Chapter 5

Analysis and Design

5.1. Introduction

In chapter 4 I have discussed the approach which I used to solve the problem. Also I mentioned the inputs, outputs and processes which used to implement the solution briefly.

This chapter discussed the analysis and design part of the project. Under the analysis part I have explained the techniques which I used to study the system. They are questioners, interviews, record reviews.etc.

Then I described the design of the proposed solution. When discuss the design I focus on top level architecture design, process design, database design and the interface design.

5.2. System Analysis

When developing examination management system, I have to analyze the requirements of the system. To analyze the requirements of the system, I have used following mechanisms.

5.2.1 Questioners

I prepared three sets of questioners and distributed to examination staff, students and lecturers. Replies given by three parties were deeply studied [Appendix c].

5.2.2. Record Reviews

To analyze the requirements I have walked through sample documents used by the examination staff. Some sample documents are Examination schedule, Repeat request form, examination result sheet, transcript, etc.

5.2.3. Interviews

Finally I conducted interviews with exam unit, lecturers and the students to get more details related to examination. Results of the interviews also helped me to finalize the requirements of the examination management system.

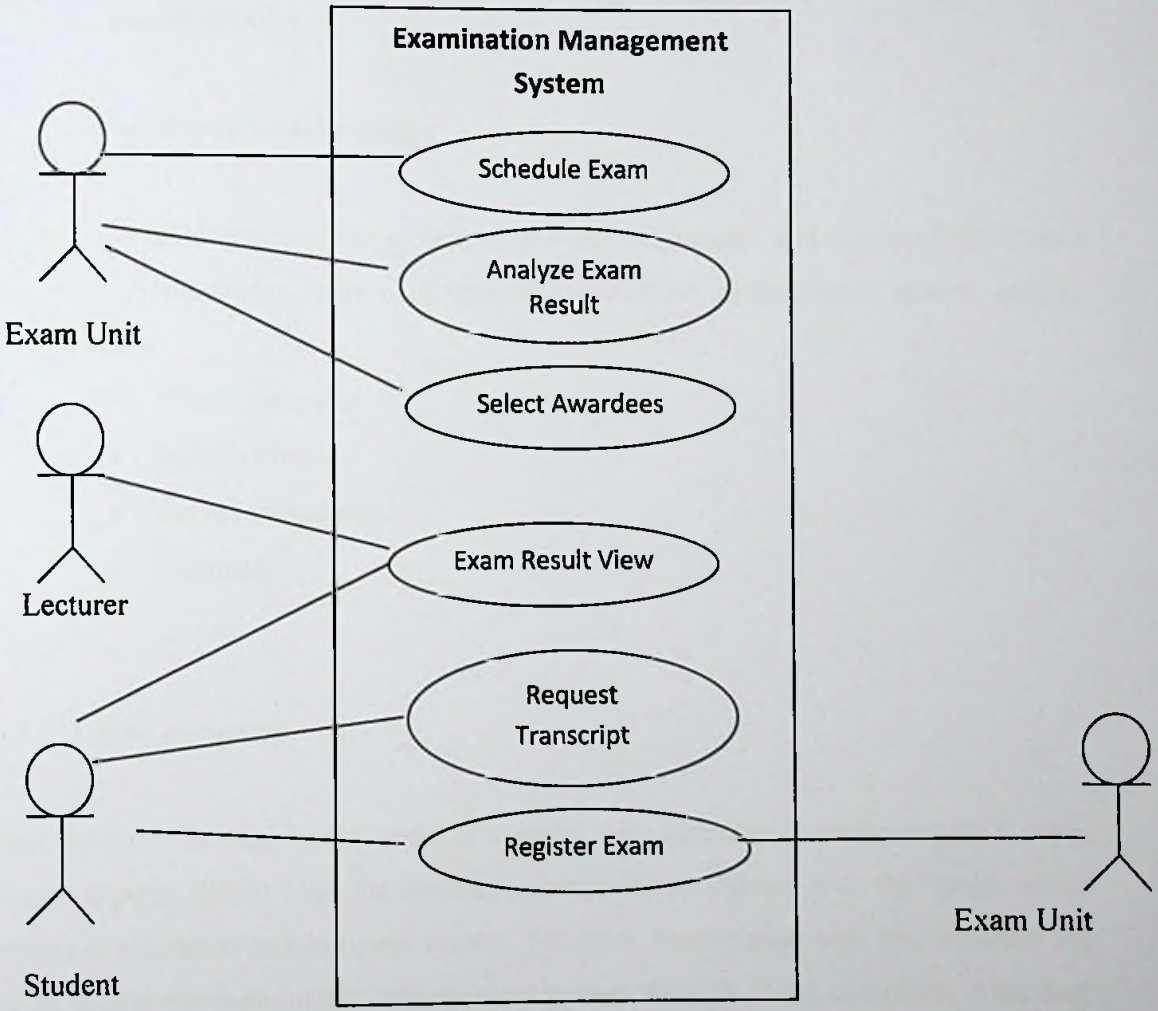

Figure 5.1: EMS Use Case Diagram

5.3. System Design

After finalization of system requirements I started the design of the system. When designing the examination management system it includes following;

- Top level architecture design
- Database Design
- System Design
- Interface design

5.3.1. Top level architecture design

The top level architecture of the system shows the components and connectivity of each component. Main components of proposed examination management system can be stated as below.

- Client computer
- Mobile Phone
- Server computer
- Database

5.3.1.1. Client computer

Client computer is used by the client to connect with examination management system. Client computer should have the internet connectivity to interact with the server which contains examination management system. Students, examination unit and lecturers are able to access the examination management system through client computer. Also they have to select a browser such as internet explorer, Firefox...etc.

5.3.1.2. Mobile Phone

Students of the institute are able to view their examination result through their mobile phone. Mobile phone should connect with the server through mobile network.

5.3.1.3. Server

Proposed examination management system is stored in a server computer. This server computer can be access by the client computer through internet connection.

5.3.1.4. Database

All examination related data such as student, courses, and results are stored on the database. Examination management system has to perform transactions with database to store and receive data.

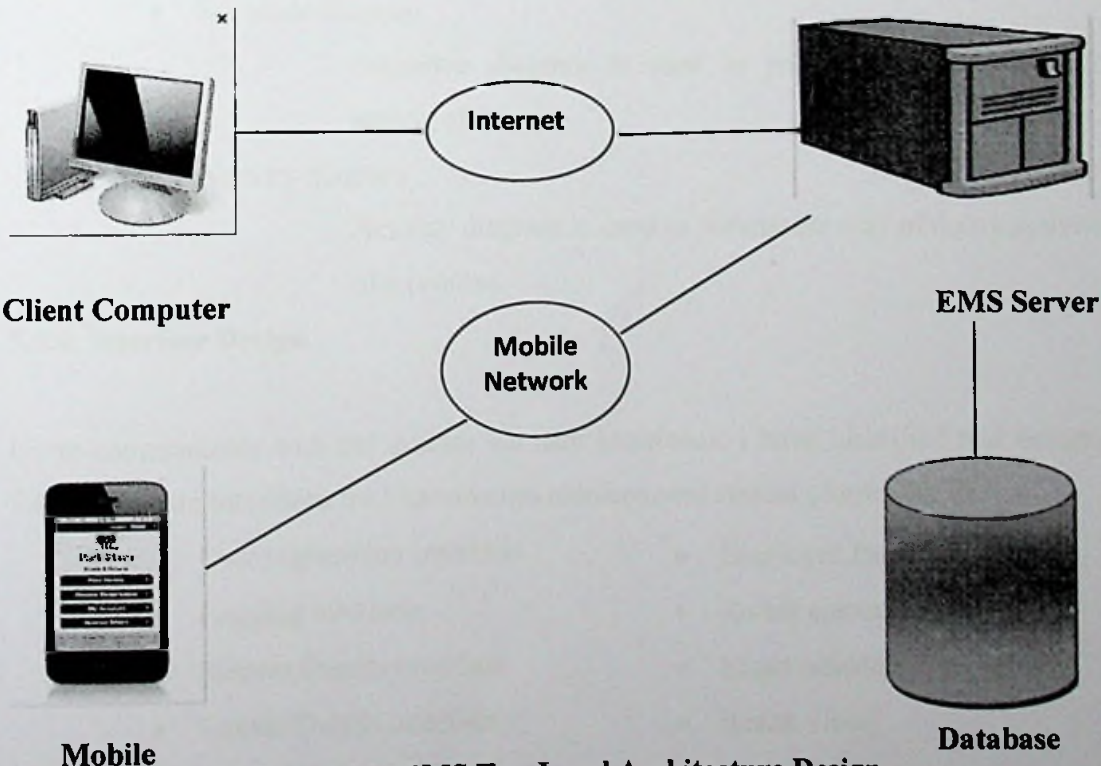

Figure 5.2: EMS Top Level Architecture Design

5.3.2. Database Design

Database keeps all the data used by examination management system. When designing database I have to consider all data. To design the database first I drew the ER diagram. Using ER diagram I represent all entities, relationships between entities, attributes of each entity and the constrains such as cardinality and participation. After that I have taken the mapped table structure and normalize it to eliminate the unsatisfied redundancies [Appendix D].

5.3.3. System Design

Unified Modeling Language is used to design the proposed examination management system. Here I have used following UML diagrams for my system design;

- Class diagram

  Class diagram presents main classes and their relationships on building the system

- Sequence diagram

  Sequence diagram is used to present the communication among classes.

- Activity diagram

  Activity diagram is used to present the way of doing activities of a process.

5.3.4. Interface Design

Users communicate with the system via user interfaces. I have identified and designed following main interfaces for Examination management system [Appendix E].

- User registration interface
- Logging interface
- Student Details interface
- Course Details interface
- Batch Details interface
- Hall Details interface
- Employee Details interface
- Result upload interface
- Exam schedule
- Result view
- Awardees selection
- Transcript request

5.4. Summery

I have used this chapter to discuss system analysis and design part. I have studied the requirements of the system using three main techniques such as interview, record review and questioners. Information taken through these techniques is deeply studied. After that I designed the solution with finalized requirements. First I designed the overall architecture of the system. Then I did database, process and interface design. I have used different techniques for each and every design.