Draw use case using ovals. Label with ovals with verbs that represent the system's function.
2	Actor		Actors are the users of a system. When one system is the actor of another system, label the actor system with the actor stereotype.

Table 4.4 Basic Use case diagram symbols and notations

4.4.1   Identify the actors that interact with the system.

4.4.2   Organize actors according to their roles.

4.4.3   Identify the primary ways in which an actor interacts with the system elements.

4.4.4   Organize these behaviors as use cases.
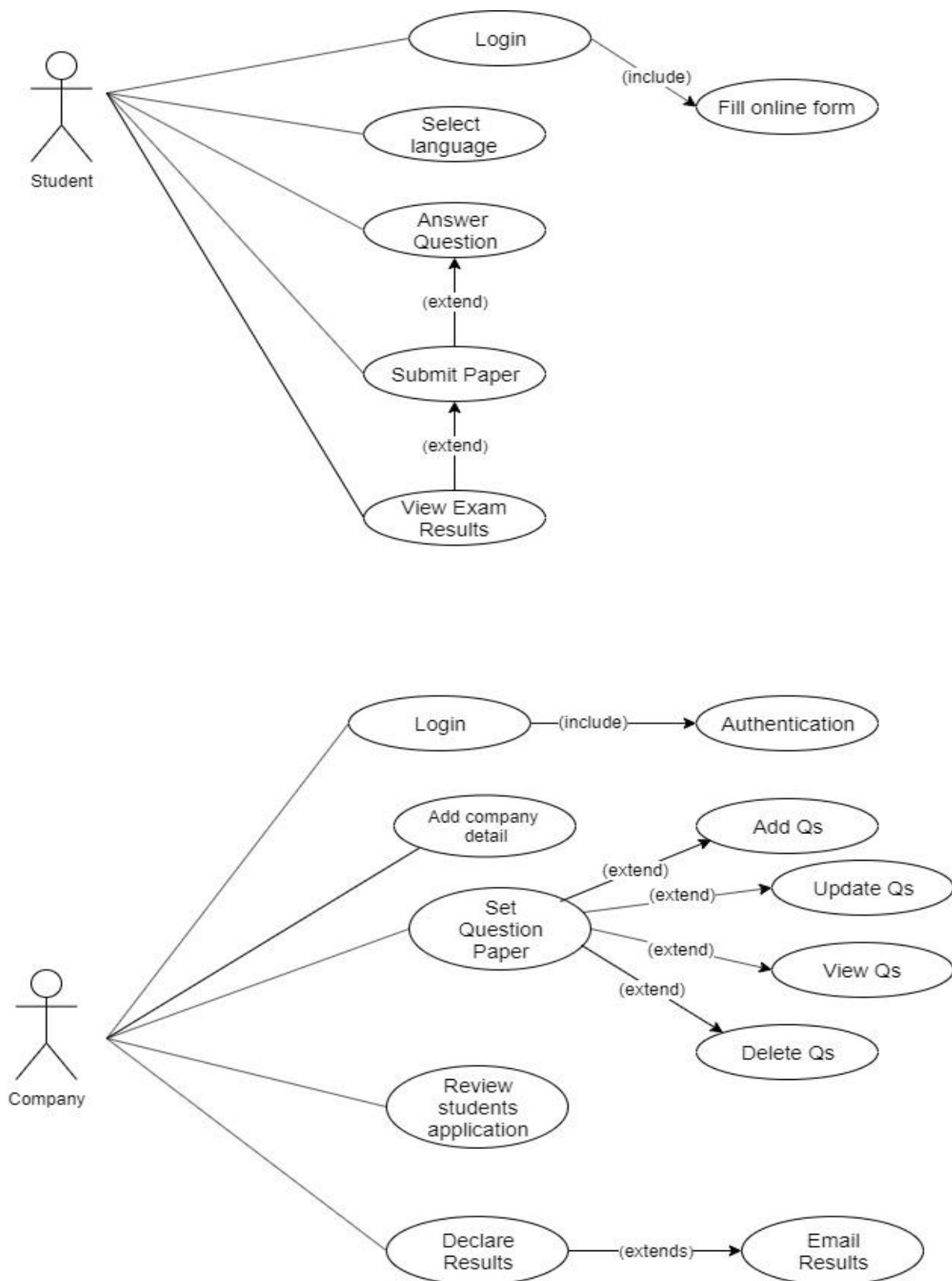
Figure 4(e). Use Case Diagram

4.5   Sequence Diagram

A Sequence diagram depicts the sequence of actions that occur in a system. The invocation of methods in each object, and the order in which the invocation occurs is captured in a Sequence diagram. This makes the Sequence diagram a very useful tool to easily represent the dynamic behavior of a system.

A Sequence diagram is two-dimensional in nature. On the horizontal axis, it shows the life of the object that it represents, while on the vertical axis, it shows the sequence of the creation or invocation of these objects.

Because it uses class name and object name references, the Sequence diagram is very useful in elaborating and detailing the dynamic design and the sequence and origin of invocation of objects. Hence, the Sequence diagram is one of the most widely used dynamic diagrams in UML.

A sequence diagram is made up of objects and messages. Objects are represented exactly how they have been represented in all UML diagrams—as rectangles with the underlined class name within the rectangle. A skeleton sequence diagram symbol table is shown in Figure:

Class Roles or Participants

Class roles describe the way an object will behave in context. Use the UML object symbol to illustrate class roles, but don't list object attributes.

Activation or Execution Occurrence

Activation boxes represent the time an object needs to complete a task. When an object is busy executing a process or waiting for a reply message, use a thin gray rectangle placed vertically on its lifeline.

Messages

Messages are arrows that represent communication between objects. Use half-arrowed lines to represent asynchronous messages. Asynchronous messages are sent from an object that will not wait for a response from the receiver before continuing its tasks. For message types, see below.
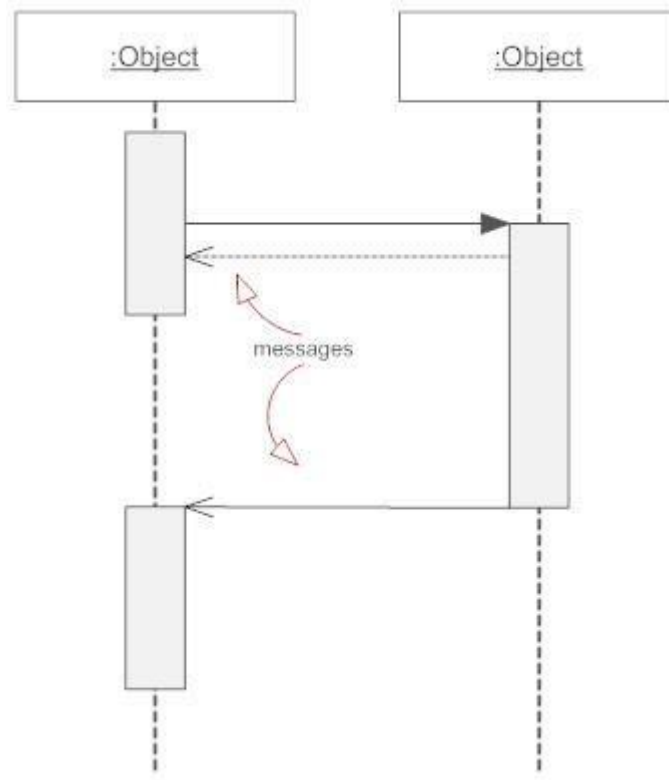
Lifelines

Lifelines are vertical dashed lines that indicate the object's presence over time.

Destroying Objects

Objects can be terminated early using an arrow labeled "<< destroy >>" that points to an X. This object is removed from memory. When that object's lifeline ends, you can place an X at the end of its lifeline to denote a destruction occurrence.

Loops

A repetition or loop within a sequence diagram is depicted as a rectangle. Place the condition for exiting the loop at the bottom left corner in square brackets [ ].
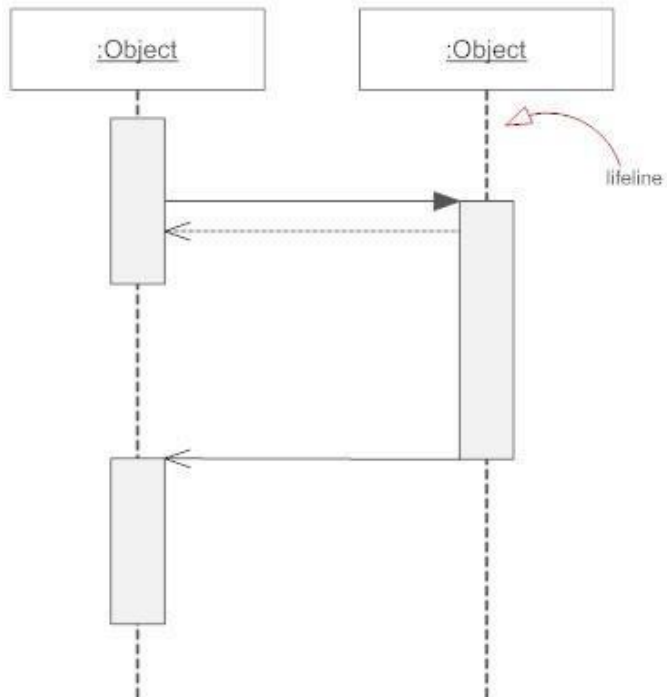
Types of Messages in Sequence Diagrams

- **Synchronous Message**

A synchronous message requires a response before the interaction can continue. It's usually drawn using a line with a solid arrowhead pointing from one object to another.

- **Asynchronous Message**

Asynchronous messages don't need a reply for interaction to continue. Like synchronous messages, they are drawn with an arrow connecting two lifelines; however, the arrowhead is usually open and there's no return message depicted.
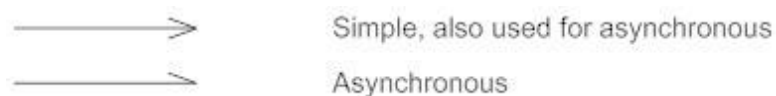
- **Reply or Return Message**

A reply message is drawn with a dotted line and an open arrowhead pointing back to the original lifeline.

Reply or return message

- **Self-Message**

A message an object sends to itself, usually shown as a U shaped arrow pointing back to itself.

Self message
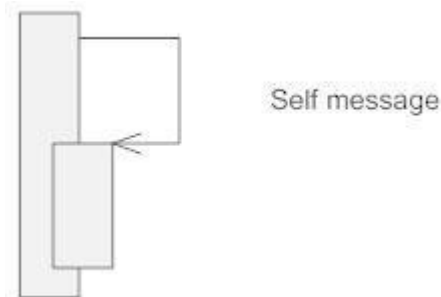
- **Create Message**

This is a message that creates a new object. Similar to a return message, it's depicted with a dashed line and an open arrowhead that points to the rectangle representing the object created.

<<create>>
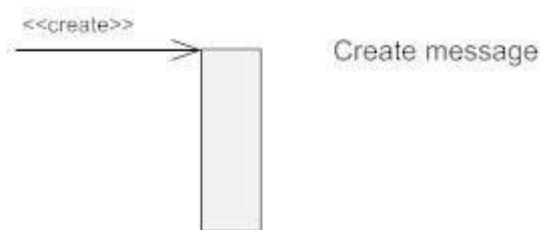
Create message

- **Delete Message**

This is a message that destroys an object. It can be shown by an arrow with an x at the end.

<<destroy>>

Delete message

- **Found Message**

A message sent from an unknown recipient, shown by an arrow from an endpoint to a lifeline.

Found message

- **Lost Message**

A message sent to an unknown recipient. It's shown by an arrow going from a lifeline to an endpoint, a filled circle or an x.
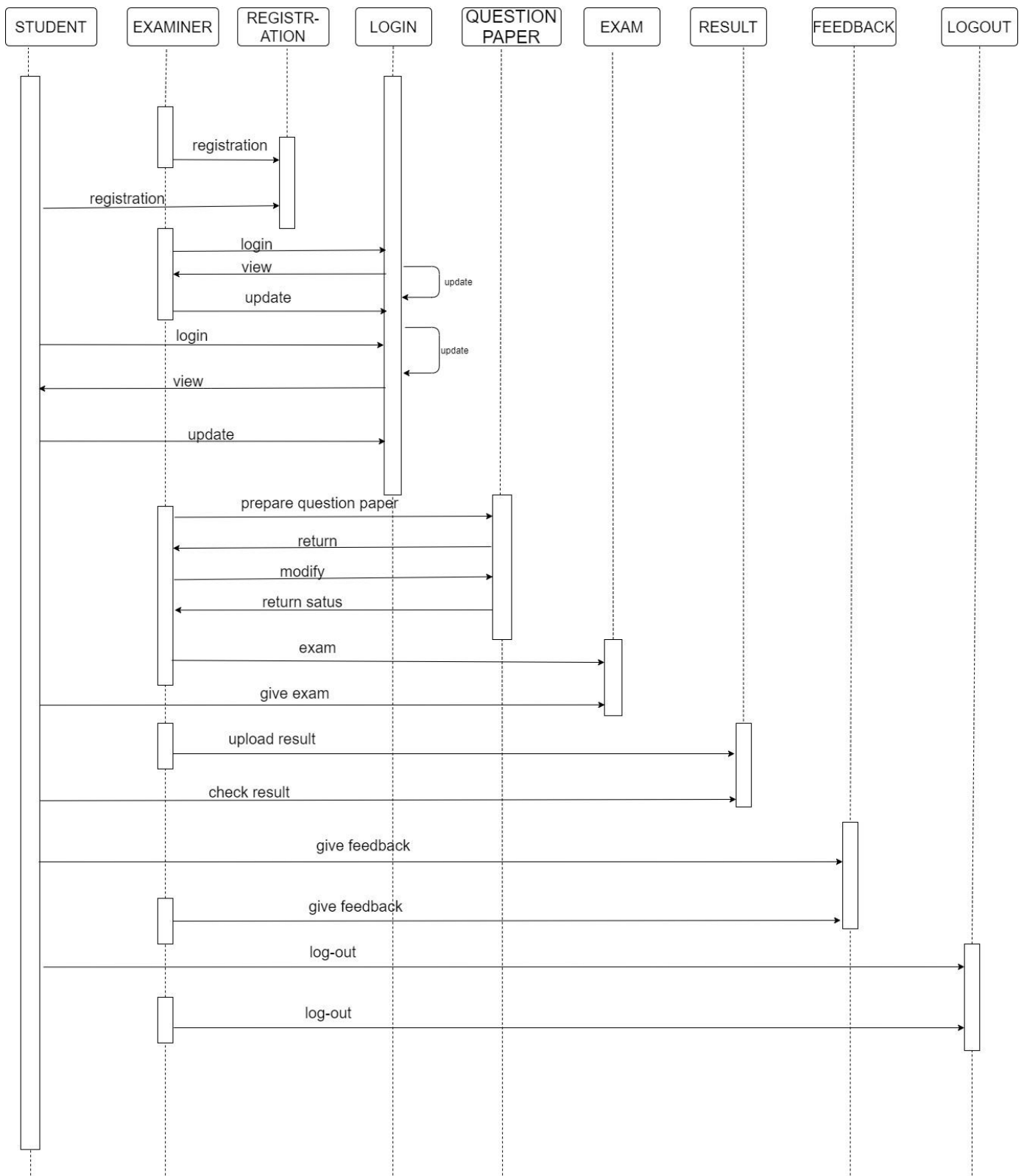
Figure 4(f). Sequence Diagram

4.6   Class Diagram

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects. The class diagram is the main building block of object oriented modeling. It is used both for general conceptual modeling of the systematic of the application, and for detailed modeling translating the models into programming code. Class diagrams can also be used for data modeling. The classes in a class diagram represent both the main objects, interactions in the application and the classes to be programmed.

Figure 4(g). Class Diagram

4.7   Data Dictionary

A data dictionary is a catalogue-a-repository-of the elements in a system. As the name suggests, these elements center on data and the way they are structured to meet user requirements and organization needs. In a data dictionary you will find a list of all the elements composing the data flowing through a system. The major elements are data flows, data stores, and processes. The data dictionary stores details and descriptions of these elements. If analysts want 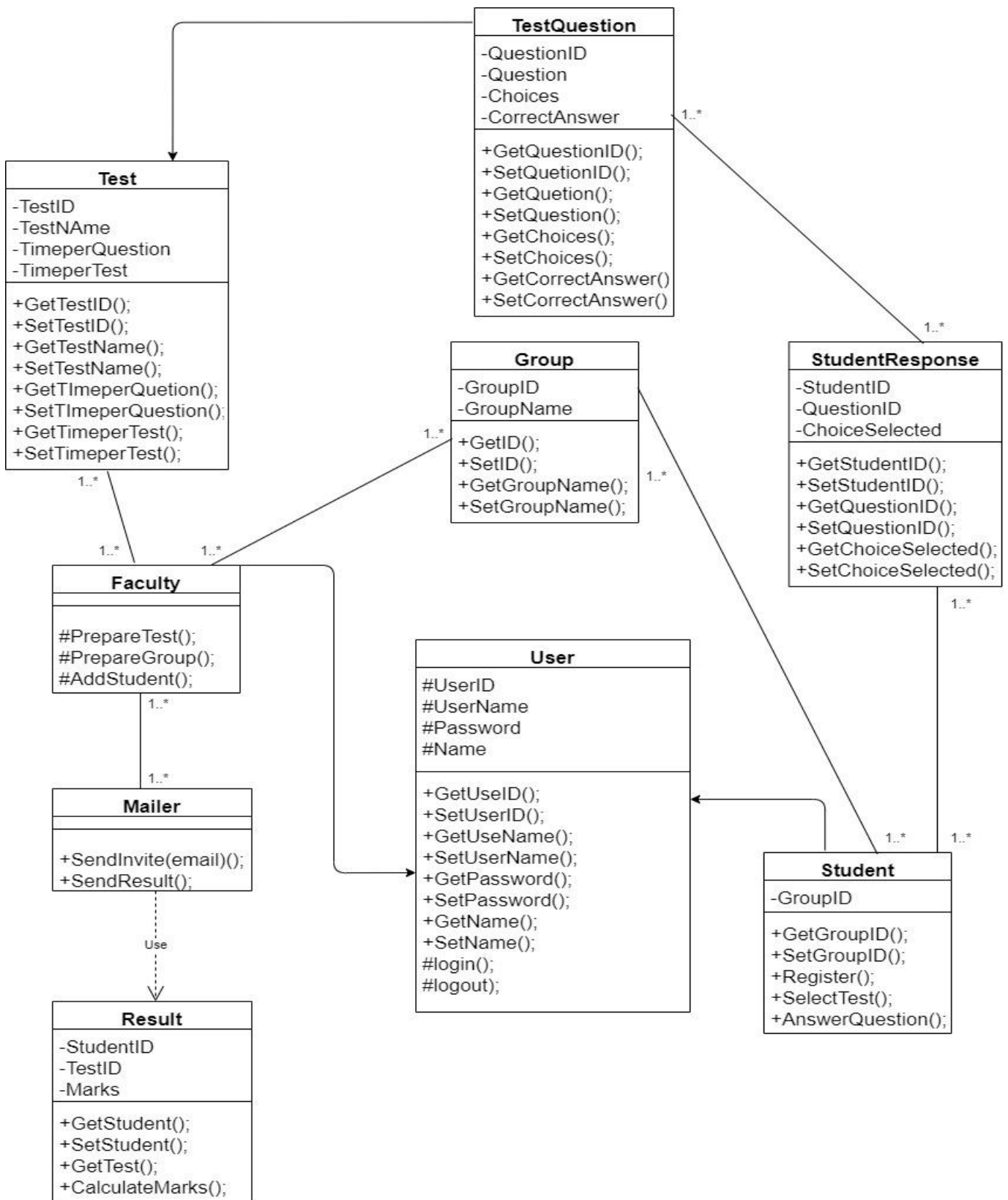to know how many characters are in a data item, by what other names it is referenced in the system, or where it is referenced in the system or where it is used in the system, they should be able to find the answers in properly developed data dictionary.

4.6.1: Login user.

Fieldname	Data type	Description
Login_id	Int(10)	Primary Key
Username	Varchar(50)	Not null
Password	Varchar(50)	Not null

4.6.1(a): login user table

4.6.2: Login Admin.

Fieldname	Data type	Description
Login_id	Int(10)	Primary Key
Username	Varchar(50)	Not null
Password	Varchar(50)	Not null

4.6.2(b): login admin table

4.6.3: Placement Officer Login.

Fieldname	Data type	Description
P_id	Int(10)	Primary Key
Username	Varchar(50)	Not null
Password	Varchar(50)	Not null

4.6.3(c): placement officer login table

4.6.4: User registration.

Fieldname	Data type	Description
User_id	Int(10)	Primary Key
User_fname	Varchar(50)	Not null
User_lname	Varchar(50)	Not null
Usersurname	Varchar(50)	Not null
Roll No	Int(15)	Not null
DOB	Varchar(50)	Not null
Address	Varchar(60)	Not null
User_gender	Varchar(10)	Not null
User_contact_no	Numeric(18,0)	Not null
User_email_id	Varchar(5,0)	Not null
Branch	Int(10)	Not null
Login_id	Int(10)	Not null
Last year percentage	Varchar(5)	Not null

4.6.4(d): User registration table

4.6.5: Placement Officer Registration.

Fieldname	Data type	Description
P ID	Int(10)	Primary Key
First name	Varchar(50)	Not null
Middle name	Varchar(50)	Not null
Last name	Varchar(50)	Not null
Roll No	Int(15)	Not null
DOB	Varchar(50)	Not null
Address	Varchar(60)	Not null
Gender	Varchar(10)	Not null
contact_no	Numeric(18,0)	Not null
email_id	Varchar(5,0)	Not null
Code	Int(10)	Not null
State	Int(10)	Not null
City	Varchar(5)	Not null
User name	Varchar(20)	Not null
Password	Varchar(10)	Not null
C Password	Varchar(10)	Not null

4.6.5(e): placement officer registration table

4.6.6: Exam table.

Fieldname	Data type	Description
ID	Int(10)	Primary Key
Exam aptitude	Varchar(50)	Not null
Technical Test	Varchar(50)	Not null
GD/PI	Varchar(50)	Not null

4.6.6(f): exam table

4.6.7: Result table.

Fieldname	Data type	Description
ID	Int(10)	Primary Key
Roll No	Varchar(12)	Not null
Branch Name	Varchar(50)	Not null
Branch Code	Varchar(20)	Not null
Name exam	Varchar(40)	Not null

4.6.7(g): result table

4.6.8: Change password.

Fieldname	Data type	Description
Old pswd	Varchar(20)	Not null
New pawd	Varchar(20)	Not null
Con pswd	Varchar(20)	Not null

4.6.8(h): change password table

4.6.9: placement cell table.

Fieldname	Data type	Description
ID	Int(10)	Not null
Name	Varchar(50)	Not null
Branch name	varchar(50)	Not null
Detail placement	varchar(50)	Not null

4.6.9(i): placement cell table

4.6.10: Company table.

| Fieldname	Data type	Description
ID	Int(10)	Primary Key
Job vacancy	Varchar(50)	Not null
Branch name	Varchar(50)	Not null
Salary package	Varchar(50)	Not null
Name exam	Varchar(50)	Not null
Address	Varchar(50)	Not null
Contact no	Int(10)	Not null

4.6.10(j): company table

4.8   E-R Diagram

In software engineering, an entity–relationship model (ER model) is a data model for describing the data or information aspects of a business domain or its process requirements, in an abstract way that lends itself to ultimately being implemented in a database such as a relational database.

The main components of ER models are entities and the relationships that can exist among them, and databases. An entity-relationship model is a systematic way of describing and defining a business process.

The process is model as components (entities) that are linked with each other by relationships that express the dependencies and requirements between them, such as: one building may be divided into zero or more apartments, but one apartment can only be located in one building.

Entities may have various properties (attributes) that characterize them. Diagrams created to represent these entities, attributes, and relationships graphically are called entity–relationship diagrams.
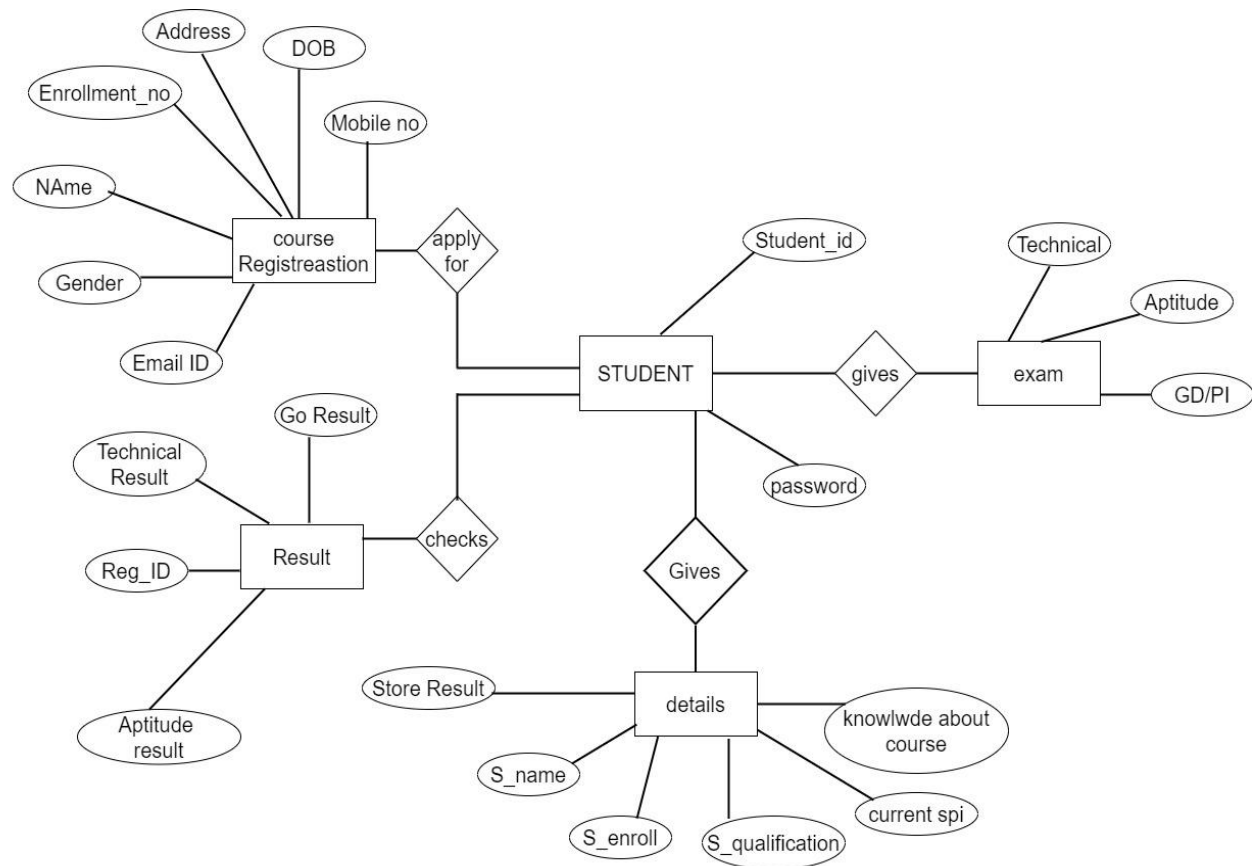
Figure 4(h). Entity-Relationship Diagram

Chapter:-5

<u>System Conclusion</u>

Conclusion

In this report, I am concluding that by developing online examination Management system it is very easy for students and online examination system management team to undertake campus placement process in college.

This online examination system also use in colleges placemat exam, also use in any company for take exam for their job. By using this online examination management system student can apply online for recruitment process. Student and E-Exam management team are in constant contact so by doing this student can easily access any information.

Student can also give online aptitude test and technical interview after the completion of whole process student can also check their result online. By using this new E-Exam management system it will save lot a resource n time in future.

Chapter:-6

Reference

<u>Reference</u>

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