R.V COLLEGE OF ENGINEERING
BENGALURU-560059
(Autonomous Institution Affiliated to VTU, Belagavi)

Faculty Expertise System

PROJECT REPORT

Submitted by

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Under the Guidance of

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in partial fulfillment for completion
of
Web Programming Laboratory
Aug – Dec 2018-19

Bachelor of Engineering
In
Department of Information Science & Engineering

RV COLLEGE OF ENGINEERING
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DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

CERTIFICATE

It is to certify that the project work titled **'Faculty Expertise System'** is carried out by **Saksham Jhawar (1RV15IS048),** who is a bonafide student of RV College of Engineering, Bangalore, in partial fulfillment for the completion of **Web Programming (12IS71) Laboratory Course,** the requirement for the award of degree of **Bachelor of Engineering** in **Department of Information Science & Engineering** of the Visvesvaraya Technological University, Belagavi during the year **2018-19**. It is certified that all corrections/suggestions indicated for the internal Assessment have been incorporated in the report. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed by the institution for the said degree.

Prof. Priya D Assistant Professor Department of ISE RVCE, Bengaluru	Prof. Rashmi R Assistant Professor Department of ISE RVCE, Bengaluru	Dr. B M Sagar Head of Department Department of ISE RVCE, Bengaluru

Semester End Examination

Name of Examiners **Signature with Date**

1

2

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DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

DECLARATION

I, **Saksham Jhawar**, student of seventh semester B.E., **Information Science and Engineering,** hereby declare that the project titled **"Faculty Expertise System"** has been carried out and submitted in partial fulfillment for the completion of **Web Programming Laboratory (12IS71),** the requirement for the award of degree of **Bachelor of Engineering** in **Department of Information Science & Engineering.**

Place: Bengaluru **Signature**
Date:

ACKNOWLEDGEMENT

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and the department. We would like to extend our sincere thanks to all of them. We are highly indebted to Prof. Rashmi R and Prof. Priya D for their guidance and constant supervision as well as for providing necessary information regarding the project and also for their support in completing the project.

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TABLE OF CONTENTS

ABSTRACT

Faculty Expertise System is a portal for the department to maintain the complete information about the faculty member of a department. It helps the head of the department to view the records of the faculty and the faculty to view his/her information and modify the same.

This system maintains the complete records of the faculty and helps the faculty and the admin to access information when needed.

A faculty module will have the responsibility of maintaining his/her details. It will help the admin to check and retrieve the faculty information as and when required. Provision has been provided to the admin to create, delete and modify the credentials of the faculty.

This project ensures that it will cover all the responsibilities of faculty and admin and maintain all records efficiently.

Otherwise, It requires a lot of paper handling which further requires proper storage facilities. Moreover, this modus operandi adversely affects the smooth functioning of the organization. This project helps in a great deal, to reduce manual labor of collecting and piling up data for later references, which is very often difficult to maintain, because of overwork or misplace of collected information. This system also figures out the human engineering considerations (ergonomics) which, in turn, has resulted in a user friendly, menu-driven Graphical User Interface. This system simplifies the upholding of large amount of data and the speed of processing is off the capacity of any manual system.

LIST OF FIGURES

Chapter 3

Chapter 4

LIST OF TABLES

Chapter 5

CHAPTER 1
INTRODUCTION

Faculty Expertise System is a portal for the department to maintain the complete information about the faculty member of a department. It helps the head of the department to view the records of the faculty and the faculty to view his/her information and modify the same.

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This project ensures that it will cover all the responsibilities of faculty and admin and maintain all records efficiently.

1.1 Motivation

There has been a rapid change in the world due to advent of technology. Databases are one of the most crucial components of our everyday life. Since most of the information retrieval systems used is based on conventional and traditional systems, in order to get the advantages of technology, the faculty expertise system has been created which will help the admin and the faculty members to upgrade themselves from traditional files to database. Also, many functionalities are needed and implemented in this project which will help in easy storage and retrieval of information.

1.2 Scope and Relevance

This system has its scope with every faculty in the department and the head of the department so that there is easy storage and retrieval of information when required. This system provides advanced way to store records of faculty members and can be used by every faculty member making it a reliable system. Once the design for the department is set, it can be used by every other department in the college.

1.3 Introduction to Web Programming Techniques

Web programming refers to the writing, markup and coding involved in Web development, which includes Web content, Web client and server scripting and network security. The most common languages used for Web programming are XML, HTML, JavaScript, Perl 5 and PHP. Web programming is different from just programming, which requires interdisciplinary knowledge on the application area, client and server scripting, and database technology.

Web programming can be briefly categorized into client and server coding. The client side needs programming related to accessing data from users and providing information. It also needs to ensure there are enough plugins to enrich user experience in a graphic user interface, including security measures.

1. To improve user experience and related functionalities on the client side, JavaScript is usually used. It is an excellent client-side platform for designing and implementing Web applications.
2. HTML5 and CSS3 support most of the client-side functionality provided by other application frameworks.

The server side needs programming mostly related to data retrieval, security and performance. Some of the tools used here include PHP, Java and MySQL. There are certain tools/platforms that aid in both client- and server-side programming. Some examples of these are Opa and Tersus.

CHAPTER 2

REQUIREMENT SPECIFICATION DETAILS

2.1 Functional Requirements

- User Register: The administrator is allowed to insert, delete or modify the user profiles and the control lies only with him

- Should be able to query the following information regarding any faculty :

  1. Books published by the faculty member
  2. Journals published by the faculty member
  3. Faculty exchange programs in which the faculty member has participated
  4. Consultancy projects which are executed by the faculty member
  5. Conferences attended by the faculty
  6. Courses handled by the faculty member
  7. Qualification details of the faculty
  8. The projects on which the faculty member has worked on
  9. Professional membership details of the faculty member
  10. Governance carried out by the faculty
  11. Professional Membership details of the faculty
  12. Community User Details of the faculty

- The system shall generate a resume of the faculty and provide a customised report of the above mentioned fields

Functional Requirements - Faculty

- Transactions: Information related to Faculty will be recorded
- The Faculty details must contain Name, Contact details, Date of Birth , Date of joining , Username and Password(provided uniquely to each faculty) , Faculty ID , E-mail ID

- The database should allow viewing and updating of the following details only by the corresponding Faculty :

1. Books published by the faculty member
2. Journals published by the faculty member
3. Faculty exchange programs in which the faculty member has participated
4. Consultancy projects which are executed by the faculty member
5. Conferences attended by the faculty
6. Courses handled by the faculty member
7. Qualification details of the faculty
8. The projects on which the faculty member has worked on
9. Professional membership details of the faculty member
10. Governance carried out by the faculty
11. Professional Membership details of the faculty
12. Community User Details of the faculty

- The design of the database must be such that any change of information of a faculty must be updated and saved effectively despite the fact that multiple faculty members access the database simultaneously.

2.2 Non-Functional Requirements

- Enhanced UI for inter operation on multiple classes of devices; independence i.e. interoperability.

- Privilege segregation of administrator and faculty**.**

- Modifiability:
  Code which is easily understandable and easily extensible
- Security:
  The system should provide a high level of security and integrity of credentials held by the system, only authorized personnel should have access to whole system data.
- Reliability:
  The system should have minimal down time and must be able to handle multiple concurrent users.
- Error handling:
  Validation of the inputs is essential and an appropriate error message must be displayed.
- Ease of Use:
  The faculty and the administrative views should be easy to use and intuitive with online help and documentation provided.

2.3 System Requirements

2.3.1 Software Requirements:

1. Front end : HTML, CSS, JavaScript
2. Back end : MySQL 5.0 Onwards, PHP
3. OS : Ubuntu 14.0 or Windows XP and higher versions
4. Server : Xampp Server

2.3.2 Hardware Requirements:

1. Processor : Pentium 3.0 or higher
2. RAM : 256MB or more
3. Hard Drive : 5GB or more

2.3.3 External User Interface Requirements

The website and database is accessed through any of the popular browsers like Google Chrome, Mozilla Firefox etc. The user navigates to the website by typing in the URL. On webpage load the user in shown the webpage wherein he needs to log-in in case he’s a prior user or else he needs to sign-up to access all the features.

CHAPTER 3

ARCHITECTURE AND DESIGN

3.1 MVC Architecture of Faculty Expertise System

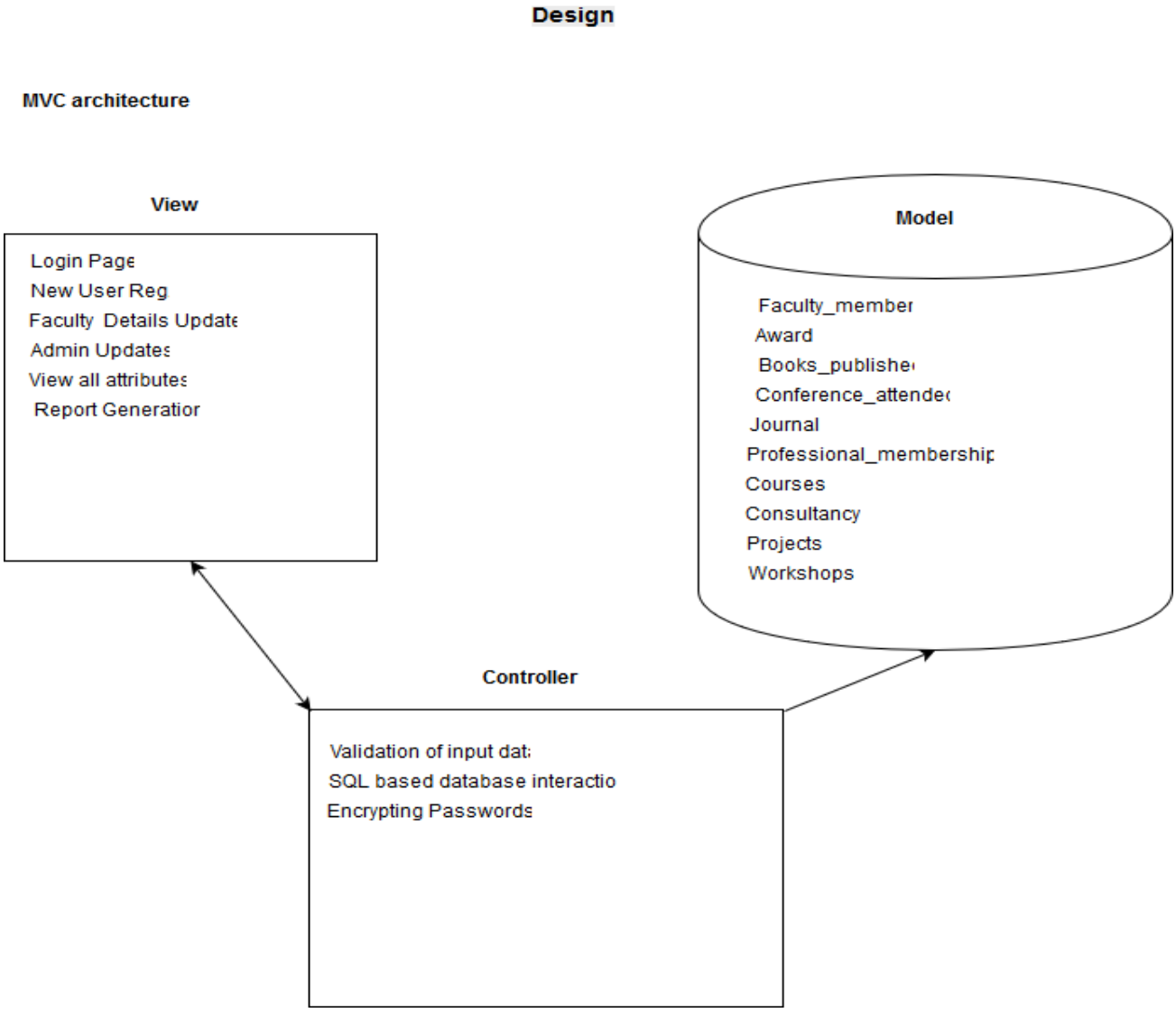


Figure 3.1: MVC Architecture of Faculty Expertise system

3.2 Entity Relationship Diagram

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is a component of data. In other words, ER diagrams illustrate the logical structure of databases. At first glance an entity relationship diagram looks very much like a flowchart. It is the specialized symbols, and the meanings of those symbols, that make it unique.

An entity–relationship model (ER model) describes inter-related things of interest in a specific domain of knowledge. An ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between instances of those entity types.

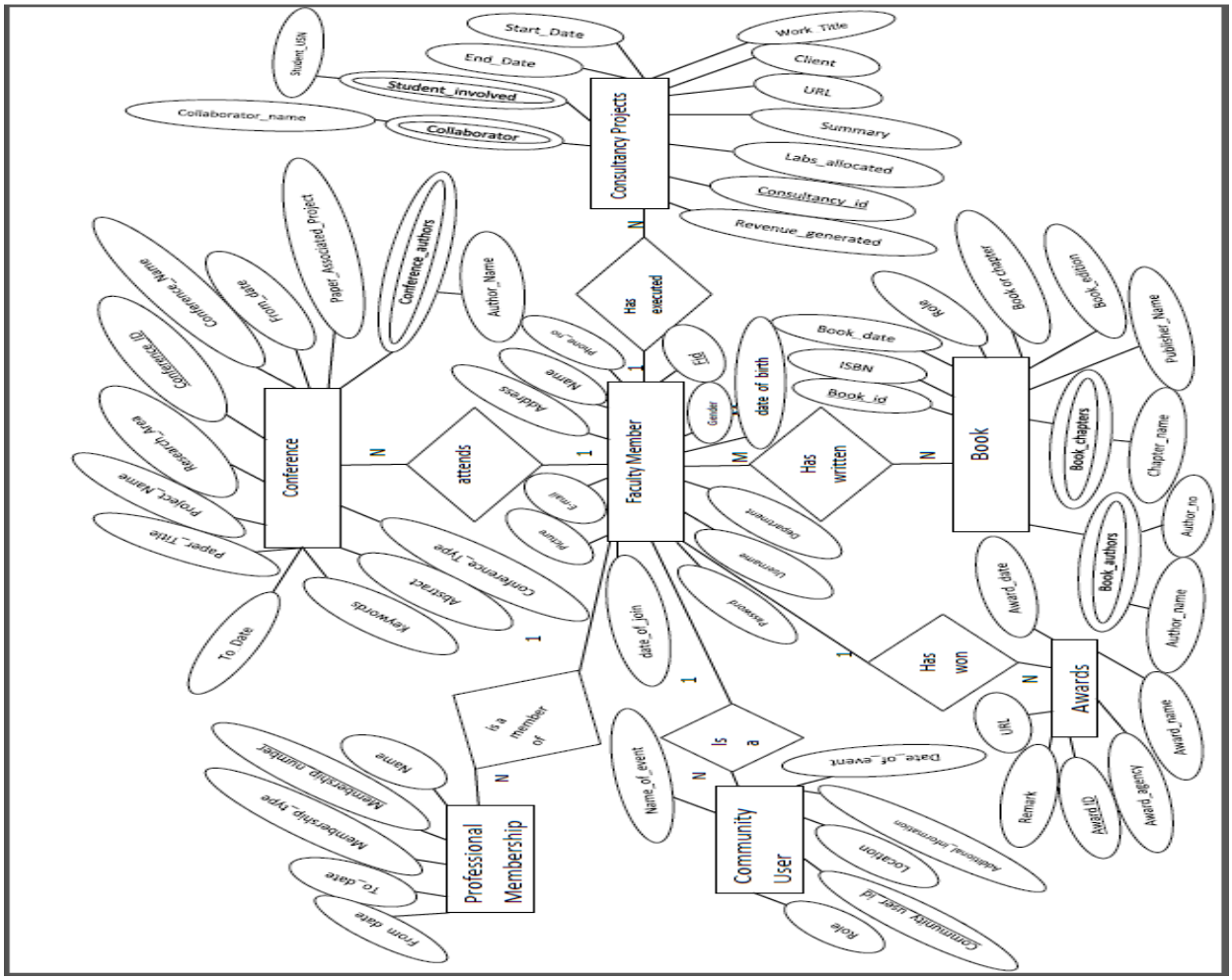


Figure 3.2(a): E-R diagram for Faculty Expertise system

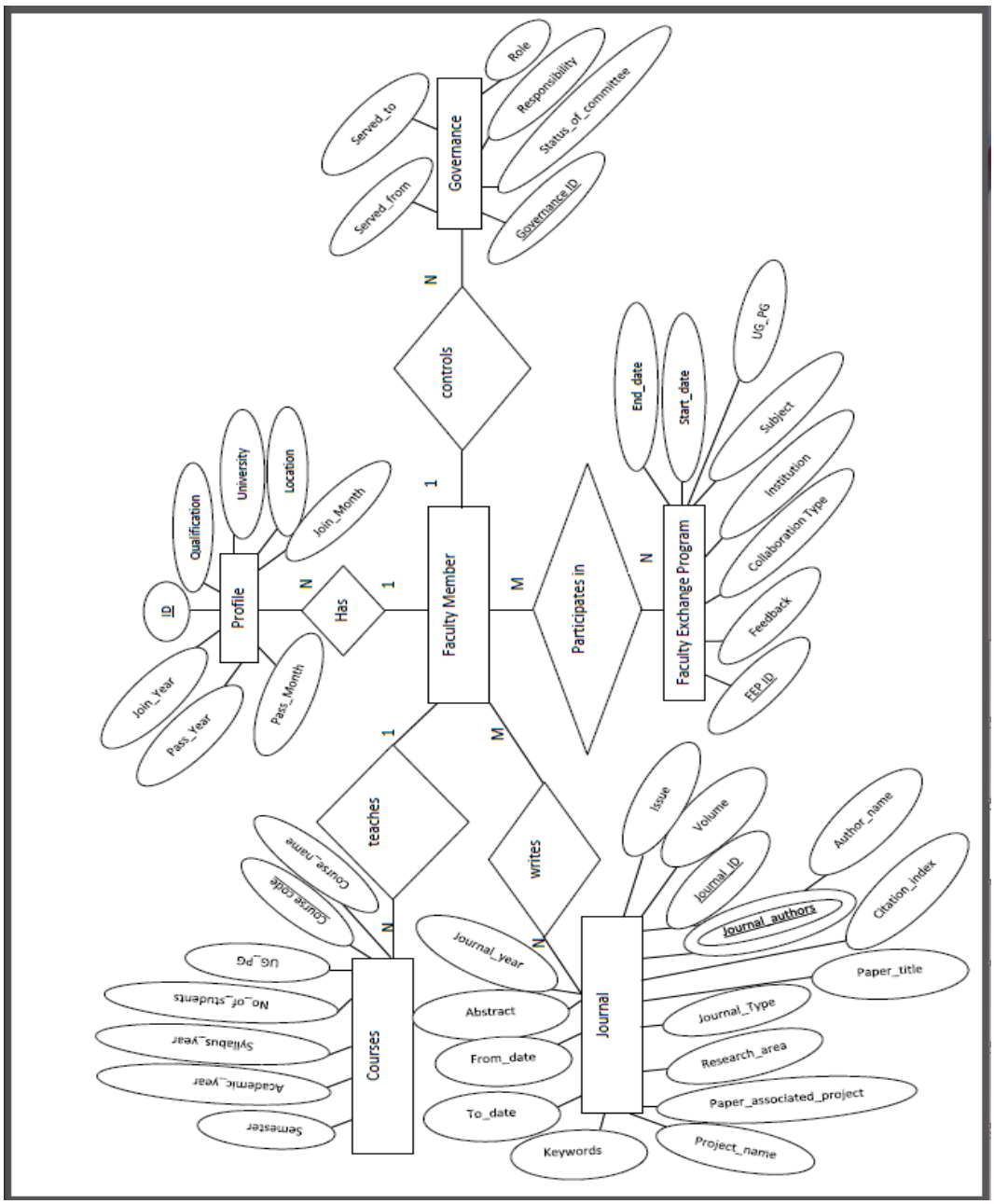


Figure 3.2(b): E-R diagram for Faculty Expertise system

3.3 Low Level Design

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. The following sections contain schema diagram, normalization schema and graph which have been used for the low level design of this project.

3.3.1 Application Control Design

A menu is a list of options or commands presented to the user of a computer or communications system. A menu may either be a system's entire user interface, or only part of a more complex one.
A user chooses an option from a menu by using an input device. Some input methods require linear navigation: the user must move a cursor or otherwise pass from one menu item to another until reaching the selection. On a computer terminal, a reverse video bar may serve as the cursor.
Admins, Counselors and the students are the three end users of the system. All the three end users of the system possess a side navigational menu.

The menu in the Admin view consists of:

- Create New user
- Delete User
- Modify Details
- Faculty Report
- Faculty Resume

The menu in the Faculty view consists of:

- View Qualification
- Courses
- Awards
- Community User
- Faculty exchange program
- Professional membership
- Conference
- Journals

- Projects
- Book published
- Governance
- It also contains buttons to add new entry and logout.

The Login Page for Faculty takes Email ID and Password; it takes Admin ID and Password for Admins.
The Logout option and the link to query in the institutional website are common for all the end users. Link to the institutional website is a image link of the institutional logo.

3.3.2 Relation Schema For Faculty Expertise System

The term relation schema refers to a heading paired with a set of constraints defined in terms of that heading. A relation can thus be seen as an instantiation of a relation schema if it has the heading of that schema and it satisfies the applicable constraints. The following steps are carried out to resolve ER diagram into ER schema. All the entities represented in the rectangular box in the ER diagram become independent tables in the database. All single valued attributes of an entity is converted to a column of the table. Key attribute in the ER diagram becomes the Primary key of the table. Any multi-valued attributes are converted into new table.

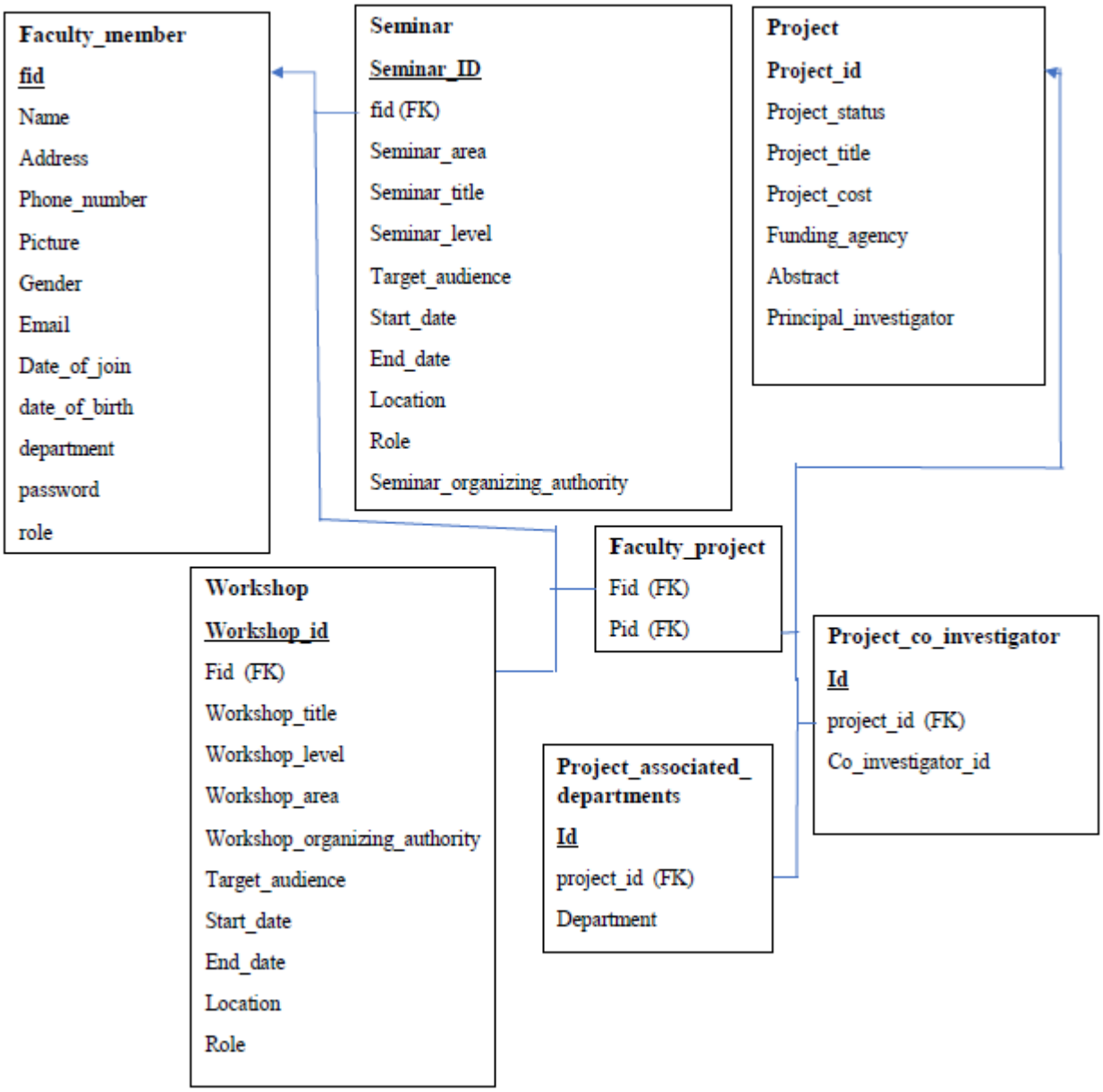


Figure 3.3(a): Schema diagram for Faculty Expertise System

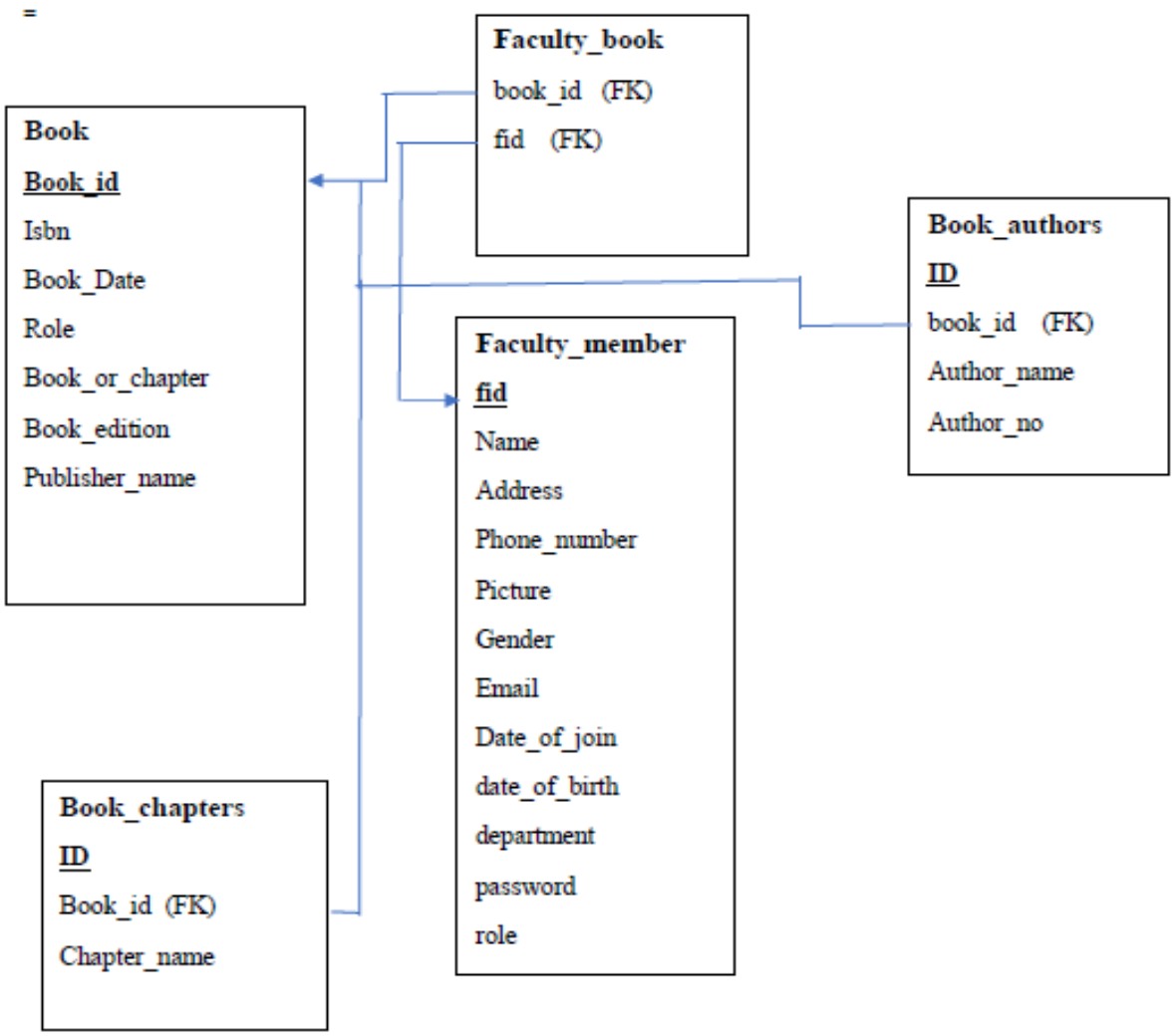


Figure 3.3(b): Schema diagram for Faculty Expertise System

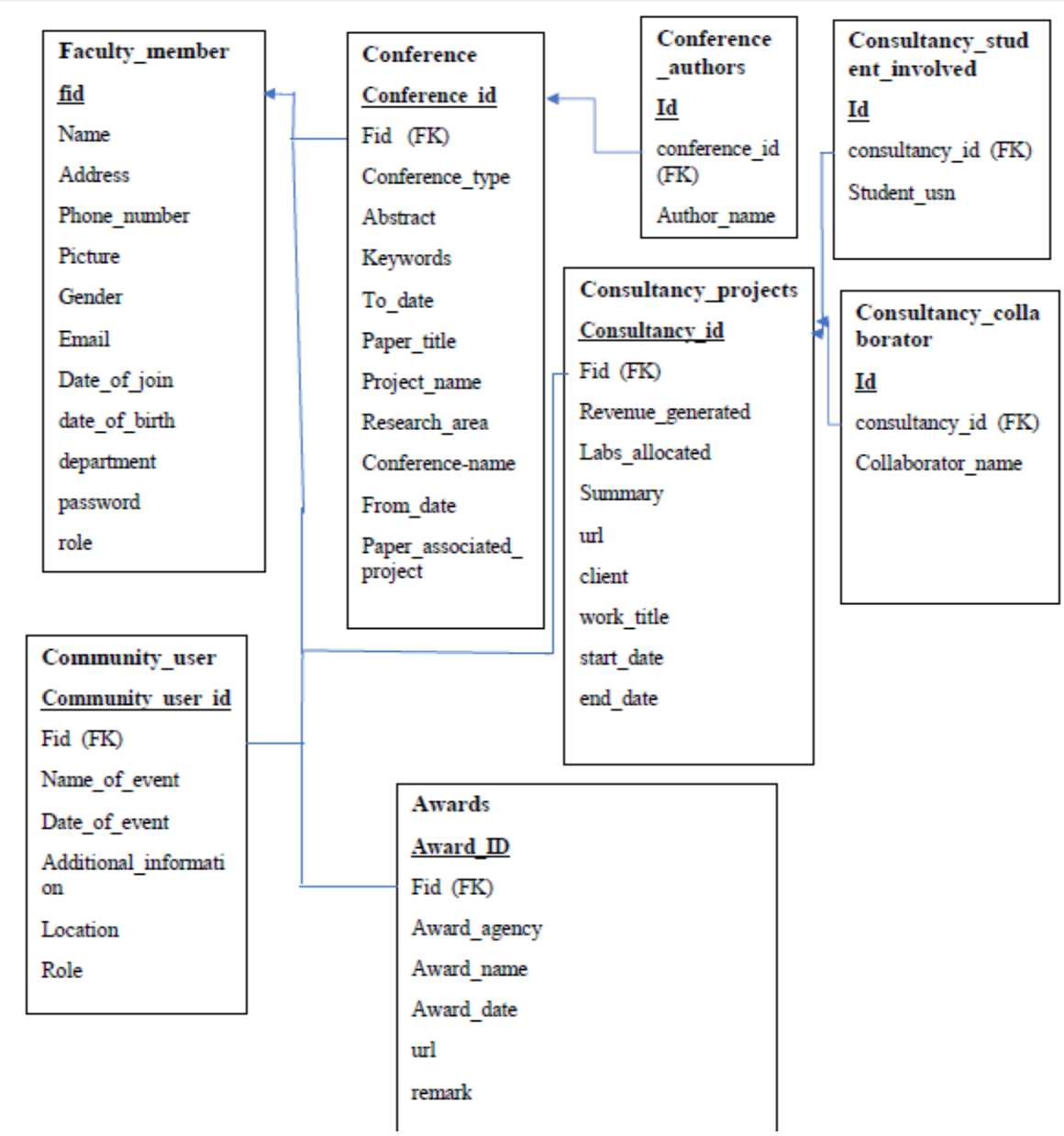


Figure 3.3(C): Schema diagram for Faculty Expertise System

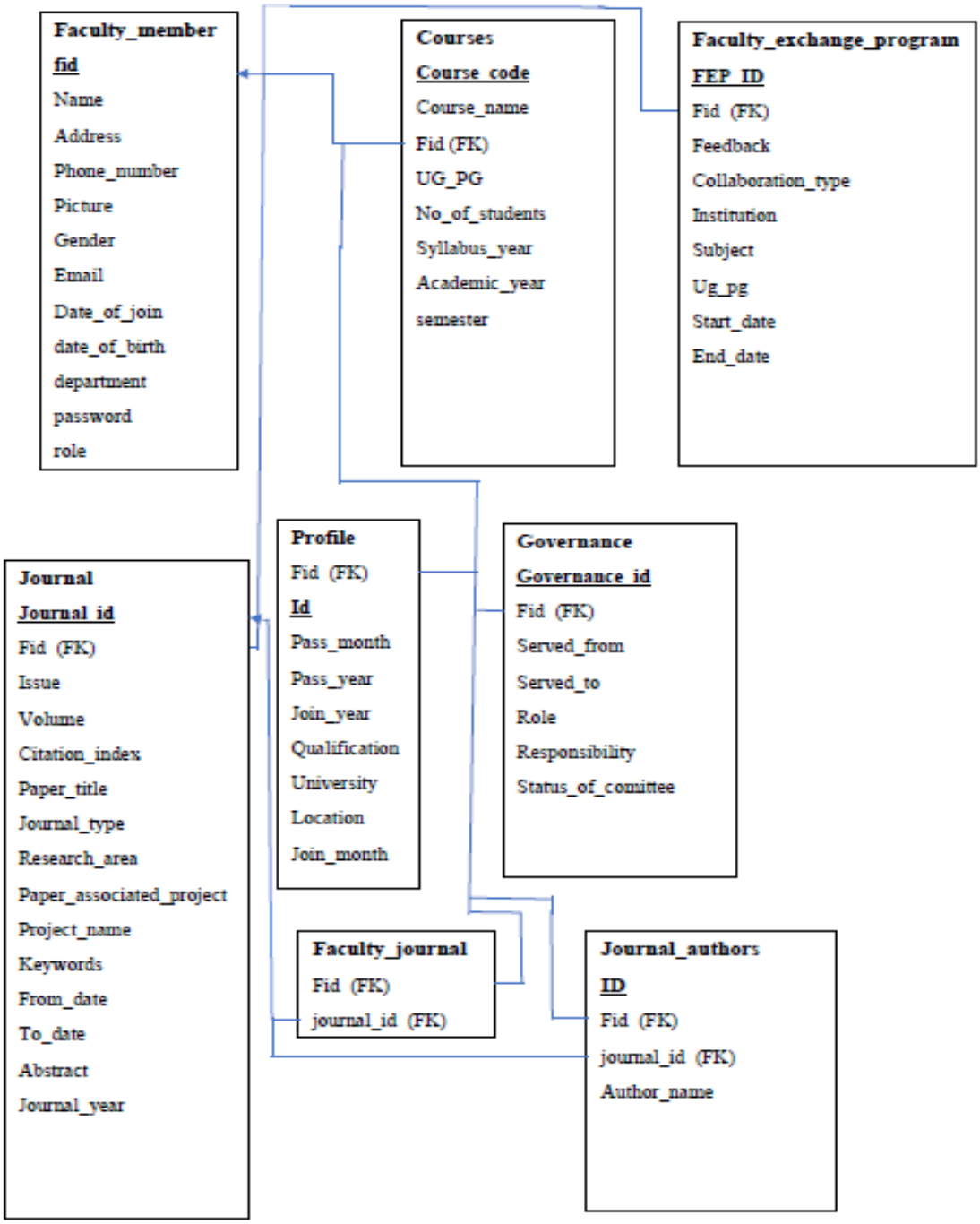


Figure 3.3(D): Schema diagram for Faculty Expertise System

3.3.4 Normalized Entity Relation Diagram of Counselor Management System

Functional dependency (FD) is a set of constraints between two attributes in a relation. If a database design is not perfect, it may contain anomalies, which are like a bad dream for any database administrator. Managing a database with anomalies is next to impossible.

- Update anomalies
- Deletion anomalies
- Insert anomalies

Normalization is a method to remove all these anomalies and bring the database to a consistent state.

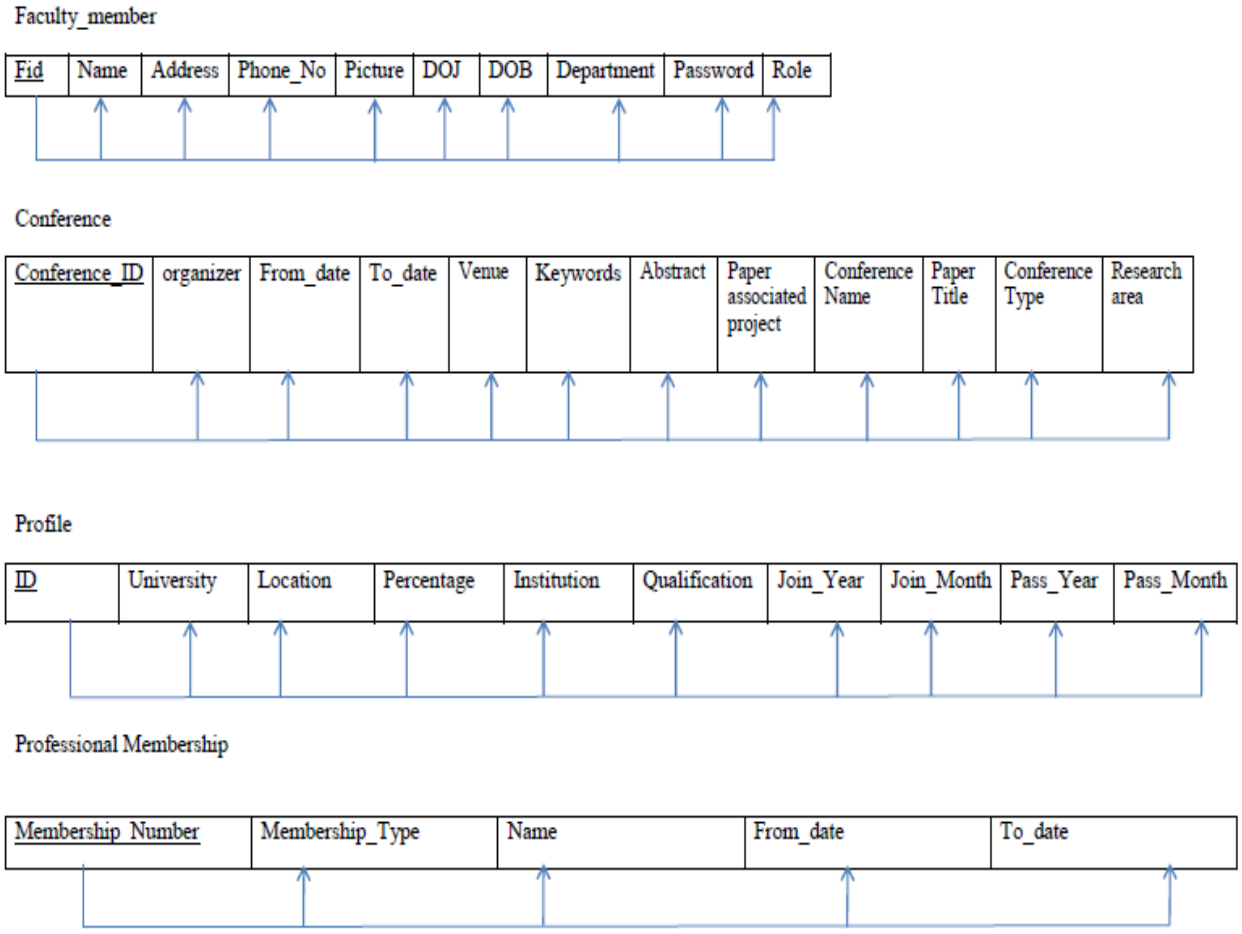


Figure 3.4(a): Normalized ER Diagram for Faculty Expertise System

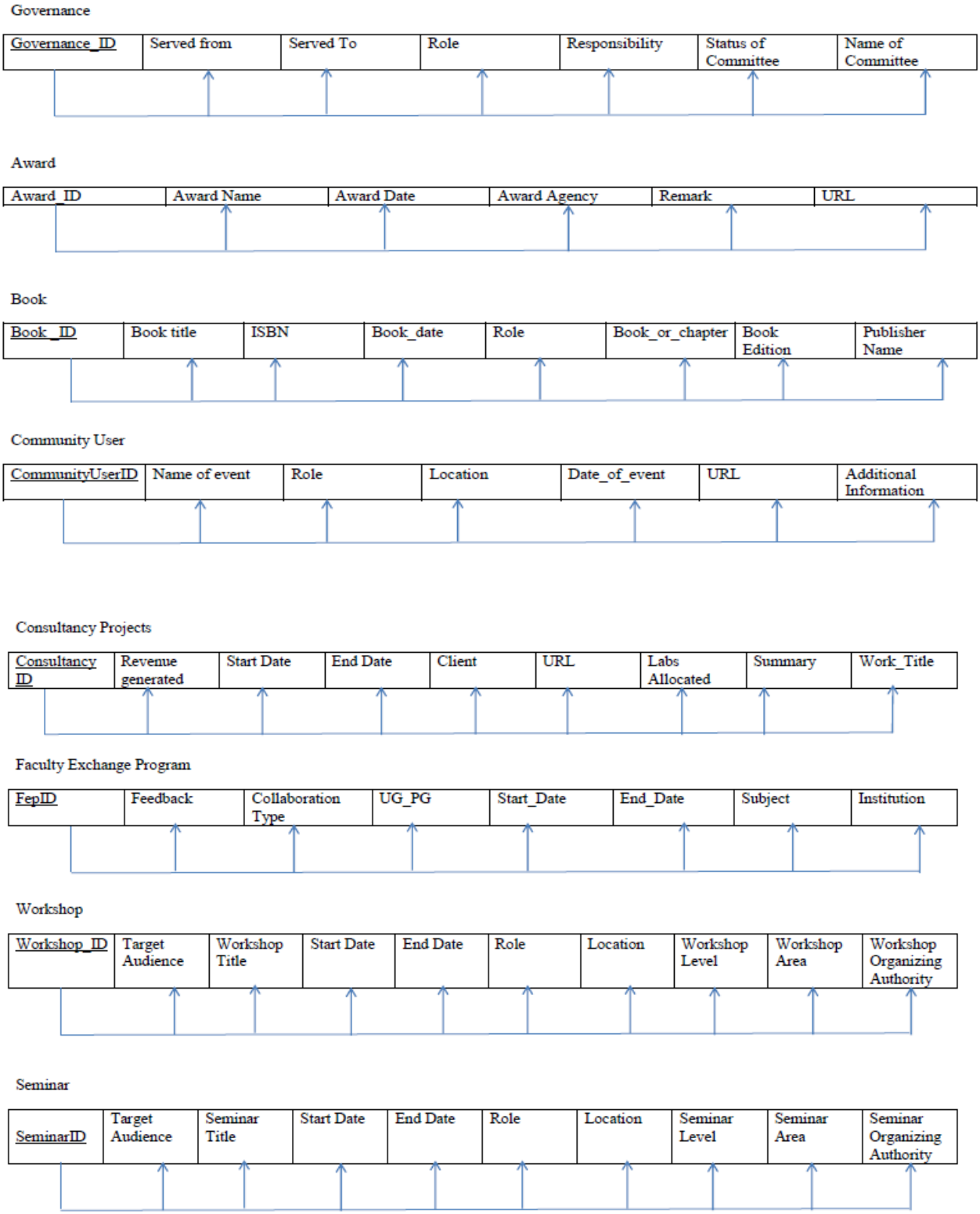


Figure 3.4(b): Normalized ER Diagram for Faculty Expertise System

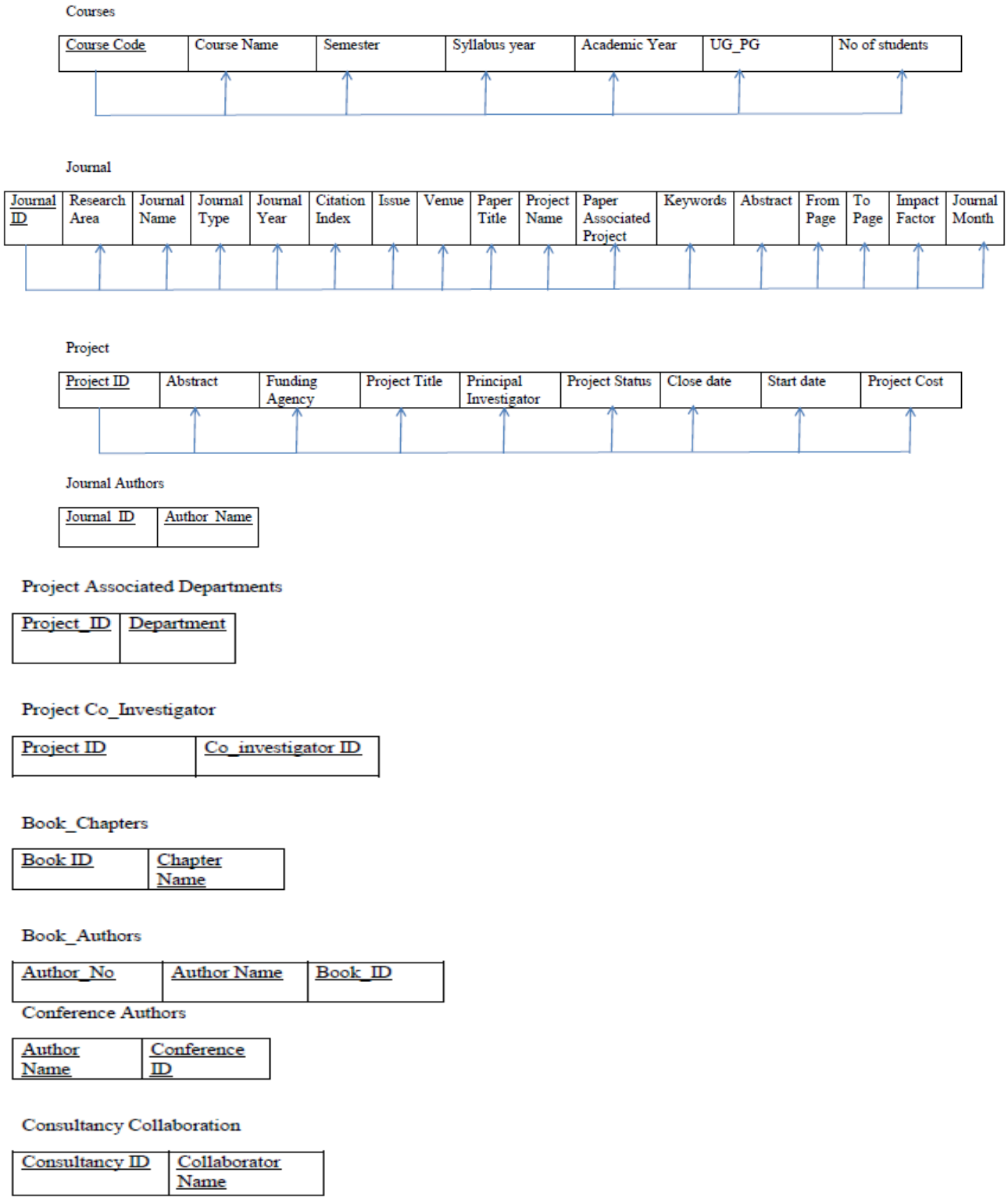


Figure 3.4(c): Normalized ER Diagram for Faculty Expertise System

Consultancy Students Involved

Student USN	Consultancy ID

Faculty_Book

Fid	Book_ID

Faculty_Project

Fid	Project_ID

Faculty_FEP

Fid	FepID

Faculty_Journal

Fid	Journal_ID

Figure 3.4(d): Normalized ER Diagram for Faculty Expertise System

CHAPTER 4
IMPLEMENTATION

4.1 Selection of Platform

LAMP is an archetypal model of web service stacks, named as an acronym of the names of its original four open-source components: the Linux operating system, the Apache HTTP Server, the MySQL relational database management system (RDBMS), and the PHP programming language. The LAMP components are largely interchangeable and not limited to the original selection. As a solution stack, LAMP is suitable for building dynamic web sites and web applications.

Since its creation, the LAMP model has been adapted to other componentry, though typically consisting of free and open-source software. For example, an equivalent installation on the Microsoft Windows family of operating systems is known as WAMP and an equivalent installation on macOS is known as MAMP.

4.1.1 Configuration of LAMP and PHP modules

Step 1: Install Apache

The Apache web server is currently the most popular web server in the world, which makes it a great default choice for hosting a website.

Apache can be installed using Ubuntu's package manager, apt. A package manager allows user to install most software pain-free from a repository maintained by Ubuntu.

sudo apt-get update

sudo apt-get install apache2

Step 2: Install MySQL

Now that Apache server is up and running, it is time to install MySQL. MySQL is a database management system. Basically, it will organize and provide access to databases where website can store information.

Again, one can use apt to acquire and install our software.

sudo apt-get install mysql-server php5-mysql

When the installation is complete, user needs to run some additional commands to get MySQL environment set up securely.

First, user needs to tell MySQL to create its database directory structure where it will store its information. This can be done by typing:

sudo mysql_install_db

Afterwards, we want to run a simple security script that will remove some dangerous defaults and lock down access to our database system a little bit. Start the interactive script by running:

sudo mysql_secure_installation

Step 3: Install PHP

PHP is the component of user setup that will process code to display dynamic content. It can run scripts, connect to MySQL databases to get information, and hand the processed content over to user's web server to display.

sudo apt-get install php5 libapache2-mod-php5 php5-mcrypt

sudo service apache2 restart

4.2 Modules and Screens

The portal consists of different screens for different functionalities to provide usability and aesthetic look to the user.

Advantages of Having Multiple Screens:

With so many designers using multiple screens, there must be some pretty significant advantages. Of course, everyone works differently, so the key is finding the setup that works best for you.

- Increased productivity
- Users use multiple programs simultaneously
- Sharing data between applications can be easier

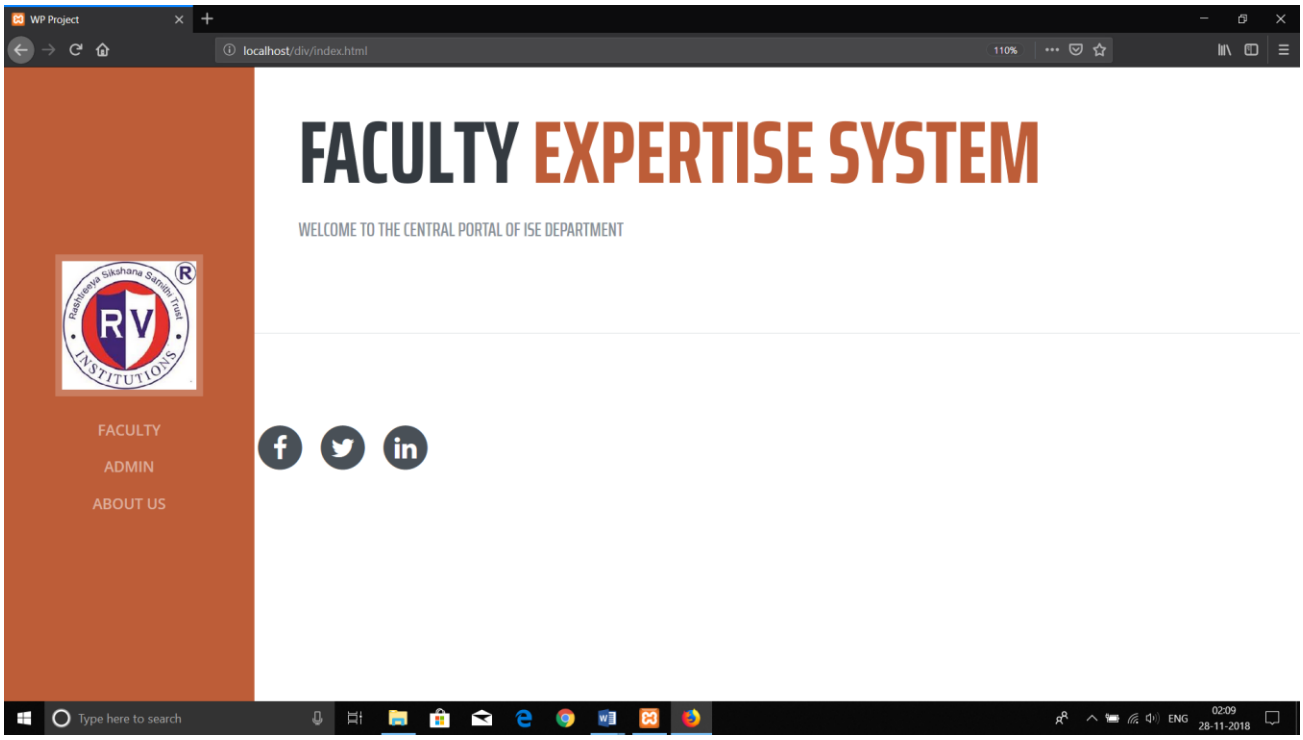


Fig. 4.1 Introduction Page of Faculty Expertise System

- On Click of About button directs the user to a page which explains the functionalities provided to all the end users of the portal and also gives the instructions on using the portal.
- On Click of Faculty button, it directs the user to the faculty login page.
- On Click of Admin button, it directs the user to admin login page.
- On Click of social media button, www.rvce.edu.in is opened on a new tab.

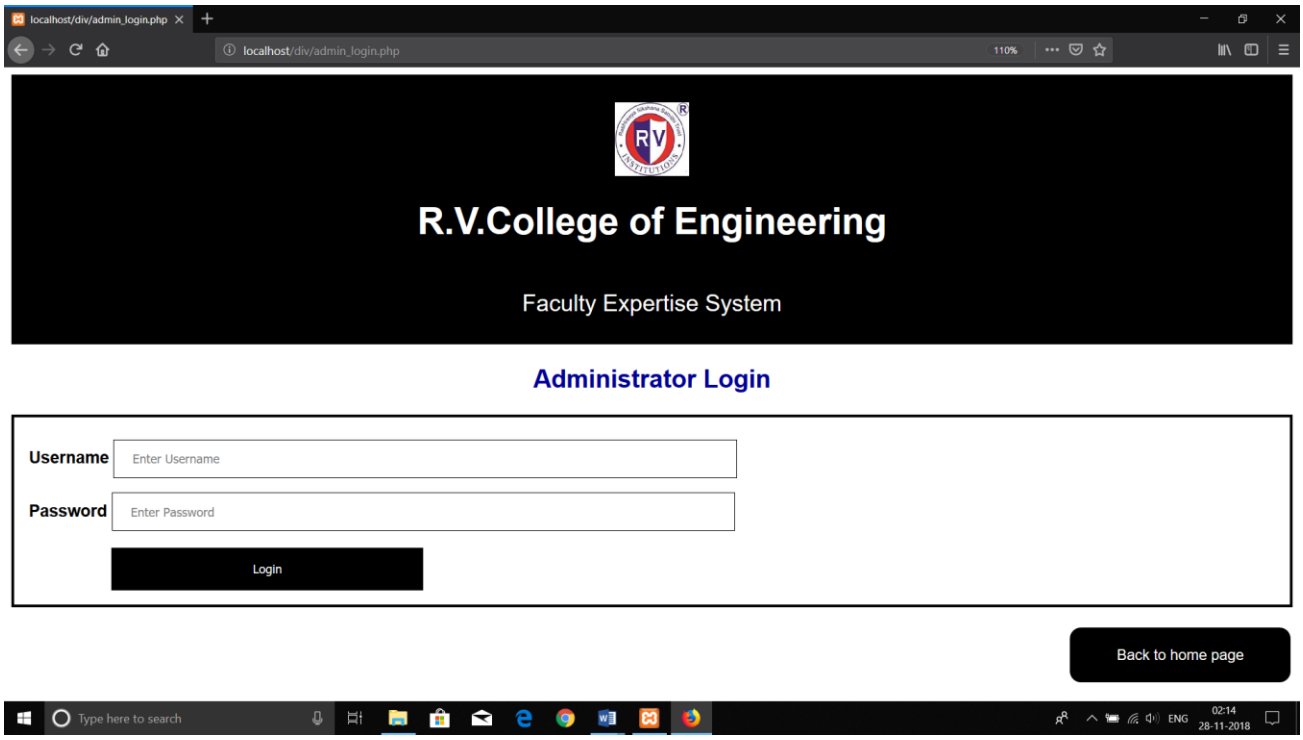


Fig. 4.2 Admin Login for faculty Expertise System

- User need to input admin ID and the correct password in order to login.
- User also has an option to back to index page by clicking on the “back to home” button.

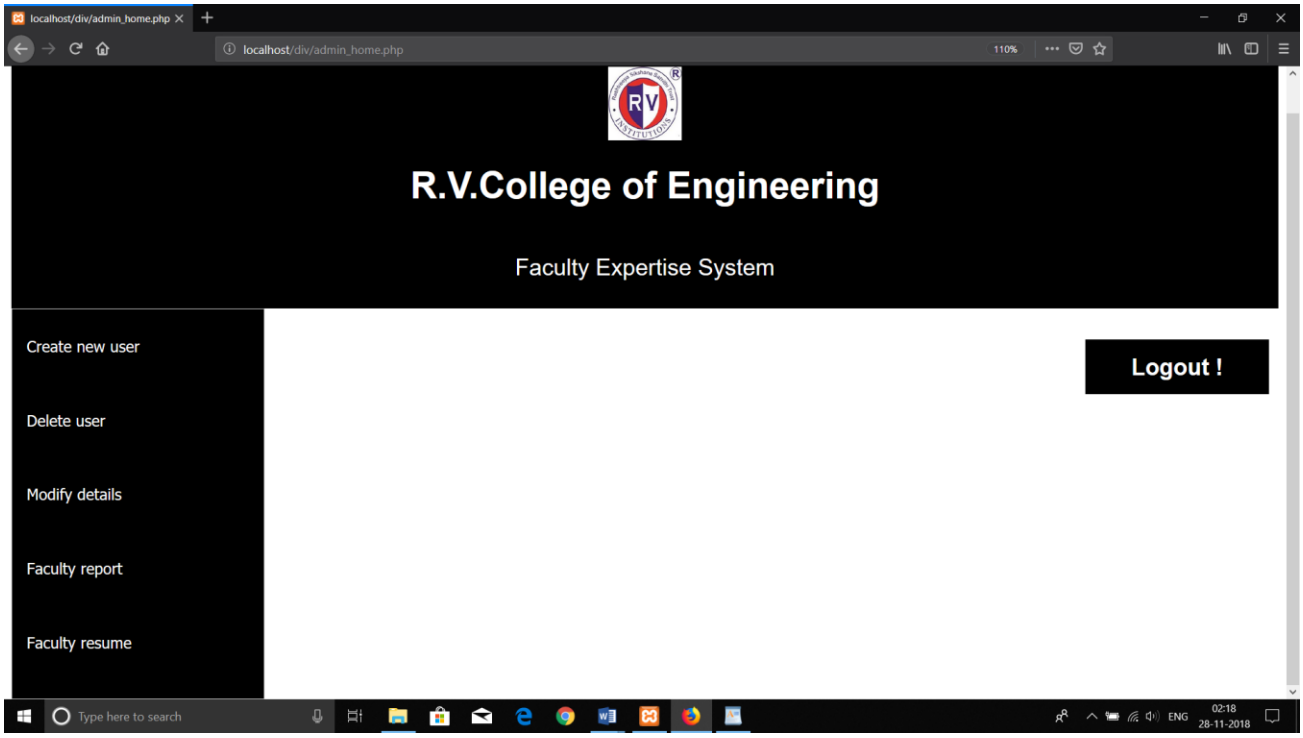


Fig. 4.3 Admin Menu for Faculty Expertise System

- Admin has privileges to create new user, delete existing users, modify details regarding a particular user, generate faculty report and resume.
- Admin can logout of the system by clicking on ”logout!” button.

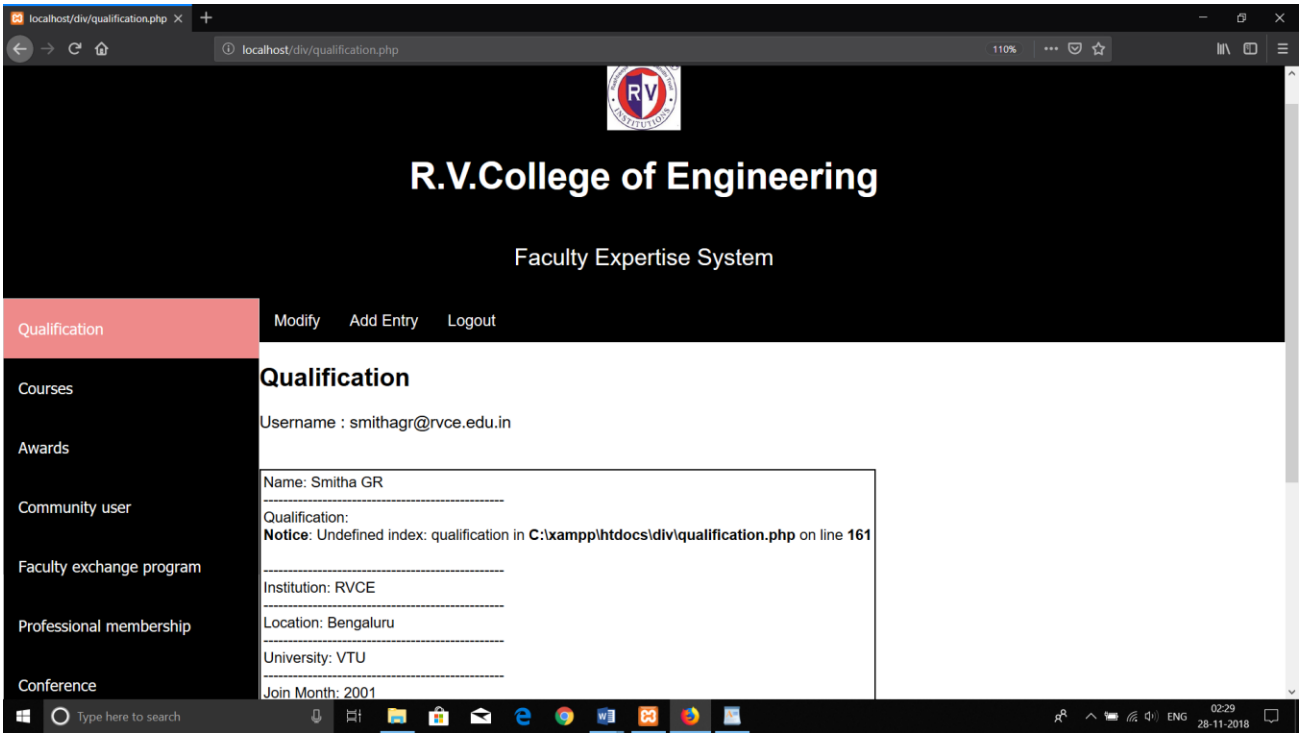


Fig. 4.4 Faculty Menu for Faculty Expertise System

- Faculty view unlocks options to view qualifications, courses, awards, exchange programs, membership, project etc. related to faculty.
- Faculty can also modify or delete entry by clicking on the respective field in the navigation bar.
- Navigation bar also features on hover feature which make it easier to follow the cursor on the screen.

CHAPTER 5
TESTING

5.1 Functional Testing

Functional test cases are independent of how software is implemented, so if the implementation changes, the test cases are still useful. All the possible functionalities provided to client must be tested; hence there may be redundancy among test cases.

ITEMS TO BE TESTED / NOT TESTED

- Faculty should be able to view their own details and correct them if they see any anomaly.
- Faculty should also be able to modify their existing details.
- They should also be able to delete any existing entry.
- Admin should be able to register any new faculty.
- Admin should be able to delete any user by entering the Faculty ID.
- Admin should have an option to verify details provided by faculty and delete them in case of any mistakes.
- Admin should be able to generate report based on faculty ID. This displays all the information regarding a particular faculty.
- At last, Admin should have an option to generate resume of a faculty. This is the consolidated report.

Item to Test	Test Description	Test Date	Responsibility
Admin_view	Able to login	29/10/18	Saksham
Admin_view	Add new user/faculty	29/10/18	Saksham
Admin_view	Delete user	29/10/18	Saksham
Admin_view	Modify details of existing user	29/10/18	Saksham
Admin_view	Generate report	29/10/18	Saksham
Admin_view	Resume Generation	29/10/18	Saksham
Faculty_view	Able to login	29/10/18	Saksham
Faculty_view	Able to view different attributes related to himself/herself.	29/10/18	Saksham
Admin_View	able to view modify existing information.	29/10/18	Saksham
Admin_View	able to add new information.	29/10/18	Saksham
Admin_View	Able to log out	29/10/18	Saksham

Table. 5.1 Functional Testing of different functionalities

5.2 Non - Functional Testing

Non-functional testing is a type of testing to check non-functional aspects (performance, usability, reliability) of a software application. It is designed to test the readiness of a system as per nonfunctional parameters which are never addressed by functional testing. Non-functional testing is equally important as functional testing and affects client satisfaction.

ITEMS TO BE TESTED / NOT TESTED

All the GUI elements should be tested for size, position, width, length and acceptance of character with respect to different browser and device. Displaying of error messages should be proper. Font size and style to be tested from readability and aesthetics perspective.

Item to Test	Test Description	Test Date	Responsibility
GUI Elements	Test the size, position, height of elements	27/10/18	Saksham
Interface aesthetics	Test the font size and color	28/10/18	Saksham
Content Spelling	Test the spelling of the content displayed on the webpage	28/10/18	Saksham

Table. 5.2 Non-Functional Testing of different functionalities

CHAPTER 6

CONCLUSION

Faculty Expertise System is a system which can be used in all the departments in order to maintain the records of the faculty effectively by providing customized results. It helps in providing error free functionality to the two types of users: faculty member as well as the administrator who is the head of the department. Hence, it assures in saving of time in finding the details related to a particular faculty member.

This project also has many benefits which include the automated resume generation of a faculty member, frequently used reports of a faculty member and many more. Hence, it will automate the monotonous tasks which are used by the faculty members using the traditional database techniques and hence results in effective management of faculty records. The project is based on the requirement specification of the user and the analysis of the existing system, with flexibility for future enhancement. The expanded functionality of today's software requires an appropriate approach towards software development. This Faculty expertise portal is designed for authorities and faculties in certain department. This make the data storing and retrieval process centralized.

Identification of the drawbacks of the existing system leads to the designing of computerized system that will be compatible to the existing system with the system which is more users friendly and more GUI oriented.

1.1 Future Enhancement

In my project Faculty expertise System, the web application will help the faculty and the administrator to manage the activities with ease. This project gave me an opportunity to learn about working disciplines of an institute, the working standards and kind of knowledge used by an institute and real-life day to day problems that faculty comes across. Also, we gained knowledge regarding how to deal with huge amount of attributes being used in order to generate resume. I have tried to make the UI as simple as possible without adding pictures to keep the application light and handy.

In future, the work of handling conflicts and further module development can be done which will make our project much more appealing to eyes.

APPENDIX A

1. Connection to Database

```
<?php

$host = "localhost";
$user = "root";
$pass="";
$db = "guestbook";
$conn = new mysqli($host,$user,$pass,$db);

?>
```

2. Administrator Login

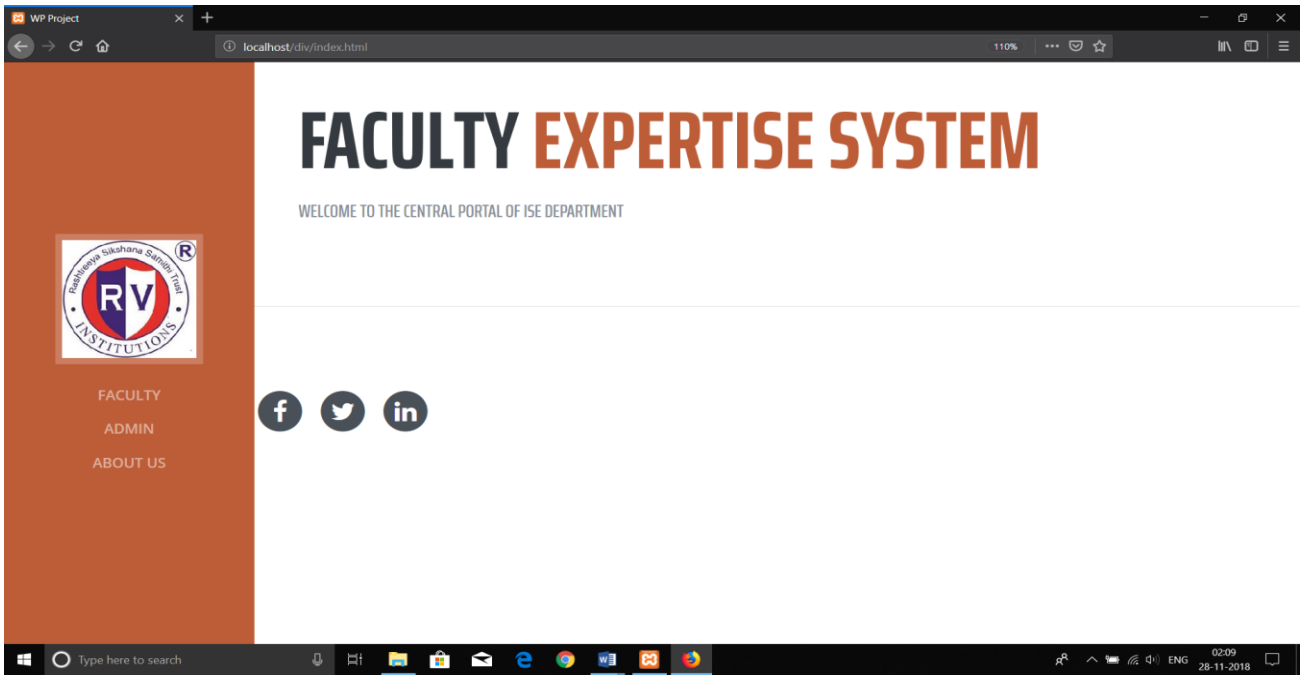
```
<?php
            if($_POST)
            {
            $host="localhost";
            $user="root";
            $pass="";
            $db="fes";
            $username=$_POST['username'];
            $password=$_POST['password'];


                  if($username=='admin' && $password=='admin@123')
                  {
                        session_start();
                        $_SESSION['fes']='true';
                        $_SESSION['username']=$username;
                        $_SESSION['password']=$password;
                        header('location:admin_home.php');
                  }
                  else{

                  echo 'Wrong username or password.Please try again';
                  }

            }


            ?>
            <h2 style="color:#000099"><center>Administrator
Login</center></h2>
```

3. Information Retrival from database

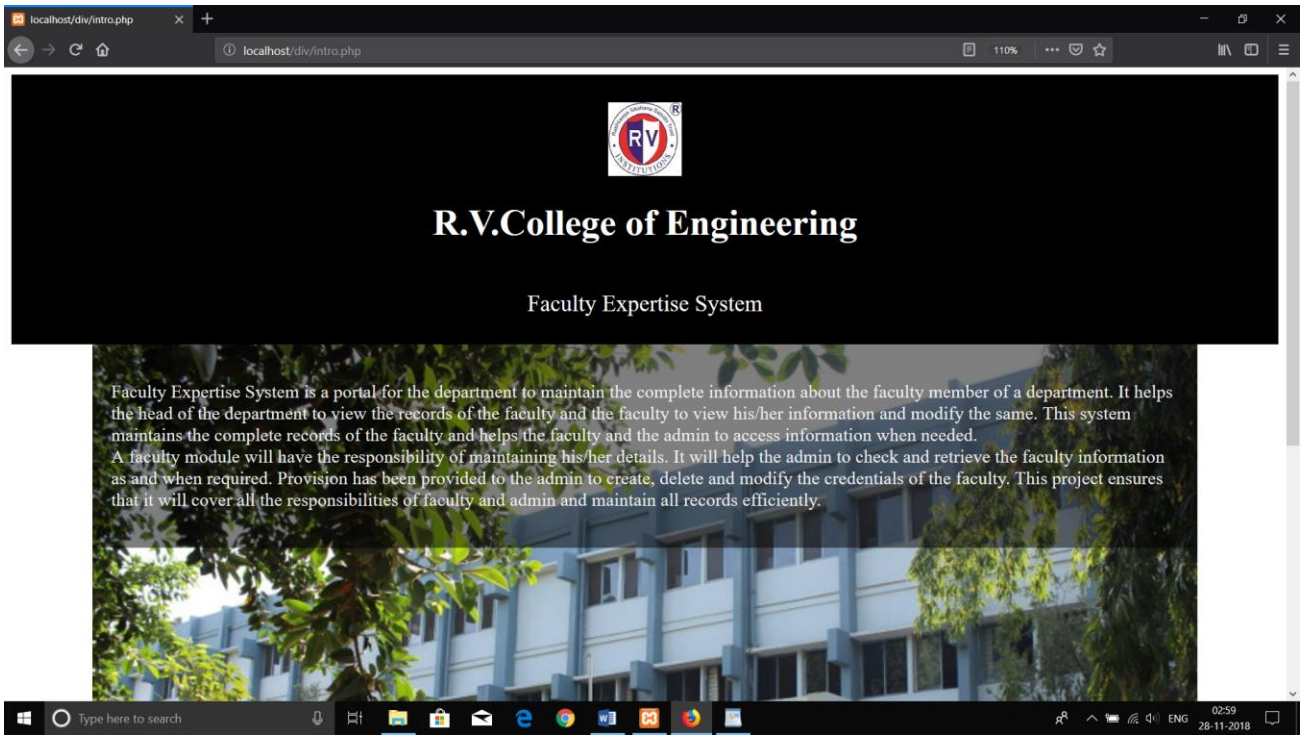
```
<?php

session_start();


$host="localhost";
           $user="root";
           $pass="";
           $db="fes";
           $conn=mysqli_connect($host,$user,$pass,$db);


 echo 'Username : ';echo $_SESSION['username'];
 $username=$_SESSION['username'];
 echo '<br><br>';
$query="select * from faculty_member,courses where id=fid and
username='$username'";
         $result = mysqli_query($conn,$query);
         echo "<table id='display'>";
         while($row = mysqli_fetch_array($result))
         {

                 echo"<br>";
            echo"<tr><td>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "Name:        "; echo $row['name'];echo "<br>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "Course Code:      "; echo $row['course_code'];echo
"<br>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "Course Name:      "; echo $row['course_name'];echo
"<br>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "Semester:         "; echo $row['semester'];echo
"<br>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "UG_PG:       "; echo $row['ug_pg'];echo "<br>";
               echo "--------------------------------------------------
";echo "<br>";
               echo "Number of Students:          "; echo
$row['no_of_students'];echo "<br>";
               echo "--------------------------------------------------
";echo "<br>";
```

```
              echo "Syllabus Year:          "; echo
$row['syllabus_year'];echo "<br>";
              echo "-------------------------------------------------
";echo "<br>";
              echo "Academic Year:          "; echo
$row['academic_year'];echo "<br>";
              echo "-------------------------------------------------
";echo "<br>";

         }

     echo "</table>";
?>
```

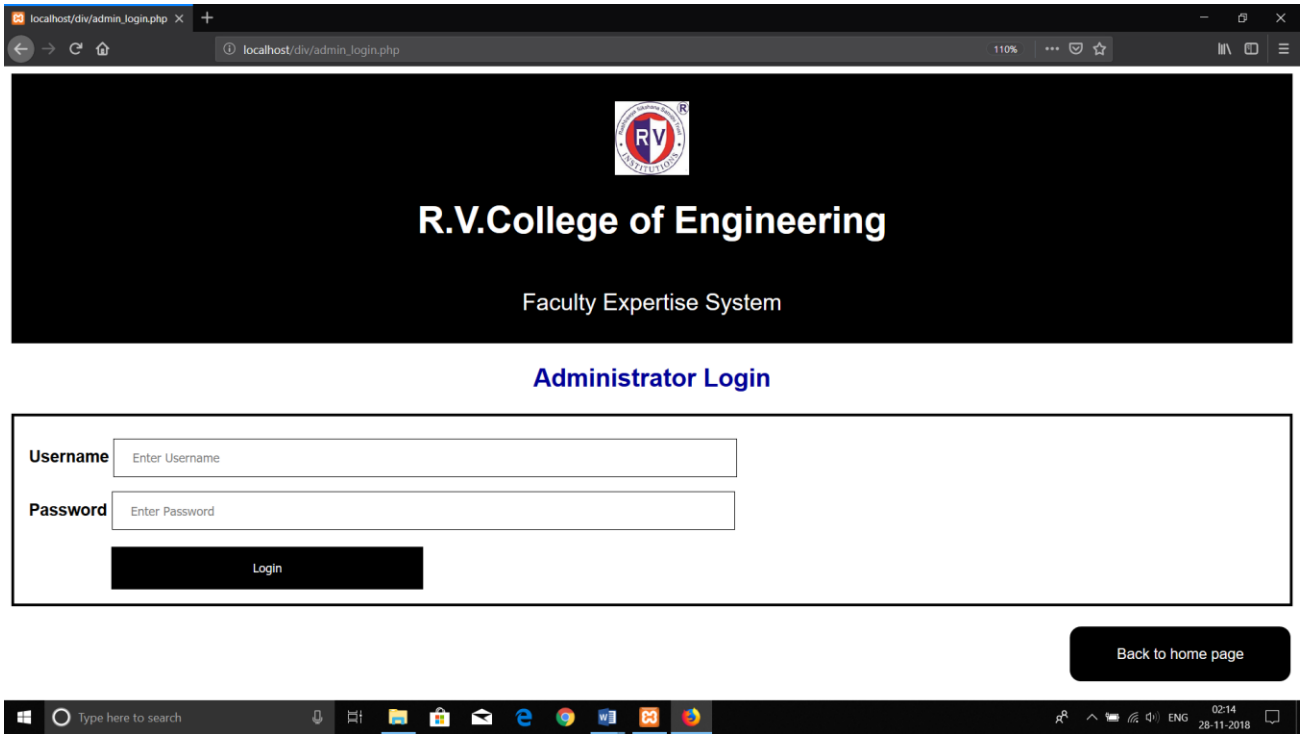
APPENDIX B



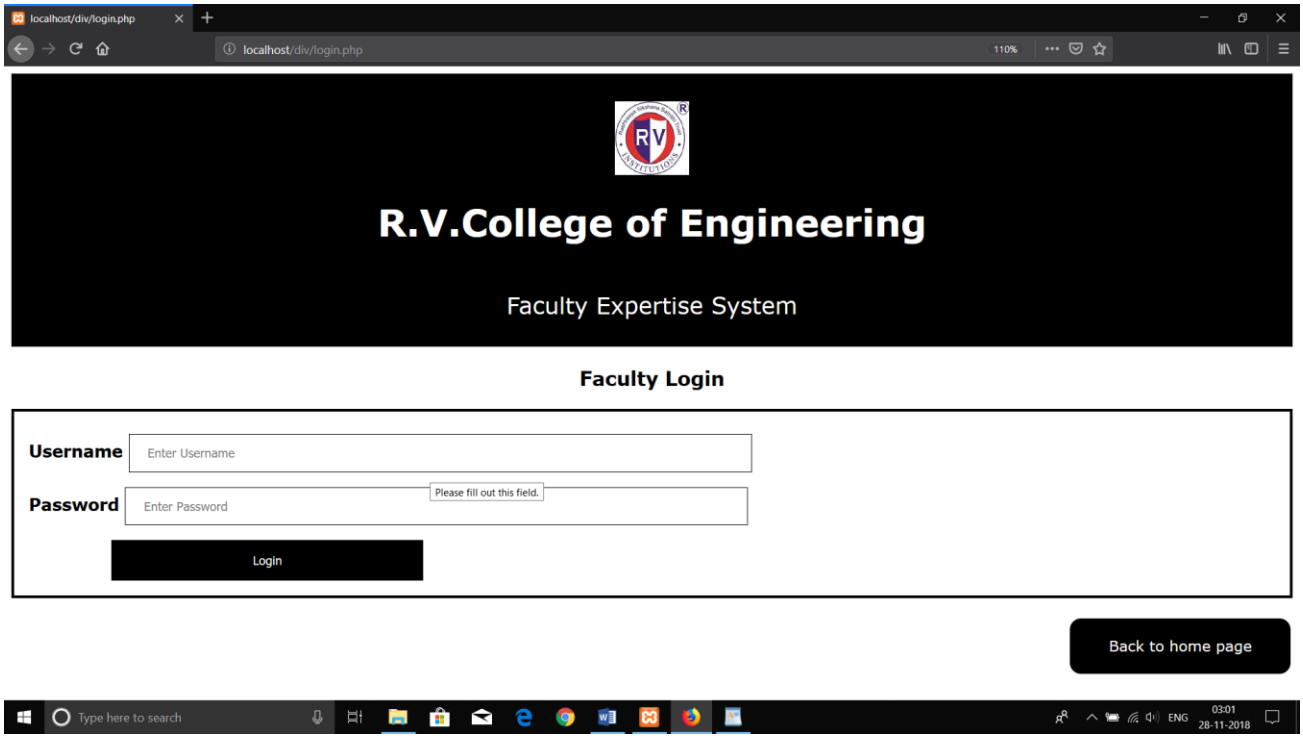
Introduction Page



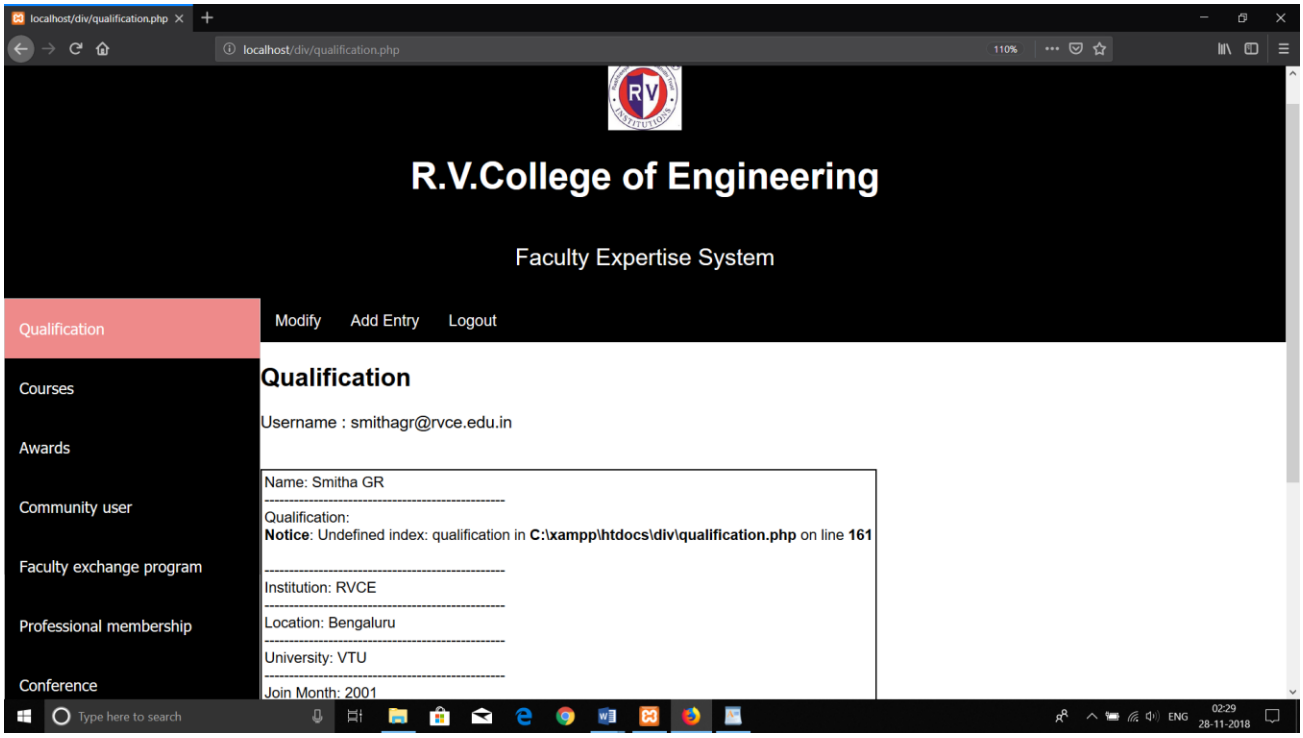
About us Page



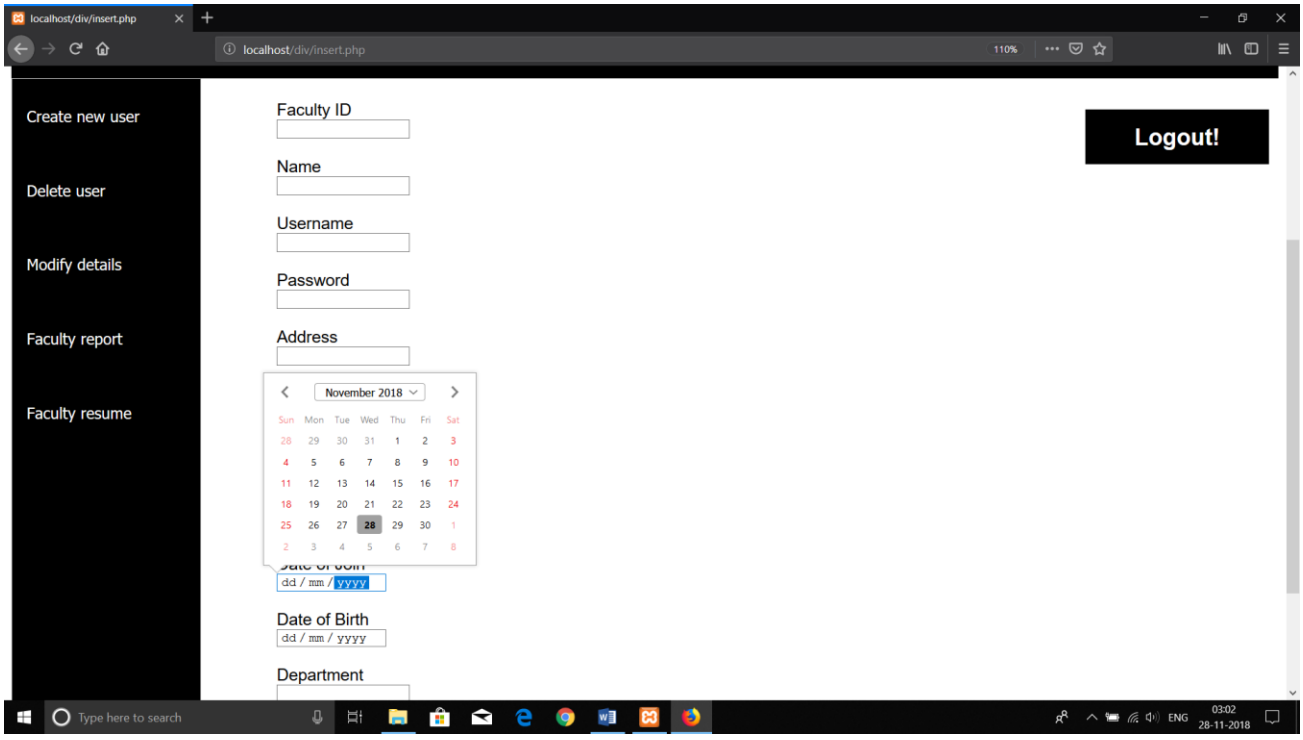
Login Page (admin)



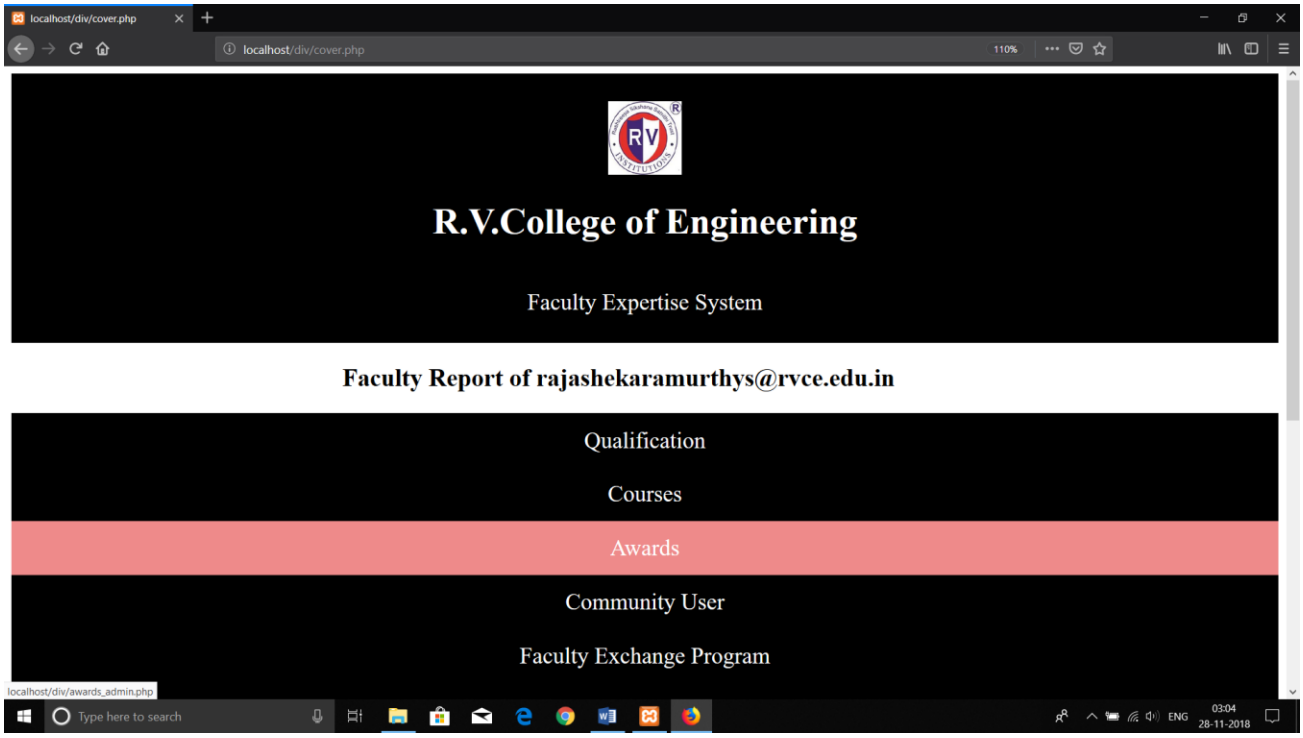
Login page (faculty)



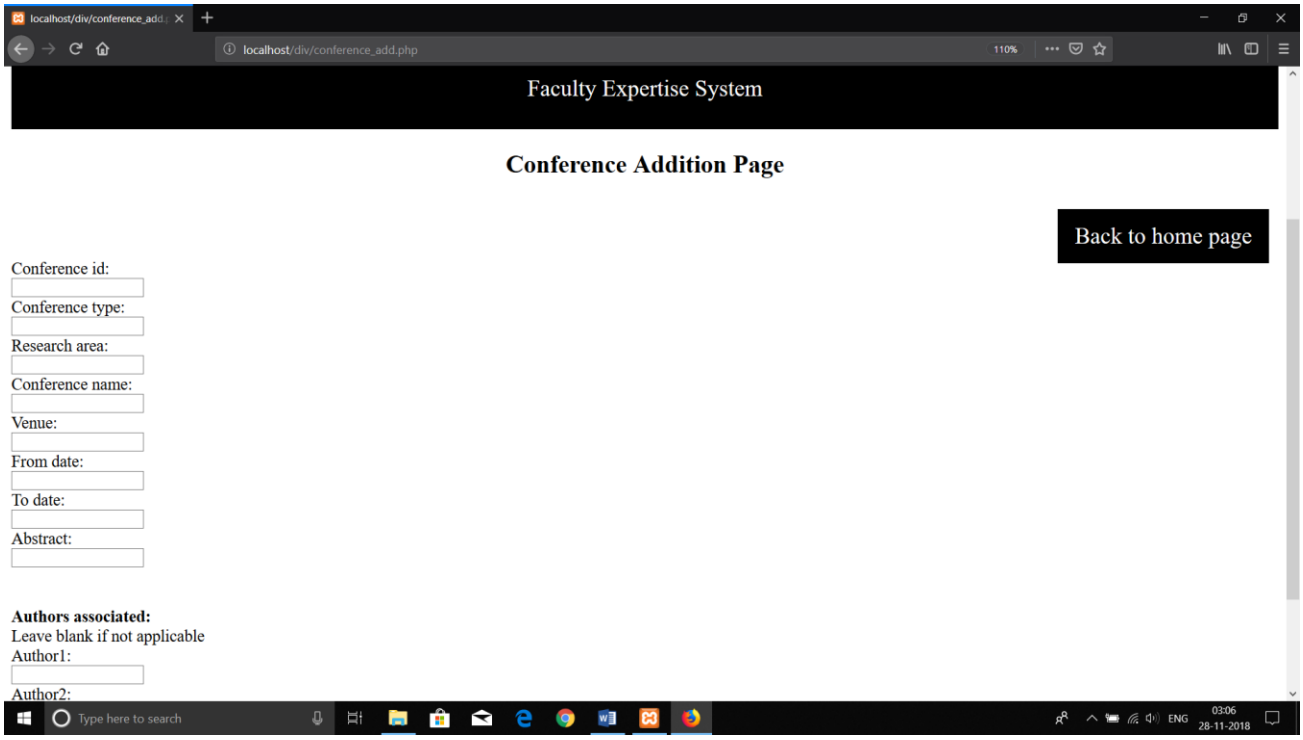
Faculty Details



New user creation by Admin



Faculty Report Generated by Admin



Details update by Faculty