Faculty Advisory System of NITC

Software Design Document

Version 1.0

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October 19, 2017

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1 Introduction

1.1 Purpose

The purpose of this Software Design Description (SDD) is to provide a low-level description of the implementation of Faculty Advisory System data base of NITC, providing insight into the structure and design of each component.

1.2 Scope

This SDD describes the detailed structure of the components of the Faculty Advisory System and the precise implementation details required to satisfy the requirements as specified in the Software Requirements Specification (SRS). It is assumed that the reader has read the SRS, since this document also defines the implementation details of the desired behaviour given the requirements within it.

1.3 Overview of document

This document provides us mainly with:

- System Architecture required for Faculty Advisory System data base.
- ER Diagram and its description.
- Relational schema and its description.
- Human interface design i.e., functionality of system from user perspective.

1.4 Definitions and Acronyms

- NITC - National Institute of Technology Calicut
- SDD - Software Design Description
- SRS - Software Requirements Specification
- FA – Faculty Advisor
- CGPA – Cumulative Grade Point Average

2 System Overview

The Faculty advisory system is composed of three major components:

1. Faculty advisor should be able to access and verify the information such as marks, grades, attendance, CGPA etc. regarding each student under him / her. This system also provides the list of students with backlogs, probation, condonation etc.
2. Students should be able to update their own marks, edit personal information and view messages from FA etc.
3. HOD can have same options as that of Faculty Advisor have but the Domain being the whole Department.

3 System Architecture

3.1 Architectural Design

The faculty advisory system is a client-server based system, which contains the following layers:

- User interface
- Internet / LAN
- Communication
- Functional service
- Data storage layers

Data transfers occur in both directions in the system. The users' input or data request is sent using either an internet browser. This data then connects to the system through the internet and in the case of an internet connection, the data is required to pass through the system's firewall, for security purposes, prior to connecting to the web server. In the functional services layer, the data input or request is routed to the appropriate functional module in accordance with the user's login and user type. Through these modules, the users will interact with the database via the SQL server.

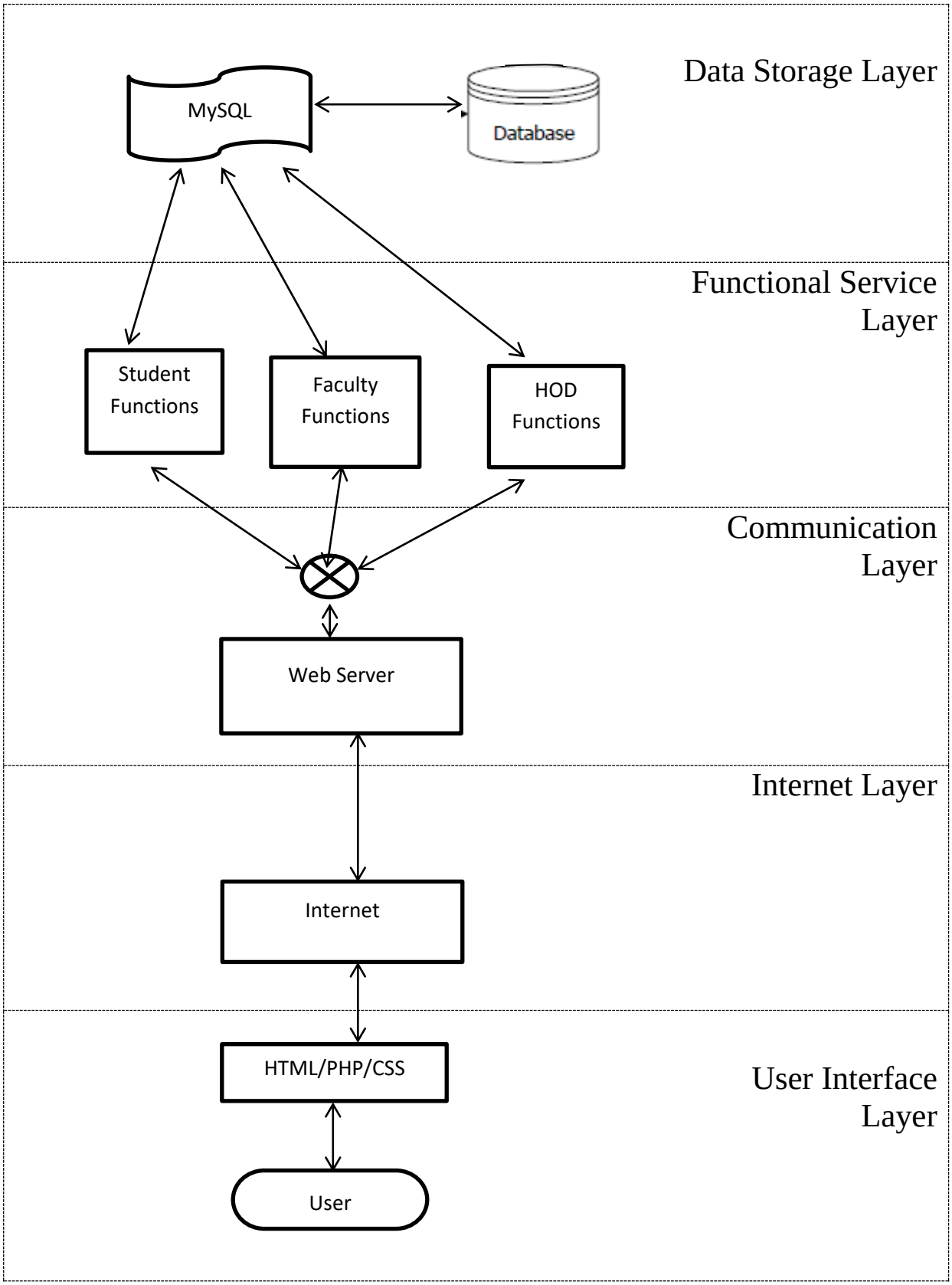

Data Storage Layer
MySQL
Database
Functional Service Layer
Student Functions
Faculty Functions
HOD Functions
Communication Layer
Web Server
Internet Layer
Internet
HTML/PHP/CSS
User Interface Layer
User

Figure 3.1

3.2 Server Architecture

The server architecture contains the web server, which interfaces with remote users. The web server will communicate using active server pages PHP and HTML as shown in the communication interface block within the following diagram.

This logical server will have the functionality in order to facilitate all users, and will interact with the database via SQL API.

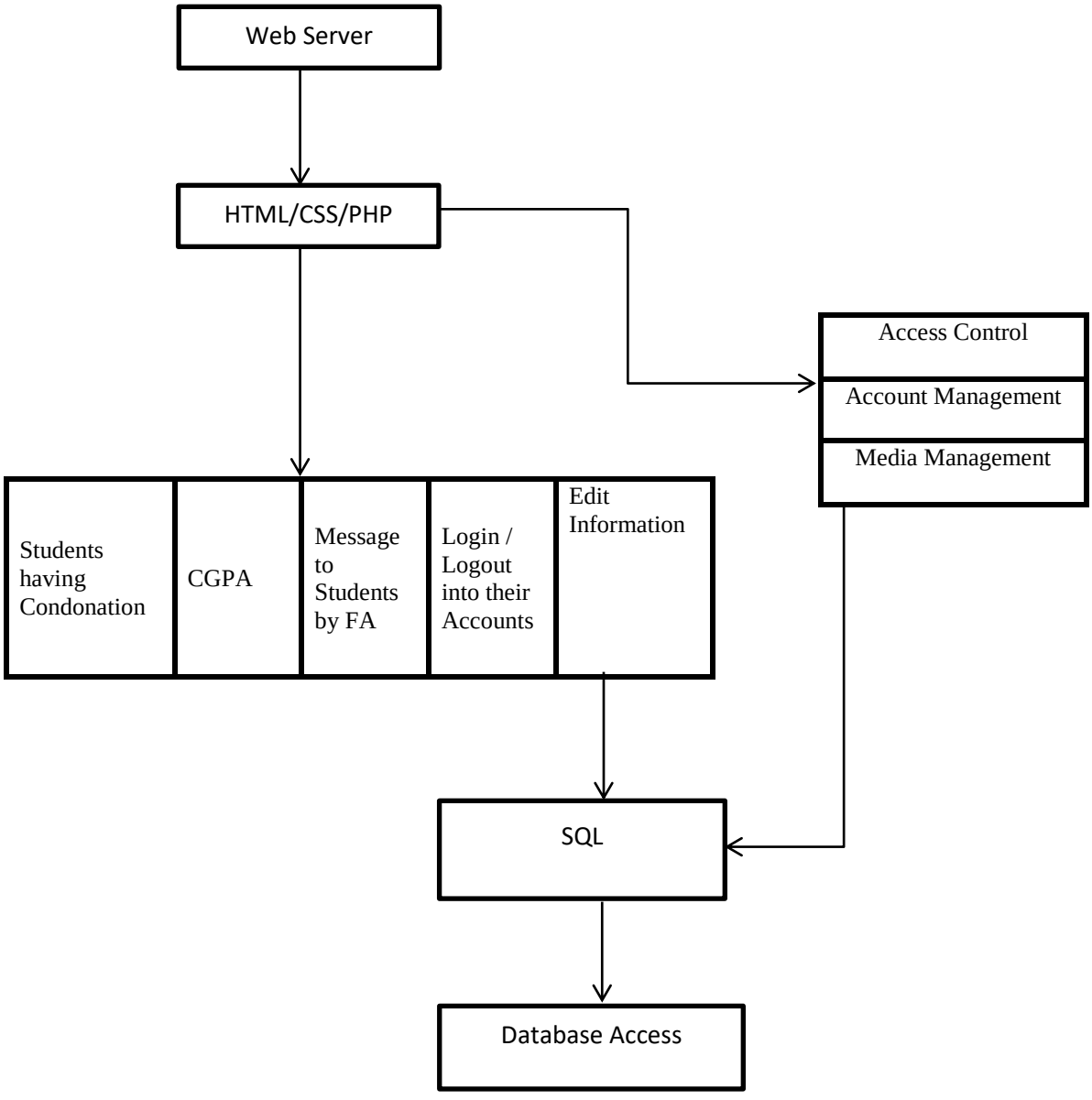


Figure 3.2

3.3 **Client Architecture**

The client architecture is available for all types of systems working on internet service.it will run on any operating system .as a result the developer libraries in the system are utilized during the implementation of the client. This architecture resides above the Windows API layer, which interfaces with the operating system. Utility functions include print, tool bar, edit and send message help and other functions.

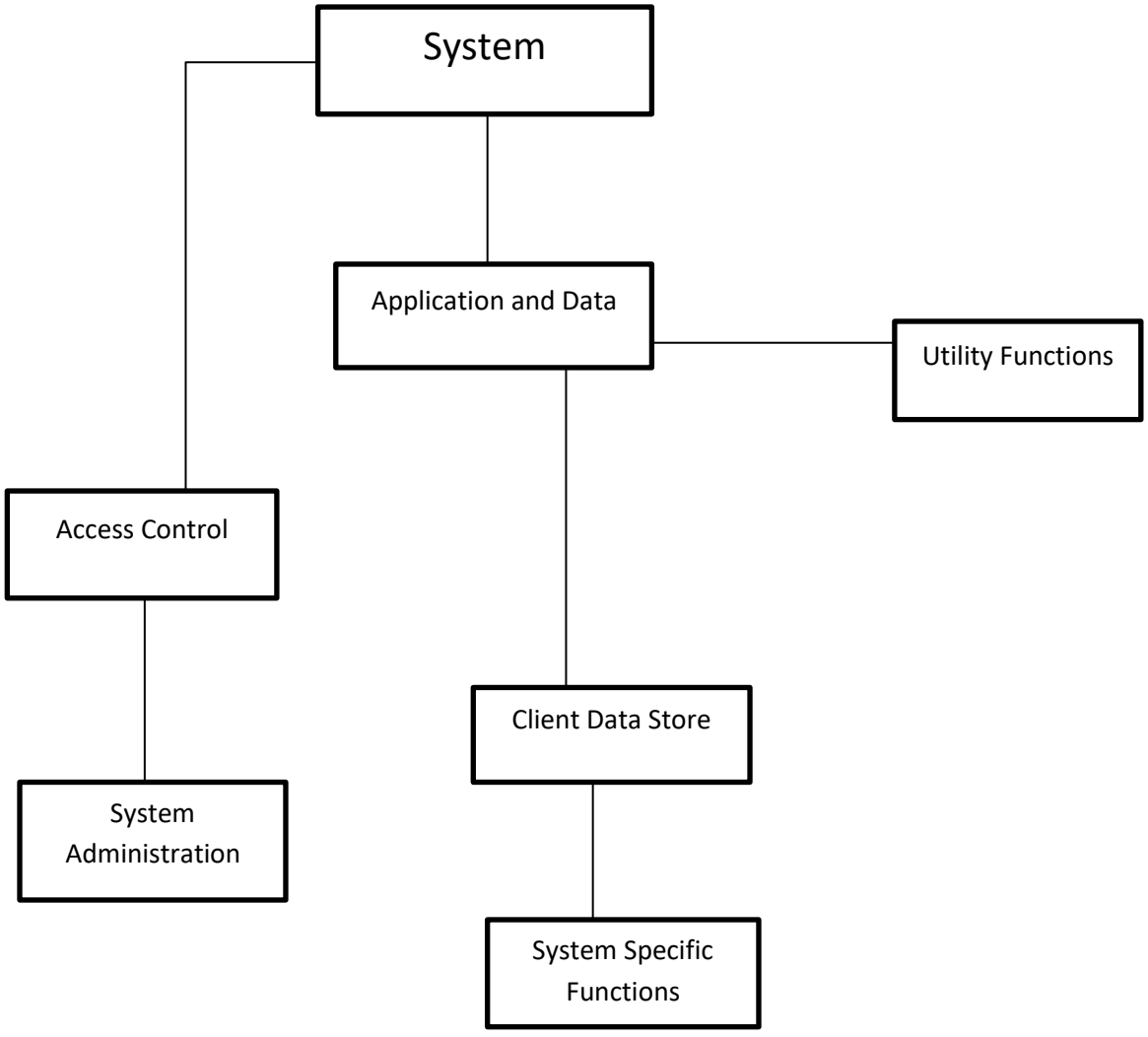


Figure 3.3

4 Data Design

4.1 Enhanced ER Diagram

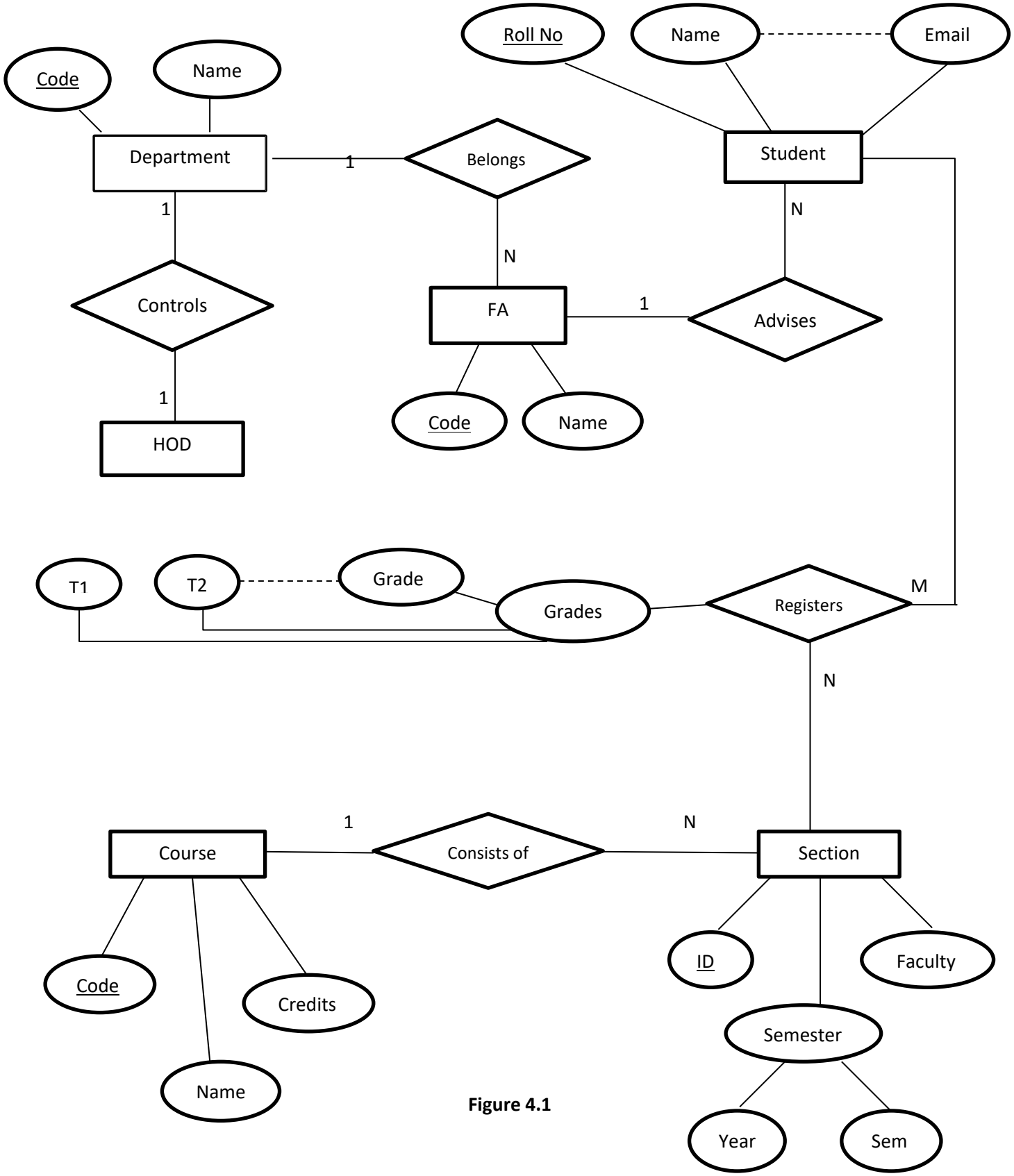


Figure 4.1

4.2 Data Dictionary

4.2.1 Student Entity:

***Description*:**

This Entity contains information such as the student's Roll No, Name, Date of Birth, Nationality, Date of joining, Religion, Date of leaving, Contact Number, Email ID, Permanent Address, Present Address, Name of local guardian, Relationship of local guardian, Occupation of local guardian, Contact Number, Name of Father, Contact Number of Father, Name of Mother, Contact Number of Mother, Occupation of Parent, Faculty Advisor Code, Entry Course, Entry Period of Study, Entry Board, Entry Institution, Entry Marks Secured, Entry Marks Total, Year of Graduation, Achievements, Scholarships, Conduct, Project, Project Guide, Internship, Placement, Condonation1, Condonation2, Probation, Medical Discontinuation.

The primary key of the Student Entity is Student's Roll Number.

***Usage*:**

The Student Entity is associated with the Faculty Advisor Entity with Foreign Key Faculty Advisor Code (N:1 Relation) i.e., A Faculty Advisor may advises many Students under his advisory-ship. The Student Entity is associated with Section Entity (M:N Relation) i.e., Many Students may registers for many Sections (courses undertaken by some Faculty) during their graduation period.

4.2.2 Faculty_Advisor Entity:

***Description*:**

This Entity contains information such as Faculty Advisor Code, Department Code, Name of the Faculty, Contact Number.

The primary key of the Faculty Advisor Entity is Faculty Advisor Code.

***Usage*:**

Each faculty advisor is associated with corresponding Department (N:1 Relation)

4.2.3 Department Entity:

***Description*:**

This Entity contains information such as Department Code, Department Name.

The primary key of the Department Entity is Department Code.

***Usage*:**

Each Department is associated with its corresponding HOD (1:1 Relation).

4.2.4 HOD Entity:

***Description*:**

This Entity contains information such as HOD Code, Name and Department Code.

The primary key of the HOD Entity is HOD Code.

4.2.5 Section Entity:

***Description*:**

This Entity contains information such as Section Id, Faculty and Semester.

The primary key of the Section Entity is Section Id.

***Usage*:**

Section Entity is associated with Course Entity.

4.2.6 Course Entity:

***Description*:**

This Entity contains information such as Course Code, Course Name.

The primary key of the Section Entity is Course Code

4.3 Data Relations

Provided below is a summary of various data relations that make up the Faculty Advisory System. Included in each table are the attributes of each relation, data type of each attribute and default value.

4.3.1 Faculty_Advisor Relation

Attribute Name	Type	Default Value	Comments
Faculty_Code	VARCHAR	-	Primary Key
Department_code	VARCHAR	-	Foreign Key
Name	VARCHAR	-	
Contact_Number	INT	-	

4.3.2 Student Relation

Attribute Name	Type	Default-Value	Comments
Roll Number	NVARCHAR	-	Primary Key
Name	VARCHAR	-	
Date_of_birth	DATE	-	
Nationality	VARCHAR	Indian	
Date_of_joinning	DATE	-	
Date_of_leaving	DATE	-	
Religion	VARCHAR	-	
Caste	VARCHAR	-	Reservations
Contact_Number	BIGINT	-	
Email_Id	VARCHAR	-	
Permanent_Address	VARCHAR	-	
Present_Address	VARCHAR	-	
Name_of_Local_gaurdian	VARCHAR	-	
Relationship_of_local_gaurdian	VARCHAR	-	
Occupation_of_local_gaurdian	VARCHAR	-	
Contact_Number_of_local_gaurdian	BIGINT	-	
Name_of_Father	VARCHAR	-	
Address_of_Father	VARCHAR	-	
Contact_Number_of_Father	BIGINT	-	
Name_of_Mother	VARCHAR	-	
Contact_Number_of_Mother	BIGINT	-	
Occupation_of_Parent	VARCHAR	-	
Faculty_Advisor_Code	VARCHAR	-	Foreign Key
Entry_Course	VARCHAR	XII	Details regarding +2 Education
Entry_Period_of_Study	VARCHAR	-	
Entry_Board	VARCHAR	-	
Entry_Institution	VARCHAR	-	
Entry_Marks_Secured	INT	-	
Entry_Marks_Total	INT	-	
Year_of_Graduation	YEAR	-	
Achievements	VARCHAR	-	
Scholarship	VARCHAR	-	
Conduct	VARCHAR	-	
Project	VARCHAR	-	
Project_Guide	VARCHAR	-	
Internship	VARCHAR	-	
Placement	VARCHAR	-	
Condation_1	VARCHAR	-	
Condation_2	VARCHAR	-	
Probation	VARCHAR	-	
Medical_Discontinuation	VARCHAR	-	

4.3.3 HOD Relation

Attribute Name	Type	Default Value	Comments
Hod_code	VARCHAR	-	Primary Key
Name	VARCHAR	-	
Department_Code	VARCHAR	-	Foreign Key

4.3.4 Department Relation

Attribute Name	Type	Default Value	Comments
Department_code	VARCHAR	-	Primary Key
Department_Name	VARCHAR	-	

4.3.5 Section Relation

Attribute Name	Type	Default Value	Comments
Section_id	VARCHAR	-	Primary Key (Generated)
Course_code	VARCHAR	-	Foreign Key
Year	INT	-	
Semester	VARCHAR	-	Monsoon/Winter
Faculty_Code	VARCHAR	-	

4.3.6 Course Relation

Attribute Name	Type	Default Value	Comments
Course_code	VARCHAR	-	Primary Key
Course_Name	VARCHAR	-	
Credits	INT	4	

4.3.7 Registers Relation

Attribute Name	Type	Default Value	Comments
Student_Roll Number	NVARCHAR	-	Primary Key/Foreign Key
Section_Section_id	VARCHAR	-	Primary Key/Foreign Key
Marks_T1	INT	0	
Marks_T2	INT	0	
Assignments	INT	0	
Quizes	INT	0	
Project	INT	0	
Grade	CHAR	-	

5 Human Interface Design

This section provides the graphic user interface for the online faculty advisory system.

Student, faculty and HOD advisors will be able to log onto the system from any computer connected to the internet. The computer will access the system through an internet browser. The user interfaces will be reflected on the screen. The access control function will determine the level of access based on the user type. The user type will be triggered by the user ID, and a menu will be displayed requesting the login details of the user.

The login credentials submitted will be verified via the access control function. If the user name or password does not match an error message will be displayed. The user will have the option to try again, or cancel the operation.

- If the user has entered the correct login credentials then he/she will have the access to edit/update the information.

5.1 Student Perspective

- A page will be displayed click on the marks option he can enter the marks of his own or can edit his marks.
- In the same page an edit option is provided ,The student can update his personal information for example his current address , contact number etc.,
- Uploading image option is also provided to upload his image.
- An option read is provided to the student, He can read the messages sent by the faculty advisor regarding any.

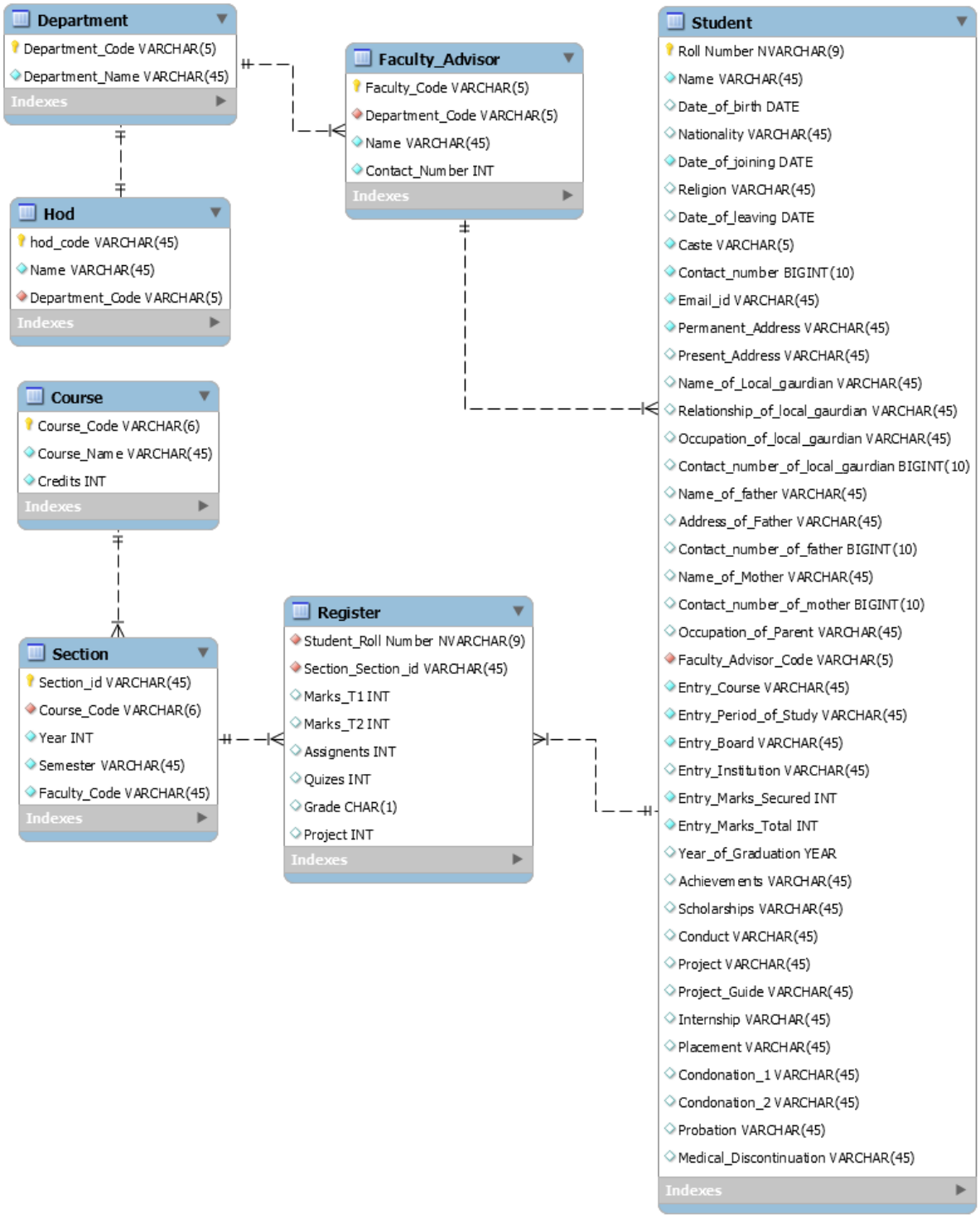
5.2 Faculty Advisor Perspective

- The marks option is provided to faculty advisor so that he/she can edit/access the marks /information of a student under his/her advisoryship.
- Send option provided can be used to send messages to the students regarding exams/any events.
- He/she can inform the students having attendance shortage backlogs etc.,

5.3 HOD Perspective

- The marks option can be used by the HOD to access the information of all the students in his/her branch.

Appendix A


Department
Department_Code VARCHAR(5)
Department_Name VARCHAR(45)
Indexes
Faculty_Advisor
Faculty_Code VARCHAR(5)
Department_Code VARCHAR(5)
Name VARCHAR(45)
Contact_Number INT
Indexes
Student
Roll Number NVARCHAR(9)
Name VARCHAR(45)
Date_of_birth DATE
Nationality VARCHAR(45)
Date_of_joining DATE
Religion VARCHAR(45)
Date_of_leaving DATE
Caste VARCHAR(5)
Contact_number BIGINT(10)
Email_id VARCHAR(45)
Permanent_Address VARCHAR(45)
Present_Address VARCHAR(45)
Name_of_Local_gaurdian VARCHAR(45)
Relationship_of_local_gaurdian VARCHAR(45)
Occupation_of_local_gaurdian VARCHAR(45)
Contact_number_of_local_gaurdian BIGINT(10)
Name_of_father VARCHAR(45)
Address_of_Father VARCHAR(45)
Contact_number_of_father BIGINT(10)
Name_of_Mother VARCHAR(45)
Contact_number_of_mother BIGINT(10)
Occupation_of_Parent VARCHAR(45)
Faculty_Advisor_Code VARCHAR(5)
Entry_Course VARCHAR(45)
Entry_Period_of_Study VARCHAR(45)
Entry_Board VARCHAR(45)
Entry_Institution VARCHAR(45)
Entry_Marks_Secured INT
Entry_Marks_Total INT
Year_of_Graduation YEAR
Achievements VARCHAR(45)
Scholarships VARCHAR(45)
Conduct VARCHAR(45)
Project VARCHAR(45)
Project_Guide VARCHAR(45)
Internship VARCHAR(45)
Placement VARCHAR(45)
Condonation_1 VARCHAR(45)
Condonation_2 VARCHAR(45)
Probation VARCHAR(45)
Medical_Discontinuation VARCHAR(45)
Indexes
Hod
hod_code VARCHAR(45)
Name VARCHAR(45)
Department_Code VARCHAR(5)
Indexes
Course
Course_Code VARCHAR(6)
Course_Name VARCHAR(45)
Credits INT
Indexes
Section
Section_id VARCHAR(45)
Course_Code VARCHAR(6)
Year INT
Semester VARCHAR(45)
Faculty_Code VARCHAR(45)
Indexes
Register
Student_Roll Number NVARCHAR(9)
Section_Section_id VARCHAR(45)
Marks_T1 INT
Marks_T2 INT
Assignents INT
Quizes INT
Grade CHAR(1)
Project INT
Indexes