VISVESVARAYA TECHNOLOGICAL UNIVERSITY
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BANGALORE INSTITUTE OF TECHNOLOGY
K.R. Road, V.V.Puram, Bangalore-560 004

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

DATABASE MANAGEMENT SYSTEM MINI PROJECT

18CSL58

"STUDENT RESULT MANAGEMENT SYSTEM"

Submitted By

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for the academic year 2021-22

Department of Computer Science & Engineering
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Department of Computer Science & Engineering

Certificate

This is to certify that the implementation of **DBMS MINI PROJECT** entitled “**STUDENT RESULT MANAGEMENT SYSTEM**” has been successfully completed by

USN: 1BI19CS038 **NAME: BHARATH GOWDA B**

of V semester B.E. for the partial fulfillment of the requirements for the Bachelor's degree in Computer Science & Engineering of the Visvesvaraya Technological University during the academic year 2021-2022.

Lab In charge :

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Bangalore Institute of Technology	Bangalore Institute of Technology
Bangalore	Bangalore

Examiners: 1) 2)

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Bharath Gowda B
1BI19CS038

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INTRODUCTION

INTRODUCTION

1.1 OVERVIEW

Student Result Management System is a web-based application that mainly focuses on providing the results to the student and the faculty. The student check their respective results using their University registered recognition id’s along with their grades and percentage of that particular semester.

The student accessing their results through college site is more convenient and the faculty can easily analyse the pass and failure of a particular subject. The system is divided into three modules- Student, Faculty and Administrator. The student using his roll number can view his results and the faculty using the joining year and the subject name and view the analysis of pass and failure count in the selected subject.

1.2 PROBLEM STATEMENT

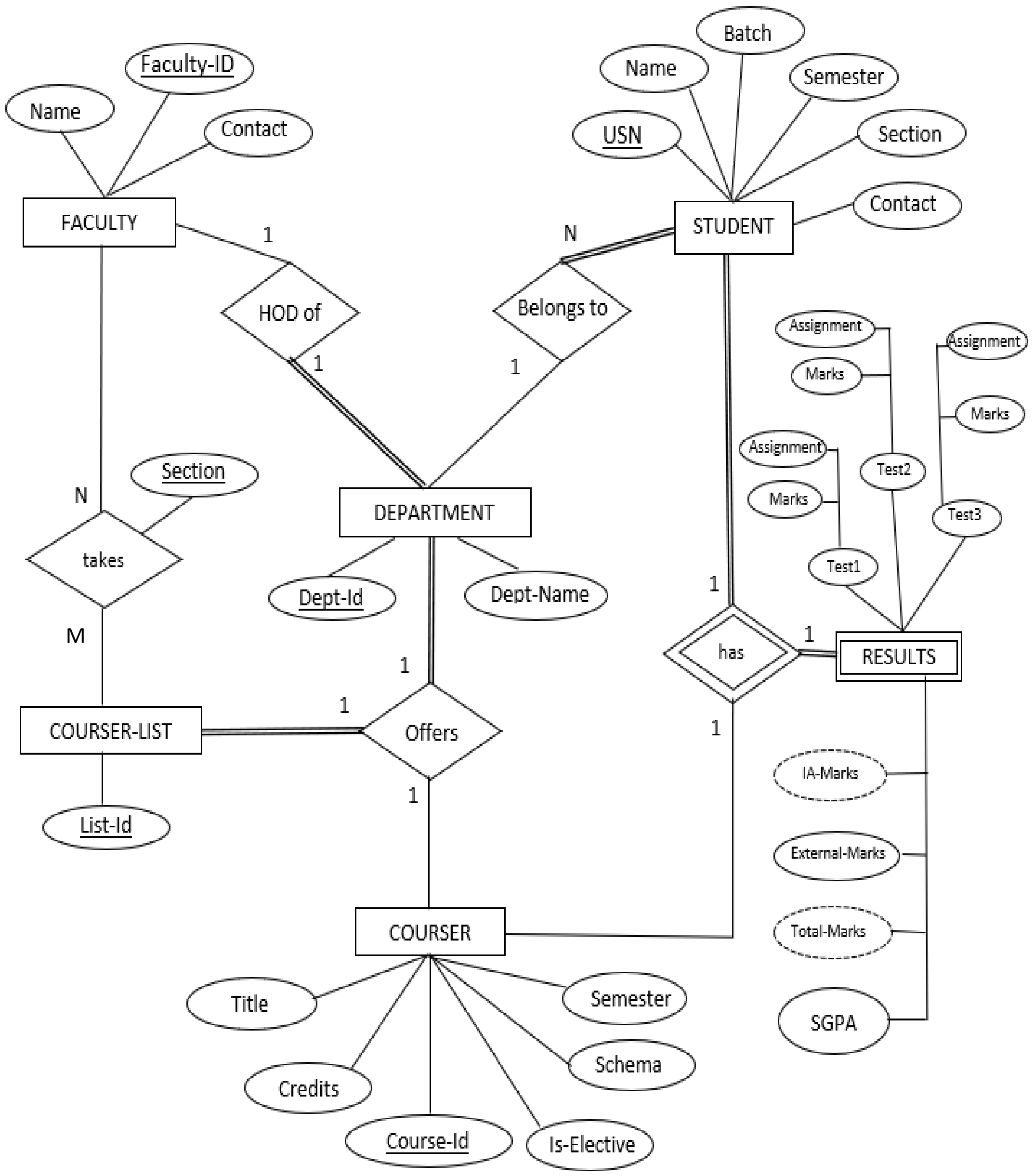
“To design and develop a system for managing the results of students.”

CHAPTER 2

BACK END DESIGN

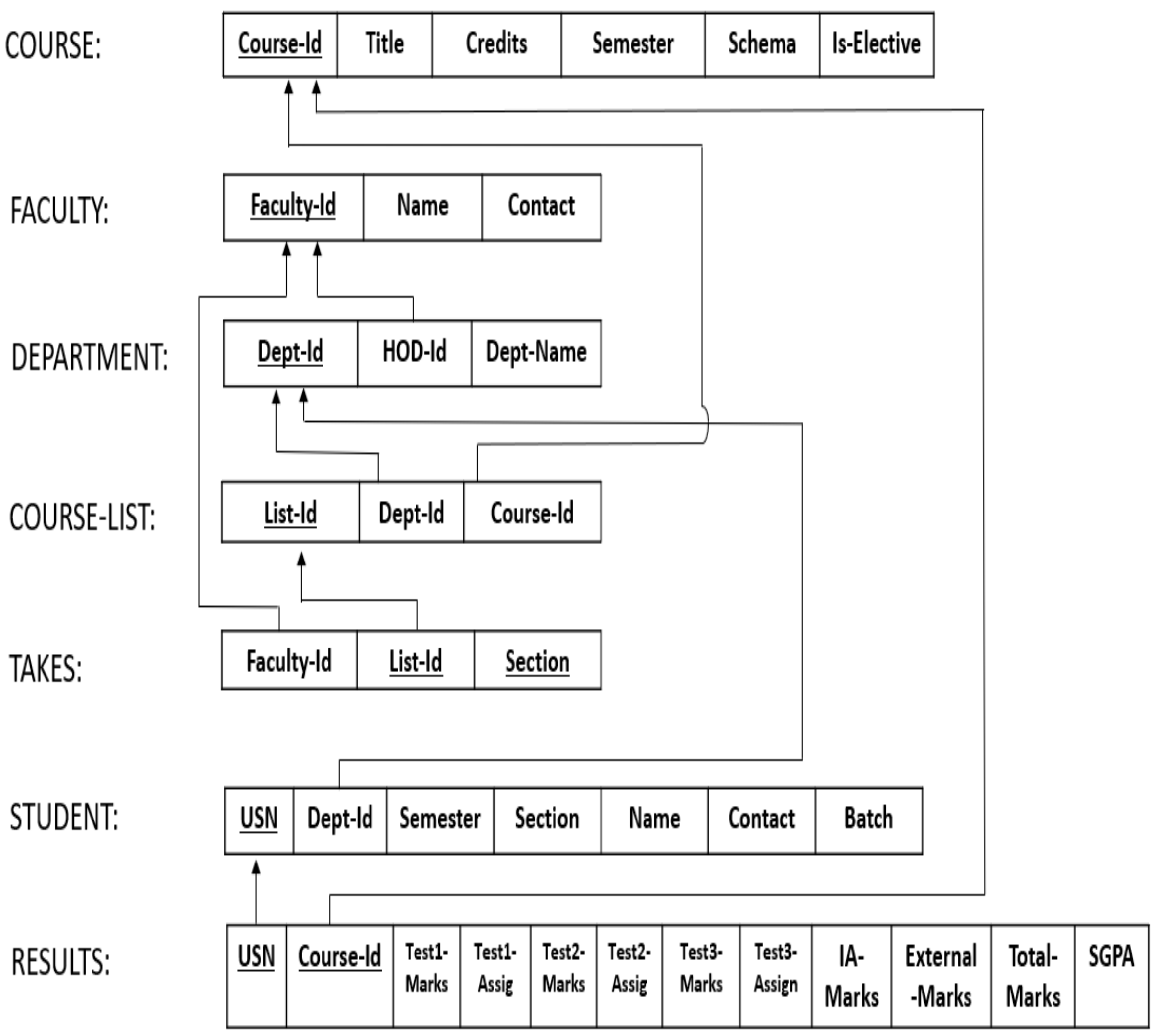
BACKEND DESIGN

2.1 CONCEPTUAL DATABASE DESIGN



2.1 ER DIAGRAM

2.2 LOGICAL DATABASE DESIGN



2.2 ER TO RELATIONAL MAPPING

2.3 NORMALISATION

Database Normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eliminate data redundancy and undesirable characteristics like Insertion, Update and Deletion Anomalies. It is a multi-step process that puts data into tabular form by removing duplicated data from the relation tables.

Normalization is used for mainly two purposes,

- Eliminating redundant(useless) data.
- Ensuring data dependencies make sense i.e. data id logically stored.

FIRST NORMAL FORM (1NF):

As per First Normal Form

a) There are no duplicated rows in the table.
b) Each cell is single valued or atomic.

SECOND NORMAL FORM (2NF):

As per Second Normal Form, a table is in 2NF iff it is in 1NF and every non prime attribute is not partially dependent on any key of the table.

THIRD NORMAL FORM (3NF):

Third Normal Form applies that every non-prime attribute of table must be dependent on primary key, or we can say that, there should not be the case that a non-prime attribute is determined by another non-prime attribute. So this *transitive functional dependency* should be removed from the table and also the table must be in the Second Normal Form.

2.3.1 NORMALISATION OF LOGIN

FACULTY:

Faculty-Id	**Name**	**Contact**
F100	Shobha	9900783185
F101	Kiran	9988075452
F102	Yashwanth	9986451235
F103	Kishor	7844561540
F104	Suma	9845540044

- FD = {Faculty-Id → {Name, Contact}}
- The FACULTY relation is in 1NF since all columns have atomic and unique values.
- The relation is in 2NF since every nonprime attribute in FACULTY is fully functionally dependent on the primary key **Faculty-Id**.
- None of the non-prime attribute of FACULTY is transitively dependent on the primary key. So, it is in 3NF.

COURSE:

Couse-Id	**Title**	**Credits**	**Semester**	**Schema**	**Is-Elective**
18MAT11	Math-I	4	1	2018	0 (False)
18CS54	ATCI	3	5	2018	0 (False)
18CS641	Advance-Java	3	6	2018	1 (True)
18CS642	Image-Processing	3	6	2018	1 (True)
18EE78	Adv-Electronics	3	7	2018	0 (False)

- FD = {Course-Id → {Title, Credits, Semester, Schema, Is-Elective}}
- The COURSE relation is in 1NF since all columns have atomic and unique values.
- The relation is in 2NF since every nonprime attribute in COURSE is fully functionally dependent on the primary key **Course-Id**.
- None of the non-prime attribute of COURSE is transitively dependent on the primary key. So, it is in 3NF.

- **Consider coursers offered by a department including faculty in-charge for each course:**

Department-Course-List: (R)

List-Id	**Dept-Id**	**Dept-Name**	**Hod-Id**	**Course-Id**	**Faculty-Id**	**Section**
L100	D100	CSE	F100	18CS54	F102	A
L100	D100	CSE	F100	18CS54	F102	B
L101	D100	CSE	F100	18CS641	F103	A
L102	D100	CSE	F100	18MAT11	F104	A
L103	D101	EEE	F101	18MAT11	F104	A
L104	D101	EEE	F101	18EE78	F101	A
L104	D101	EEE	F101	18EE78	F101	B

FD: {

List-Id → {Dept-Id, Course-Id}

Dept-Id → {Dept-Name, Hod-Id}

{List -Id, Section} → Faculty-Id

}

Candidate key:

{List-Id, Section}$^+$ = {Dept-Id, Dept-Name, Hod-Id, Course-ID, Faculty-Id}

Prime Attribute: {List-Id, Section}

Non-Prime Attribute: {Dept-Id, Dept-Name, Hod-Id, Course-ID, Faculty-Id}

- The given relation R is in 1NF since all columns have atomic and unique values.
- The relation is not in 2NF since Dept-Id and Course-Id is dependent only on List-Id which is a proper subset of Candidate Key.
- Divide the Relation into two relations, one Department-Courses((List-Id, Course-Id, Dept-Id, Dept-Name, Hod-Id), another one Faculty-Takes(Faculty-Id, List-Id, Section}

DEPARTMENT-COURSE:

List-Id	**Course-Id**	**Dept-Id**	**Dept-Name**	**Hod-Id**
L100	18CS54	D100	CSE	F100
L101	18CS641	D100	CSE	F100
L102	18MAT11	D100	CSE	F100
L103	18MAT11	D101	EEE	F101
L104	18EE78	D101	EEE	F101

- The relation is in 2NF since every nonprime attribute is fully functionally dependent on the primary key **List-Id**.
- The non-prime attribute Dept-Name and Hod-Id are transitively dependent on List-Id. Hence the relation is not in 3NF
- Divide the Relation into two relations, one Department(Dept-Id, Dept-Name, Hod-Id) another one Courses-List(List-Id, Course-Id, Dept-Id,}

DEPARTMENT:

Dept-Id	**Dept-Name**	**Hod-Id**
D100	CSE	F100
D101	EEE	F101

- None of the non-prime attribute of DEPARTMENT is transitively dependent on the primary key. So, it is in 3NF.

COURSE-LIST:

List-Id	**Dept-Id**	**Course-Id**
L100	18CS54	D100
L101	18CS641	D100
L102	18MAT11	D100
L103	18MAT11	D101
L104	18EE78	D101

- None of the non-prime attribute of STUDENT is transitively dependent on the primary key. So, it is in 3NF.

FACULTY-TAKES:

Faculty-Id	**List-Id**	**Section**
F102	L100	A
F102	L100	B
F103	L101	A
F104	L102	A
F104	L103	A
F101	L104	A
F101	L104	B

- None of the non-prime attribute of FACULTY_TAKES is transitively dependent on the primary key. So, it is in 3NF.

STUDENT:

<u>**USN**</u>	**Name**	**Contact**	**Dept-Id**	**Batch**	**Semester**	**Section**
1BI18CS001	Girish	9988775461	D100	2018	7	A
1BI19CS002	Vivek	9845678541	D100	2019	5	A
1BI19CS058	Hairsh	9655874575	D100	2019	5	B
1BI19CS161	Suyog	6988450210	D101	2019	5	B

- The STUDENT relation is in 1NF since all columns have atomic and unique values.
- The relation is in 2NF since every nonprime attribute in STUDENT is fully functionally dependent on the primary key **USN**.
- None of the non-prime attribute of STUDENT is transitively dependent on the primary key. So, it is in 3NF.

RESULTS:

<u>**USN**</u>	<u>**Course-Id**</u>	**Test-1 Marks**	**Test-I Ass.M**	**..**	**IA Marks**	**External Marks**	**Total Marks**	**SGPA Points**
1BI19CS002	18MAT11	30	10		40	49	89	36
1BI19CS002	18CS54	29	8		35	45	80	27
1BI19CS058	18CS54	30	10		38	48	86	27
1BI19CS161	18MAT11	25	7		38	50	88	36
1BI19CS161	18EE78	15	8		30	35	75	24

- The RESULTS relation is in 1NF since all columns have atomic and unique values.
- The relation is in 2NF since every nonprime attribute in RESULTS is fully functionally dependent on the primary key **(USN, Course-Id)**.
- None of the non-prime attribute of RESULTS is transitively dependent on the primary key. So, it is in 3NF.

CHAPTER 3

FRONT END DESIGN

FRONT END DESIGN

3.1 HTML

Hypertext Markup Language (HTML) is the main markup language for creating web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets, within the web page content. HTML tags most commonly come in pairs like and , although some tags represent empty elements and so are unpaired. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. CSS Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can also be applied to any kind of XML document. CSS is designed primarily to enable the separation of document content (written in HTML or a similar markup language) from document presentation, including elements such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content.

3.2 CASCADING STYLE SHEETS (CSS)

Cascading Style Sheets (**CSS**) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML.[1] CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility provide more flexibility and control in the specification of presentation characteristics enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, which reduces complexity and repetition in the structural content and enable the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

The name *cascading* comes from the specified priority scheme to determine which style rule applies if more than one rule matches a particular element. This cascading priority scheme is predictable.

The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet media type (MIME type) is registered for use with CSS by RFC 2318 (March 1998). The W3C operates a free CSS validation service for CSS documents.

In addition to HTML, other markup languages support the use of CSS including XHTML, plain XML, SVG, and XUL.

3.3 JAVA SCRIPT

JavaScript often abbreviated as JS, is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled, and multiparadigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions. Alongside HTML and CSS, JavaScript is one of the core technologies of the Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behaviour and all major web browsers have a dedicated JavaScript engine to execute it.

3.4 HARDWARE AND SOFTWARE CONFIGURATION

Hardware Configuration

1. Processor : Intel Pentium 4.0
2. Ram : 2GB
3. Hard disk : 500GB

Software Configuration

1. Operating system : windows 10
2. Frond-End : HTML, JAVA SCRIPT
3. Back-End : NodeJS, Express
4. Database : ORACLE

CHAPTER 4

MAJOR MODULES

MAJOR MODULES

❖ Admin:

- Admin has complete access to all the resources. Admin creates new users (like faculty, student), update details of the user. Any complex operations required are done by admin.

❖ Faculty:

- **Login:** Faculty can be both teaching and non-teaching staff. Admin creates account for new faculty and provides them with user-id and password. Faculty can login into portal using the same.

- **Course-taken:** Faculty can take different course to different classes, Course-taken module gives details about it.

- **Update-Marks:** This module allows a Faculty to retrieve, update marks of each students in a particular test. The output of this module will be in table form.

- **CSV-Operation:** This module allows a Faculty to export results of student in csv format. Which can be opened in Excel for any further operations. Faculty can import a csv file to update marks as long as the file follows required constraints.

- **Maths-Operation:** This module allows a Faculty to use simple math operations (like addition, subtraction, average) for updating marks. Ex. Operation to find the final internal marks based on three tests average.

❖ Department:

- **HOD:** For each department there is one Faculty as HOD. This module allows the HOD to monitor other faculties working for the department.

- **Course-Offered:** The HOD can add or remove courses offered by the department for a particular semester based on university schema.

❖ Student:

- **Login:** Student can use there USN (or any Unique ID provided by the Institution) and password distributed by admin as user credentials.

- **Check-Result:** This module allows the Students to check their marks (updated by faculty in-charge). Students can also check their previous semester results.

- **Contact-Faculty:** This module connects Student with faculty in-charge for any querying. Student can only contact the faculty in-charge of a particular course in current semester of the student.

CHAPTER 5

IMPLEMENTATION

IMPLEMENTATION

5.1 CREATE STATEMENTS

```
Create table user_login(
user_id varchar(20) primary key,
password varchar(20) not null,
type number(1) default 2,
token varchar(20),
login_fail number(2) default 0,
token_fail number(5) default 0
);

create table course(
course_id varchar(10) primary key,
title varchar(30) not null,
semester number(2),
schema number(4),
credits number(2),
isEelective number(1),
constraint ckc check(credits >=0 and semester > 0)
);

create table faculty(
faculty_id varchar(20),
name varchar(20) not null,
contact number(10),
photo_container varchar(10) default null,
constraint pkf primary key(faculty_id),
constraint fkf foreign key(faculty_id) references user_login(user_id) on delete cascade
);

create table department(
dept_id varchar2(10),
hod_id varchar2(20),
dept_name varchar2(50) not null,
constraint pkd primary key(dept_id),
constraint fkd foreign key(hod_id) references faculty(faculty_id) on delete set null
);

create table course_list(
list_id varchar(10),
course_id varchar(10),
dept_id varchar(10),
constraint pkcf primary key(list_id),
constraint fkcf1 foreign key(dept_id) references department(dept_id) on delete cascade,
constraint fkcf2 foreign key(course_id) references course(course_id) on delete cascade,
constraint ukcf unique (dept_id,course_id)
);

create table takes(
faculty_id varchar(20),
list_id varchar(10),
section varchar(2),
constraint pkct primary key(list_id,section),
constraint fkct1 foreign key(faculty_id) references faculty(faculty_id) on delete cascade,
constraint fkct foreign key(list_id) references course_list(list_id) on delete cascade
);


create table student(
usn varchar(20),
name varchar(30),
dept_id varchar(10),
batch number(4),
semester number(2) default 0,
section varchar(2),
contact number(10),
photo_container varchar(10) default null,
constraint pkss primary key(usn),
constraint fks1 foreign key(dept_id) references department(dept_id) on delete cascade,
constraint fks2 foreign key(usn) references user_login(user_id) on delete cascade
);


create table results(
usn varchar(20),
course_id varchar(20),
test1_marks number(3) default -2,
test1_assignment number(3) default -2,
test2_marks number(3) default -2,
test2_assignment number(3) default -2,
test3_marks number(3) default -2,
test3_assignment number(3) default -2,
IA_marks number(3) default -2,
external_marks number(3) default -2,
total number(3) default -2,
sgpa number(3) default -2,
constraint pkr primary key(usn,course_id),
constraint fkr1 foreign key(usn) references student(usn) on delete cascade,
constraint fkr2 foreign key(course_id) references course(course_id) on delete cascade
);
```

5.2 FRONT END CODE

5.2.1 LOGIN PAGE

```
<html>
    <head>
        <title>
            BIT-Result Portal
        </title>
        <script src='./static/JS/axios.min.js'></script>
        <link rel="stylesheet" href='./static/CSS/login.css'>
    </head>
    <body>
        <div id='home-page'>
            <div class='left-home' onclick="window.open('https://bit-bangalore.edu.in')">
                <img class='background' src='./static/images/background1.jpg'>
            </div>
            <div class='right-home'>
                <div class='main-form'>
                    <form class='login-form' id='id-login-form'>
                        <h3> STUDENT / FACULTY</h3>
                        <div>
                            <input id='username' type="text"  placeholder="username" required>
                        </div>
                        <div>
                            <input id='password' type="password" placeholder="password"
required>
                        </div>
                        <div >
                            <button id='loginButton' type='submit'>
                                <span>LOGIN</span>
                            </button>
                        </div>
                        <span style='color:red;font-style: italic;font-size: 14px;'
id='authentication-error'></span>
                    </form>
                    <div class='quick-link'>
                        <div>
                            <a href="https://vtu.ac.in/">
                                <img src="static/icons/vtulogo.png"/>
                            </a>
                        </div>
                        <div>
                            <a href='https://www.linkedin.com/school/bitsince1979/'>
                                <img src="static/icons/linkedin--v1.png"/>
                            </a>
                        </div>
                        <div>
                            <a href="https://www.facebook.com/bitsince1979">
                                <img src="static/icons/facebook--v1.png"/>
```

```
 </a>
                    </div>
                    <div>
                        <a href="https://www.instagram.com/bitsince1979/">
                            <img src="static/icons/instagram-new--v2.png"/>
                        </a>
                    </div>
                    <div>
                        <a href="https://www.twitter.com/bitsince1979">
                            <img src="static/icons/twitter--v1.png"/>
                        </a>
                    </div>
                    <div>
                        <a href="https://www.youtube.com/bitsince1979">
                            <img src="static/icons/youtube-play.png"/>
                        </a>
                    </div>
                    <div>
                        <a href="https://goo.gl/maps/AsrhV4234NU3k8fa8">
                            <img src="static/icons/youtube-play.png"/>
                        </a>
                    </div>
                </div>
            </div>
        </div>
    </div>
    <script>
      document.getElementById('id-login-form').addEventListener('submit',function(e){
            e.preventDefault();
            login();
        })

        async function login(){
           var user = {
            'username' : document.getElementById('username').value,
            'password' : document.getElementById('password').value
           }
           var res = await axios.post('/home/login',user)
           console.log(res.data)
           if(res.data.error){
               document.getElementById('authentication-error').innerHTML = 'username or
password incorrect'
               document.getElementById('password').value = ''
           }

           else{
               window.sessionStorage.setItem('username',user.username)
               window.sessionStorage.setItem('token',res.data.token)
               if(res.data.type.toLowerCase() == 'student'){
                    window.open('/student','_self')
                }

else if(res.data.type.toLowerCase() == 'admin'){
                    window.open('/admin','_self')
                }
                else if(res.data.type.toLowerCase() == 'faculty'){
                    window.open('/faculty','_self')
                }
            }
        }
    </script>
  </body>
</html>
```

5.2.2 STUDENT PAGE

```
<html>
  <head>
    <title>
      BIT-Result Portal
    </title>
    <script src='./static/JS/axios.min.js'></script>
    <link rel="stylesheet" href='./static/CSS/navBar.css'>
    <link rel="stylesheet" href='./static/CSS/faculty-home.css'>
    <link rel="stylesheet" href='./static/CSS/table.css'>
  </head>
  <style>
    #root{
      min-height: 100vh;
    }
    .table-list th{
      min-width: 80px;
    }
  </style>
  <body>
    <nav class="navbar">
      <div class='nav-left'>
        <div class='app-logo'><img src='./static/images/logo.png' class="medium-
icon"></div>
        <div class='app-name'> Bangalore Institute Of Technology </div>
      </div>
      <div class='nav-right'>
        <ul>
          <li class='active' id='main-options-home'><a>Home</a></li>
          <li id='main-options-professors'><a >Professors</a></li>
          <li id='main-options-results'><a >Results</a></li>
          <li class='nav-userinfo'>
            <label class="nav-userpic" for='upload-pic'>
              <img id='user-icon'  src='static/icons/thumnail.png'>
            </label>
```

```
<input type='file' id='upload-pic' accept="image/*" style="display: none;">
                  <div class='nav-username' id='username'></div>
               </li>
            </ul>
         </div>
      </nav>
      <div id='home-render' style='min-height: 100vh;'>

      </div>
      <div id='root' style='display: none;'>
         <style>
         <div class='hod-panel' id='professors-hod-pannel' style='display: none;' >
            <div id='hod-name' style='padding-left:15px;min-width:15%'></div>
            <div id='dept-name'></div>
            <div id='hod-contact' style='padding-right:15px;width:15%'></div>
         </div>

         <div id='main-table'>

         </div>
      </div>
      <div >
         <img          style="margin:auto;width:100%;height:100vh;object-fit:          cover;"
src='./static/images/background1.jpg'>
      </div>
   </body>
      <script src='static/JS/index.js'></script>
      <script>
      <script src="./static/JS/faculty-student.js"></script>
      <script>
         async function setInActive(){
            document.getElementById('root').style.display = 'none'
            document.getElementById('home-render').style.display = 'none'
            document.getElementById('main-options-home').className = ''
            document.getElementById('main-options-professors').className = ''
            document.getElementById('main-options-results').className = ''
            document.getElementById('professors-hod-pannel').style.display = 'none'
            document.getElementById('results-header-options').style.display = 'none'
         }

         document.getElementById('main-options-home').childNodes[0].onclick  =  async
function(e){
            e.preventDefault()
            setInActive()
            e.target.parentNode.className = 'active'
            renderHome()
            document.getElementById('home-render').style.display = 'block'
            window.history.replaceState({student: 'student'},'','home')
         }
      document.getElementById('main-options-professors').childNodes[0].onclick       =
async function(e){

           e.preventDefault()
           setInActive()

           e.target.parentNode.className = 'active'
           renderProfessors()
           document.getElementById('root').style.display = 'block'
           document.getElementById('professors-hod-pannel').style.display = 'flex'
           window.history.replaceState({student: 'student'},'','professors')
       }
      document.getElementById('main-options-results').childNodes[0].onclick  =  async
function(e){
           e.preventDefault()
           setInActive()
           e.target.parentNode.className = 'active'

           curInfo.semester = userInfo.semester
           dropdown = document.getElementById('id-semester')
           dropdown.innerHTML = ''
           for(i=0;i<curInfo.semester;i++)
           {
              opt = document.createElement('option')
              opt.value= i+1
              opt.innerHTML= i+1
              dropdown.append(opt)
           }
           dropdown.value = curInfo.semester
           renderResult()
           document.getElementById('root').style.display = 'block'
           document.getElementById('results-header-options').style.display = 'block'
           window.history.replaceState({student: 'student'},'','results')

       }
    </script>
    <script>
       const userInfo = {}
       async function authenticate(){
           var user={
              'username': sessionStorage.getItem('username'),
              'token' : sessionStorage.getItem('token')
           }
           let res = await axios.post('/student/authenticate',user)
           if(res.data.error){
              console.log('Authentication error')
              alert('Authentication Failed')
              document.body.innerHTML = ''
              window.open('/','_self')
           }
           else{
              console.log(res.data)
```

```
                userInfo['username'] = user.username
                userInfo['token'] = user.token

               userInfo['name'] = res.data.name
                userInfo['photo_container'] = res.data.photo_container
                userInfo['contact'] = res.data.contact
                userInfo['semester'] = res.data.semester
                userInfo['hod'] = res.data.hod
                userInfo['hod_contact'] = res.data.hod_contact
                userInfo['dept_name'] = res.data.dept_name
                document.getElementById('username').innerHTML = userInfo.name
                if(userInfo.photo_container != null)
                    setProfilePic()
                pageRender()
            }
        }

        async function pageRender(){
            console.log(window.location.pathname)
            if(window.location.pathname == '/student/professors'){
                document.getElementById('main-options-professors').childNodes[0].click()
            }

            else if(window.location.pathname == '/student/results'){
                document.getElementById('main-options-results').childNodes[0].click()
            }
            else{
                document.getElementById('main-options-home').childNodes[0].click()
            }

        }
        authenticate()
    </script>
</html>
```

5.2.3 FACULTY PAGE

```
<html>
    <head>
        <title>
            BIT-Result Portal
        </title>
        <script src='./static/JS/axios.min.js'></script>
        <link rel="stylesheet" href='./static/CSS/navBar.css'>
        <link rel="stylesheet" href='./static/CSS/faculty-home.css'>
        <link rel="stylesheet" href='./static/CSS/header.css'>
        <link rel="stylesheet" href='./static/CSS/table.css'>
        <link rel="stylesheet" href='./static/CSS/footer.css'>
    </head>
    <style>
```

```
  </style>


<body>
    <style>

    </style>
    <nav class="navbar">
      <div class='nav-left'>
        <div  class='app-logo'><img  src='./static/images/logo.png'  class="medium-
icon"></div>
        <div class='app-name'> Bangalore Institute Of Technology </div>
      </div>
      <div class='nav-right'>
        <ul>
          <li class='active' id='main-options-home'><a>Home</a></li>
          <li id='main-options-course'><a>Course</a></li>
          <li id='main-options-students'><a>Students</a></li>
          <li id='main-options-marks'><a>Update-Marks</a></li>
          <li class='nav-userinfo'>
            <label   class="nav-userpic"   for='upload-pic'   style="border:
none;background:transparent;">
              <img id='user-icon'  src='static/icons/thumnail.png'>
            </label>
            <input  type='file'  id='upload-pic'  accept="image/*"  style="display:
none;">
            <div class='nav-username' id='username'></div>
          </li>
        </ul>
      </div>
    </nav>
    <div id='home-render' style='min-height: 100vh;'>

    </div>
    <div id='root' style="display: none;">

      <div class='header-option' style='display: none;' id='header-options'>
        <div class='add-btn'>
          <div>
            <div  class='input-field'  style='visibility:hidden'  style='display:  none;'
id='add-student'>
              <input type='text'  placeholder="Enter USN">
              <div onclick="addStudent()" >
                <img style='width:30px;height:100%;' src="static/icons/enter.png"/>
              </div>
            </div>
            <div class='drop-down-options' style='visibility: visible;' id='drop-down-
options'>
              <select name="dept_name" id="d_dept_name">
              </select>
              <select name="couse" id="d_course_id">
              </select>
```

```
                    <select name="section" id="d_section">


</select>
                    <div                id='student-render'                style='display:none'
onclick="document.getElementById('main-table').innerHTML='';renderStudentList()" >


<img style='height:35px;width:35px;' src="static/icons/enter.png"/>
                    </div>
                 </div>
              </div>

              <div  id='marks-add-button'  style='display:none'  class='add-student-button'
onclick="console.log('to be implemented');" >
                 <img style='width:30px' src="static/icons/add.png"/>
                 <span style='color:purple;font-weight: bold;'>Add</span>
              </div>
              <div  id='student-add-button'  style='display:none'  class='add-student-button'
onclick="toggleVisibility(document.getElementById('add-
student'));toggleVisibility(document.getElementById('drop-down-options'))" >
                 <img style='width:30px' src="static/icons/add.png"/>
                 <span style='color:purple;font-weight: bold;'>Add</span>
              </div>

           </div>
        </div>
        <div class='footer-option' style="display: none;" id='faculty-error-log'>
           <div id="error-log" class='paragraph'>
              <div style='color: red;'>Error Logs :</div>
           </div>
        </div>
     </div>
     <div id='home-pic'>
        <img        style="margin:auto;width:100%;height:100vh;object-fit:        cover;"
src='./static/images/background1.jpg'>
     </div>
  </body>
     <script src='static/JS/faculty.js'></script>
     <script src="./static/JS/faculty-student.js"></script>
     <script src="./static/JS/faculty-results.js"></script>
     <script src='static/JS/index.js'></script>
     <script>
        async function setInActive(){
           document.getElementById('home-render').style.display = 'none'
           document.getElementById('root').style.display = 'none'
           document.getElementById('main-options-home').className = ''
           document.getElementById('main-options-course').className = ''
           document.getElementById('main-options-students').className = ''
           document.getElementById('main-options-marks').className = ''
           document.getElementById('faculty-error-log').style.display = 'none'
           document.getElementById('home-pic').style.display = 'none'
document.getElementById('header-options').style.display = 'none'
            document.getElementById('add-student').style.display = 'none'
            document.getElementById('marks-add-button').style.display = 'none'
            document.getElementById('student-add-button').style.display = 'none'
            document.getElementById('marks-render').style.display = 'none'
            document.getElementById('student-render').style.display = 'none'}

        document.getElementById('main-options-home').childNodes[0].onclick  =  async
function(e){
           e.preventDefault()
           setInActive()
           e.target.parentNode.className = 'active'
           renderHome()
           document.getElementById('home-render').style.display = 'block'
           document.getElementById('home-pic').style.display = 'block'
           document.getElementById('error-log').innerHTML=''
           window.history.replaceState({student: 'faculty'},'','home')
        }
        document.getElementById('main-options-course').childNodes[0].onclick  =  async
function(e){
           e.preventDefault()
           setInActive()
           e.target.parentNode.className = 'active'
           renderCourseList()
           document.getElementById('root').style.display = 'block'
           document.getElementById('faculty-error-log').style.display = 'block'
           document.getElementById('error-log').innerHTML=''
           window.history.replaceState({student: 'faculty'},'','course')
        }
        document.getElementById('main-options-students').childNodes[0].onclick         =
async function(e){
           e.preventDefault()
           setInActive()
           e.target.parentNode.className = 'active'
           renderStudentList()
           document.getElementById('root').style.display = 'block'
           document.getElementById('faculty-error-log').style.display = 'block'
           document.getElementById('header-options').style.display = 'block'
           document.getElementById('student-render').style.display = 'block'
           document.getElementById('student-add-button').style.display = 'flex'
           document.getElementById('add-student').style.display = 'flex'
           document.getElementById('error-log').innerHTML=''
           window.history.replaceState({faculty:'faculty'},'','students')
        }
        document.getElementById('main-options-marks').childNodes[0].onclick  =  async
function(e){
           e.preventDefault()
           setInActive()
           e.target.parentNode.className = 'active'
           renderResultList()
           document.getElementById('root').style.display = 'block'

          document.getElementById('faculty-error-log').style.display = 'block'
           document.getElementById('drop-down-options').style.visibility = 'visible'
           document.getElementById('add-student').style.visibility = 'hidden'
           document.getElementById('header-options').style.display = 'block'
           document.getElementById('marks-render').style.display = 'block'
           document.getElementById('marks-add-button').style.display = 'flex'
           window.history.replaceState({faculty:'faculty'},'','update-marks')

}
    </script>
    <script>
        const userInfo = {}
        async function pageRender(){
           console.log(window.location.pathname)
           if(window.location.pathname == '/faculty/update-marks'){
               document.getElementById('main-options-marks').childNodes[0].click()
           }
           else if(window.location.pathname == '/faculty/students'){
               document.getElementById('main-options-students').childNodes[0].click()
           }
           else if(window.location.pathname == '/faculty/course'){
               document.getElementById('main-options-course').childNodes[0].click()
           }
           else{
               document.getElementById('main-options-home').childNodes[0].click()
           }

        }
        async function authenticate(){
           var user={
               'username': sessionStorage.getItem('username'),
               'token' : sessionStorage.getItem('token')
           }
           let res = await axios.post('/faculty/authenticate',user)
           if(res.data.error){
               alert('Authentication Failed')
               document.body.innerHTML = ''
               window.open('/','_self')
           }
           else{
               userInfo['username'] = user.username
               userInfo['token'] = user.token
               userInfo['name'] = res.data.name
               userInfo['photo_container'] = res.data.photo_container
               userInfo['contact'] = res.data.contact
               document.getElementById('username').innerHTML = userInfo.name
               if(userInfo.photo_container != null)
                   setProfilePic()
               pageRender()
           }
         }

        authenticate()
      </script>
</html>
```

5.2.4 ADMIN PAGE

```
<html>
   <head>
      <title>
         BIT-Result Portal
      </title>
      <script src='./static/JS/axios.min.js'></script>
      <link rel="stylesheet" href='./static/CSS/navBar.css'>
      <link rel="stylesheet" href='./static/CSS/login.css'>
      <link rel="stylesheet" href='./static/CSS/table.css'>
      <link rel="stylesheet" href='./static/CSS/faculty-home.css'>
   </head>
   <style>
      #root{
         min-height: 100vh;
         width:100%;
         margin-top: 16px;
      }
      .table-list {
         width: fit-content;
      }

   </style>
   <body>
   </body>
      <script src='static/JS/index.js'></script>
      <script>
         const adminInfo = {}
         async function authenticate(){
            var user={
               'username': sessionStorage.getItem('username'),
               'token' : sessionStorage.getItem('token')
            }
            let res = await axios.post('/admin/authenticate',user)
            if(res.data.error){
               console.log('Authentication error')
               alert('Authentication Failed')
               document.body.innerHTML = ''
               window.open('/','_self')
            }
            else{
               console.log(res.data)
```

```
                adminInfo['name'] = res.data.name
                adminInfo['photo_container'] = res.data.photo_container

               adminInfo['contact'] = res.data.contact
                document.getElementById('username').innerHTML = adminInfo.name
                if(adminInfo.photo_container != null)
                    setProfilePic()
                getDCLInfo()
                //renderAdminPage()
            }
        }
        authenticate()
    </script>
</html>
```

5.3 BACK END CODE

5.2.3 ORACLE RELATED FUNCTIONS

```
async function connect(){
    try{
        db = await oracledb.getConnection({user : "dbms",password : "2310"});
        isConnected=true;
    }
    catch(err){
    }

}

//<------------------ User----------------------------->

async function authentication(user){
    user.username = user.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    let res = {}
    var result = await db.execute(`select password,type,login_fail from user_login where
user_id='${user.username}'`)
    if(result.rows[0]){
        let row = result.rows[0]
        if(row[2] > manager.maxLoginFail ){
            return({error: true,value:'AccountLocked'})
        }
        else if(row[0]==user.password){
            res = {token:user.token,type:row[1],error:false}
            db.execute(`update user_login set token = '${user.token}',token_fail=0 where
user_id='${user.username}'`)
        }
        else{
            db.execute(`update user_login set login_fail = login_fail + 1 where
user_id='${user.username}'`)
            res = {token:'',type:'',error:true,value:'LoginFail'}

        }
        db.execute('commit')
    }
    else{
        res = {error:true,value:'LoginFail'}
    }
    return res
}

async function tokenAuthentication(user){
    user.username = user.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    let res = {}
    var result = await db.execute(`select token,token_fail,type from user_login where
user_id='${user.username}'`)
    if(result.rows.length < 1)
        return {token:'',type:'',error:true,value:'NoRecord'}
    let row = result.rows[0]
    if(row[1] > manager.maxTokenFail ){
        return({error: true,value:'AccountLocked'})
    }
    else if(row[0]==user.token){
        res = {error:false,type:row[2]}
    }
    else{
        res = {token:'',type:'',error:true,value:'TokenFail'}
        db.execute(`update user_login set token_fail = token_fail + 1 where
user_id='${user.username}'`)
        db.execute('commit')
    }
    return res
}

async function getInfo(user){
    user.username = user.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    var res = {}
    if(manager.AccountType[user.type] == 'Student'){
        let result = await db.execute(`select USN, s.Name as Name, Dept_Name as
Department, f.Name as HOD,
                            f.contact as HodContact, Batch, Semester, Section, s.Contact
as Phone,s.photo_container,s.dept_id
                            from student s, department d, faculty f
                            where usn='${user.username}'
```

```
                                  and s.dept_id = d.dept_id
                                  and d.hod_id = f.faculty_id`)
      res.name = result.rows[0][1]

      res.dept_name = result.rows[0][2]
      res.hod = result.rows[0][3]
      res.hod_contact = result.rows[0][4]
      res.batch = result.rows[0][5]
      res.semester = result.rows[0][6]
      res.section = result.rows[0][7]
      res.contact = result.rows[0][8]
      res.photo_container = result.rows[0][9]
      res.dept_id= result.rows[0][10]

   }
   else{
      result = await db.execute(`select name,photo_container,contact from faculty where
faculty_id='${user.username}'`)
      res['name'] = result.rows[0][0]
      res['photo_container'] = result.rows[0][1]
      res['contact'] = result.rows[0][2]
   }
   return res
}

async function createPhotoContainer(username,type){
   if(!isConnected){
      await connect();
   }
   var res = manager.randomString(10)
   try{
      if(type==manager.AccountTypeInv['student']){
         await db.execute(`update student set photo_container='${res}' where
usn='${username.toUpperCase()}'`)
         await fs.mkdir(manager.path.private+'\\'+res,false,async (err) => {
            if(err)
            return true
         });
      }
      else{
         await db.execute(`update faculty set photo_container='${res}' where
faculty_id='${username.toUpperCase()}'`)
         await fs.mkdir(manager.path.public+'\\'+res,false,async (err) => {
            if(err)
               return true
         });
      }
      await db.execute('commit')
   }
   catch(error){
      //console.log(error)
      //res = createPhotoContainer(username,type)
```

```
    }
    return res
}

//<-----------------Admin-------------------------->

async function createAccount(info){
    if(!isConnected){
        await connect();
    }
    try{
        if(info.type == 'student'){
            photo                                        =                                        await
createPhotoContainer(info.id.toUpperCase(),manager.AccountTypeInv['student'])
            await db.execute(`insert into user_login(user_id,password,type,token)
                values('${info.id.toUpperCase()}','${info.password}',2,'')`)
            await                           db.execute(`insert                                  into
student(usn,name,dept_id,batch,semester,section,contact,photo_container)

values('${info.id.toUpperCase()}','${info.name}','${info.department.toUpperCase()}',
                ${info.batch},${info.semester},'${info.section}',${info.contact},'${photo}')`)

        }
        else if(info.type == 'faculty'){
            photo                                        =                                        await
createPhotoContainer(info.id.toUpperCase(),manager.AccountTypeInv['faculty'])
            await db.execute(`insert into user_login(user_id,password,type,token)
                values('${info.id.toUpperCase()}','${info.password}',1,'')`)
            await db.execute(`insert into faculty(faculty_id,name,contact,photo_container)

values('${info.id.toUpperCase()}','${info.name}',${info.contact},'${photo}')`)
        }
        else if(info.type == 'admin'){
            photo                                        =                                        await
createPhotoContainer(info.id.toUpperCase(),manager.AccountTypeInv['faculty'])
            await db.execute(`insert into user_login(user_id,password,type,token)
                values('${info.id.toUpperCase()}','${info.password}',0,'')`)
            await db.execute(`insert into faculty(faculty_id,name,contact,photo_container)
                values('${info.id.toUpperCase()}','${info.name}',${info.contact},'${photo}')`)
        }
        else if(info.type == 'department'){
            await db.execute(`insert into department(dept_id,hod_id,dept_name)

values('${info.id.toUpperCase()}','${info.hod.toUpperCase()}','${info.name}')`)
        }
        else if(info.type == 'course'){
            await                           db.execute(`insert                                  into
course(course_id,title,semester,schema,credits,iselective)

values('${info.id.toUpperCase()}','${info.title}',${info.semester},${info.schema},${info.
credits},${info.iselective})`)
        }
        else{

  return {error:true,value: info.type + ' : Not valid'}
        }
        res = {error:false}
        await db.execute('commit')
    }
    catch (error){
        res = {error:true,value: info.type+' : Inertion was unsuccessful'}//,detail: error}
    }
    return res
}

async function getTableInfo(info){
    if(!isConnected){
        await connect();
    }
    let result
    try{
        if(info.type == 'student'){
            result                    =                    await                    db.execute(`select
usn,name,password,contact,batch,dept_id,semester,section
                    from student s,user_login a
                    where           s.dept_id='${info.department.toUpperCase()}'           and
s.semester=${info.semester}      and      s.section='${info.section.toUpperCase()}'      and
s.usn=a.user_id
                    order by usn`)

        }
        else if(info.type == 'faculty'){
            result = await db.execute(`select faculty_id,name,password,contact
                        from faculty f,user_login a
                        where type=1 and f.faculty_id=a.user_id
                        order by faculty_id`)

        }
        else if(info.type == 'admin'){
            result = await db.execute(`select faculty_id,name,password,contact
                        from faculty f,user_login a
                        where type=0 and f.faculty_id=a.user_id
                        order by faculty_id`)
        }
        else if(info.type == 'department'){
            result = await db.execute(`select dept_id,dept_name,hod_id
                        from department
                        order by dept_id`)
        }
        else if(info.type == 'course'){
            result = await db.execute(`select course_id,title,semester,credits,iselective,schema
                              from course where schema=${info.schema}
                              order by course_id`)

     }

      else{
            return {error:true,value: info.type + ' : Not valid'}
          }
          res = result
          res['error'] =false
       }
       catch (error){
          res = {error:true,value: info.type+' : Search was unsuccessful'}//,detail: error}
       }
       return res
    }

async function updateTableInfo(info){
    if(!isConnected){
        await connect();
    }
    let res = {}
    try{
        if(info.type == 'student'){

            await db.execute(`update user_login set
password='${info.password}',type=${manager.AccountTypeInv[info.type]} where
user_id='${info.usn}'`)

            await db.execute(`update student set name='${info.name}', batch=${info.batch},
dept_id='${info.dept_id.toUpperCase()}' ,
                  semester=${info.semester},
section='${info.section.toUpperCase()}',contact = ${info.contact} where
usn='${info.usn}'`)



        }
        else if(info.type == 'faculty'){
            await db.execute(`update user_login set
password='${info.password}',type=${manager.AccountTypeInv[info.type]} where
user_id='${info.faculty_id}'`)
            await db.execute(`update faculty set
name='${info.name}',contact=${info.contact} where faculty_id='${info.faculty_id}' `)

        }
        else if(info.type == 'admin'){
            await db.execute(`update user_login set
password='${info.password}',type=${manager.AccountTypeInv[info.type]} where
user_id='${info.faculty_id}'`)
            await db.execute(`update faculty set
name='${info.name}',contact=${info.contact} where faculty_id='${info.faculty_id}' `)
        }
        else if(info.type == 'department'){
          await          db.execute(`update          department          set
dept_name='${info.dept_name}',hod_id='${info.hod_id.toUpperCase()}'


where dept_id='${info.dept_id}'`)
        }
        else if(info.type == 'course'){
          await          db.execute(`update          course          set
title='${info.title}',semester=${info.semester},   credits=${info.credits},   iselective   =
${info.iselective},schema=${info.schema}
                    where course_id='${info.course_id}'`)
        }
        else{
          return {error:true,value: info.type + ' : Not valid'}
        }
        await db.execute('commit')
        res['error'] =false
    }
    catch (error){
        res = {error:true,value: info.type+' : update was unsuccessful'}//,detail: error}
    }
    return res
}

async function removeTableInfo(info){
    if(!isConnected){
        await connect();
    }
    let res = {}
    try{
        if(info.type == 'student'){
          await db.execute(`delete from user_login where user_id='${info.id}'`)
        }
        else if(info.type == 'faculty'){
          await db.execute(`delete from user_login where user_id='${info.id}'`)
        }
        else if(info.type == 'admin'){
          await db.execute(`delete from user_login where user_id='${info.id}'`)
        }
        else if(info.type == 'department'){
          await db.execute(`delete from department where dept_id='${info.id}'`)
        }
        else if(info.type == 'course'){
          await db.execute(`delete from course where user_id='${info.id}'`)
       }
        else{
          return {error:true,value: info.type + ' : Not valid'}
        }
        await db.execute('commit')
        res['error'] =false
    }
    catch (error){
        res = {error:true,value: info.type+' : Removal was unsuccessful'}//,detail: error}
    }
    return res}

async function getDepartment(){
    if(!isConnected){
        await connect();
    }
    let res = {}
    try{
        res.department = await db.execute(`select dept_id,dept_name,hod_id from
department order by dept_id`)
        res.course = await db.execute(`select course_id,title from course order by course_id`)
        res.list = await db.execute(`select dept_id,course_id,title from course_list inner join
course using(course_id) order by dept_id,course_id`)
        res.faculty = await db.execute(`select faculty_id,name from faculty order by
faculty_id`)
        res.error = false
    }
    catch{
        res.error = true
    }
    return res
}

async function getDeptCourse(info){
    if(!isConnected){
        await connect();
    }
    let res = {}
    try{
        res = await db.execute(`select list_id,course_id,title,credits
                        from (select course_id,list_id from course_list where dept_id =
'${info.dept_id.toUpperCase()}')
                        inner join (select * from course where semester=${info.semester})
using(course_id)
                        order by course_id`)
        res.error = false
    }
    catch{
        res.error = true
        res.value = 'No Course listed in department'
    }
    return res
}

async function removeDeptCourse(list_id){
    if(!isConnected){
        await connect();
    }
    let res = {}
    try{
        res = await db.execute(`delete from course_list where list_id = '${list_id}' `)
        res.error = false


  await db.execute('commit')
    }
    catch{
        res.error = true
        res.value = 'Removal of course-list was unsuccessful'
    }
    return res
}
async function addDeptCourse(info){
    if(!isConnected){
        await connect();
    }
    let res = {}
    info.list_id = manager.randomString(10)
    try{
        res = await db.execute(`insert into course_list(list_id,course_id,dept_id)
values('${info.list_id}','${info.course_id.toUpperCase()}','${info.dept_id}') `)
        res.error = false
        await db.execute('commit')
    }
    catch{
        res.error = true
        res.value = 'Insertion of course-list was unsuccessful'
    }
    return res
}

async function getFacultyCourse(info){
    if(!isConnected){
        await connect();
    }
    let result = {}
    try{
        result = await db.execute(`select list_id,title,semester,section,faculty_id,name
                from (select list_id,course_id from course_list where
course_id='${info.course_id.toUpperCase()}' and
dept_id='${info.dept_id.toUpperCase()}')
                inner join takes using(list_id) inner join faculty using(faculty_id) inner join
course using(course_id) order by course_id`)
        result.error = false
    }
    catch{
        result.error = true
        result.value = 'Selected Course is not taught to any section'
    }
    return result
}
async function removeFacultyCourse(info){
    if(!isConnected){
        await connect();
    }

 let result = {}
    try{
        await db.execute(`delete from takes where list_id='${info.list_id}' and
section='${info.section}'`)
        result.error = false
        await db.execute('commit')
    }
    catch{
        result.error = true
        result.value = 'Removal was unsucessful'
    }
    return result
}
async function addFacultyCourse(info){
    if(!isConnected){
        await connect();
    }
    let result = {}
    try{
        res = await db.execute(`select list_id from course_list where
course_id='${info.course_id}' and dept_id='${info.dept_id}'`)
        if(res.rows[0])
            info.list_id = res.rows[0][0]
        else
            return {error:true,value:'Department-Course combination is not listed in course-
list'}

        await db.execute(`insert into takes(list_id,faculty_id,section)
values('${info.list_id}','${info.faculty_id}','${info.section.toUpperCase()}')`)
        result.error = false
        await db.execute('commit')
    }
    catch{
        result.error = true
        result.value = 'Insertion was unsucessful'
    }
    return result
}
//<------------------Student--------------------------->
async function getResults(info){
    info.username = info.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    let res = {}
    let result = await db.execute(`select *
                    from ((select course_id,semester as
course_Semester,isElective,Title
```

```
                                    from course
                                    where semester = ${info.semester})
                                    inner join

                              (select * from results
                                    where usn = '${info.username}')
                                    using (course_id)
                                    )
                          order by course_id`)

   if(result.rows[0]){
      res = result
      res.error = false
   }
   else{
      res = {error:true,value:'ResultNotUpdated'}
   }
   return res
}

async function getProfessorContact(info){
   info.username = info.username.toUpperCase()
   if(!isConnected){
      await connect();
   }
   let res = {}
   let user = {}
   let result = await db.execute(`select dept_id,semester,section from student where
usn='${info.username}'`)
   user.dept_id = result.rows[0][0]
   user.semester = result.rows[0][1]
   user.section = result.rows[0][2]



   result = await db.execute(`(select name,contact,photo_container,course_id,title
                          from ((((select * from course_list where dept_id = '${user.dept_id}')
                          inner join (select course_id,title from course where semester =
${user.semester}) using(course_id))
                          inner join (select  * from  takes where section = '${user.section}')
using(list_id))
                          inner join faculty using(faculty_id)))
                          order by course_id`)
   if(result.rows[0]){
      res = result
      res.error = false
   }
   else{
      res.error = true
      res.value = 'NoProfessor'
   }
   return res
}
```

```
//<------------------Faculty-------------------------->

// info = (faculty_id:'F100')
//return : faculty{...}
async function getCourseList(info){
    info.username = info.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    let res = {}
    let result = await db.execute(`select course_id,title,dept_name,semester,section
                                from ((((select * from takes
                                        where faculty_id='${info.username}')
                                        inner join course_list
                                            using (list_id))
                                        inner join department
                                            using (dept_id))
                                        inner join course
                                            using (course_id))
                            order by course_id,section`)
    if(result.rows[0]){
        res = result
        res.error = false
    }
    else{
        res = {error:true,value:'NoCourseTaught'}
    }
    return res
}

//info = faculty{...}
//return : {list_id,dept_id}
async function checkCourseList(info){
    info.username = info.username.toUpperCase()
    if(!isConnected){
        await connect();
    }
    let res = {}
    let result = await db.execute(`select * from
                                (select list_id,dept_id,semester,title
                                    from ((((select * from course_list where
course_id='${info.course_id}')
                                    inner join
                                    (select * from department where
dept_name='${info.dept_name}')
                                    using (dept_id))
                                    inner join
                                    (select list_id from takes
                              where faculty_id = '${info.username}' and
section='${info.section}')
                              using (list_id))

                          inner join
                           (select course_id,semester,title from course)

                          using (course_id))
                         )
                       `)
   if(result.rows[0]){
      res.error = false
      res.list_id = result.rows[0][0]
      res.dept_id = result.rows[0][1]
      res.semester = result.rows[0][2]
      res.title = result.rows[0][3]
   }
   else{
      res = {error:true}
   }
   ////console.log(res)

return res
}

//info = faculty{...}+dept_id+sem
async function getStudentBySem(info){
   if(!isConnected){
      await connect();
   }
   let res = []

   let result = await db.execute(`select usn from student  where semester =
${info.semester}
                         and section = '${info.section}' and dept_id='${info.dept_id}'
                       `)
   ////console.log(result)
   if(result.rows[0]){
      for(let i=0 ; i<result.rows.length;i++){
         res.push(result.rows[i][0])
      }
   }
   ////console.log(236,res)
   return res
}

//info = faculty{...}+dept_id
async function getStudentResult(info){
   if(!isConnected){
      await connect();
   }
   let res = {}
   let result = await db.execute(`select *
                              from       (select  usn,name  from  student  where  semester  =
${info.semester} and section = '${info.section}' and dept_id='${info.dept_id}')

                               inner join
                                    (select * from results where course_id='${info.course_id}')
                                    using (usn)

                              order by usn
                          `)
   if(result.rows[0]){
     res=result
     res.error = false
   }
   else{
      res = {error:true,value:'NoCourseStudent'}
   }
   return res
}

//info = faculty{...}+dept_id+{course_id:'18CS54', newMarks=[usn,name,.....] }
async function updateResult(info){


if(!isConnected){ await connect();
   }
   try{
      info.usn
   }
   catch{
      return {error:false}
   }
   let res = {value:[]}
   let student = await getStudentBySem(info)

   if(student == []){
      return ({error:true,value:'NoCourseStudent'})
   }

   let
metaData=['TEST1_MARKS','TEST1_ASSIGNMENT','TEST2_MARKS','TEST2_ASS
IGNMENT','TEST3_MARKS','TEST3_ASSIGNMENT','IA_MARKS','EXTERNAL_M
ARKS','TOTAL']

   for(i = 0 ; i<info.newMarks.length;i++){
      query = ''
      s = info.newMarks[i]

      if(student.includes(s[0])){
         for(c=0 ; c<metaData.length ; c++)
            query += metaData[c]+'='+ s[c+3]+', '
         query = query.replace(/, $/,'')
```

```
            try {


result = await db.execute(`update results set ${query} where usn='${s[0]}' and course_id
= '${info.course_id}'`)
            }
            catch(error) {


res.value.push({usn:s[0],value:'Student Marks was not updated',detail:error})
            }
        }
        else{
            res.value.push({usn:s[0],value:'Student not listed in your class'})
        }
    }
    db.execute('commit')
    return res
}

//info = faculty{...}+dept_id
async function getStudentFromCourse(info){
    if(!isConnected){
        await connect();
    }

    stud = await getStudentBySem(info)
    s = ''
    for(i=0;i<stud.length;i++){
        s += `'${stud[i]}', `

 }

    s = s.replace(/,\s*$/,'')
    let res = {value:[]}

    if(s== '')
        return {error:true}
    result = await db.execute(`select usn,name,semester,batch,contact,photo_container
                              from (select * from results where course_id='${info.course_id}' and
usn in (${s}) )
                              inner join student using(usn) order by usn
                              `)
    if(result.rows[0]){
        res = result
        res.error = false
        res.studentBySem = stud
    }
    else{
        res.error = true
    }
    return res
}
//info = {course_id:'18CS54', usn : ['s1',s2'...]}

async function addStudentToCourse(info){
    if(!isConnected){
        await connect();
    }
    try{
        info.usn

 }
    catch{
        return {error:false}
    }
    let res = {value:[]}

    for(let i=0 ; i<info.usn.length; i++){
        try {
            await db.execute(`insert into results(usn,course_id)
values('${info.usn[i]}','${info.course_id}')`)
        }
        catch(error) {
            res.value.push({usn:info.usn[i],value:'Student was not added',detail:error})
        }

    }


 db.execute('commit')
    return res}

//info = faculty{...}+dept_id+{course_id:'18CS54', usn : ['s1',s2'...]}
async function removeStudentFromCourse(info){
    if(!isConnected){

await connect();
    }
    try{
        info.usn
    }
    catch{
        return {error:false}
    }

    let res = {value:[]}
    let student = await getStudentBySem(info)

    if(student == []){
        return ({error:true,value:'NoCourseStudent'})
    }
```

```
   if(student.includes(info.usn)){
      try {


await db.execute(`delete from results where usn='${info.usn}' and course_id='${info.course_id}'`)}
      catch(error) {
         res.value.push({usn:info.usn[i],value:'Removal of Student was unsucessful',detail:error})
      }
   }

 else{
      res.value.push({usn:info.usn[i],value:'Student not listed in your class'})
   }
   db.execute('commit')
   return res
}
```

5.4 SQL QUERIES

<------Query: To retrive info of a student whose usn='1BI19CS058'-------------->

```
select USN, s.Name as Name, Dept_Name as Department, f.Name as HOD,
f.contact as HodContact, Batch, Semester, Section, s.Contact as Phone
from student s, department d, faculty f
where usn='1BI19CS058' and s.dept_id = d.dept_id d.hod_id = f.faculty_id;
```

<-----Query: To retrive result of a particular semester say 7 of a student whose usn='1BI19CS161' ----------->

```
select *
from   ((select course_id,semester as course_Semester,isElective,Title from course
            where semester
           inner join
         (select * from results where usn = '1BI19CS161')  using (course_id)
);
```

<-----Query: To retrive professors contact info----------->

```
select name,contact,profile_container
from faculty f
where f.faculty_id in ((select faculty_id
                                 from takes
                                 where section = 'A'
                                 and list_id in (select list_id
                                                  from course_list cl, course c
                                                  where cl.dept_id='D100'
                                                  and cl.course_id = c.course_id
                                                  and c.semester = '6')
                        )
                        union
                         (select hod_id from department
                         where dept_id = 'D100'));
```

<------Query: To retrive all courses handled by a professor----------->

```
select course_id,title,dept_Name,Semester,section
from ((((select * from takes
                        where faculty_id = 'F101')
                        inner join course_list
                        using (list_id))
                        inner join department
                        using (dept_id))
                        inner join course
                        using (course_id));
```

<--------Query: To check is a faculty with faculty_id='F102' teaches course course_id='18CS54' to section='A' students belonging to dept_name='CSE'---------->

```
select * from
(select list_id,dept_id
  from  (select * from course_list where course_id='18CS54')
        inner join
       (select * from department where dept_name='CSE')  using (dept_id)
)
inner join
(select list_id from takes
where faculty_id = 'F102' and section='A')
using (list_id);
```

<-------Query: To retrive list of students taking a course='18MAT11' belonging to dept_id='D100', semester=5 and section='A'------------------->

```
select *
from  (select usn,name from student
where semester = 5 and section = 'A' and dept_id='D100')
inner join
(select * from results where course_id='18MAT11')
using (usn)
;
```

<-------Query: To retrive usn list of student belonging to dept_id = 'D100',semester=5,section='A'----->

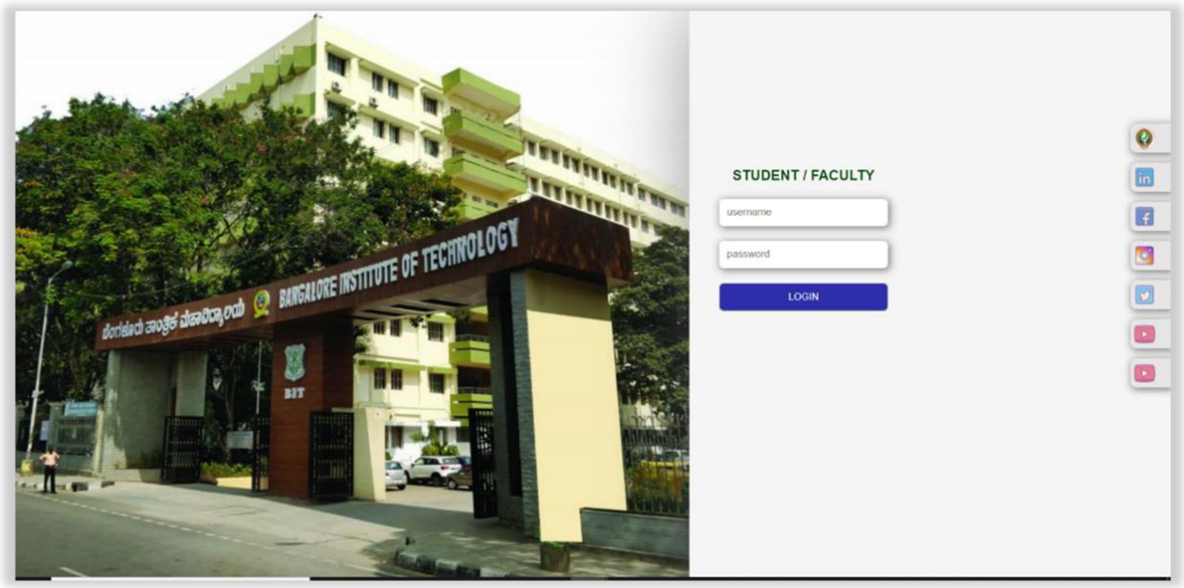
```
select usn from student
where dept_id='D100' and semester=5 and section='A';
```

CHAPTER 6

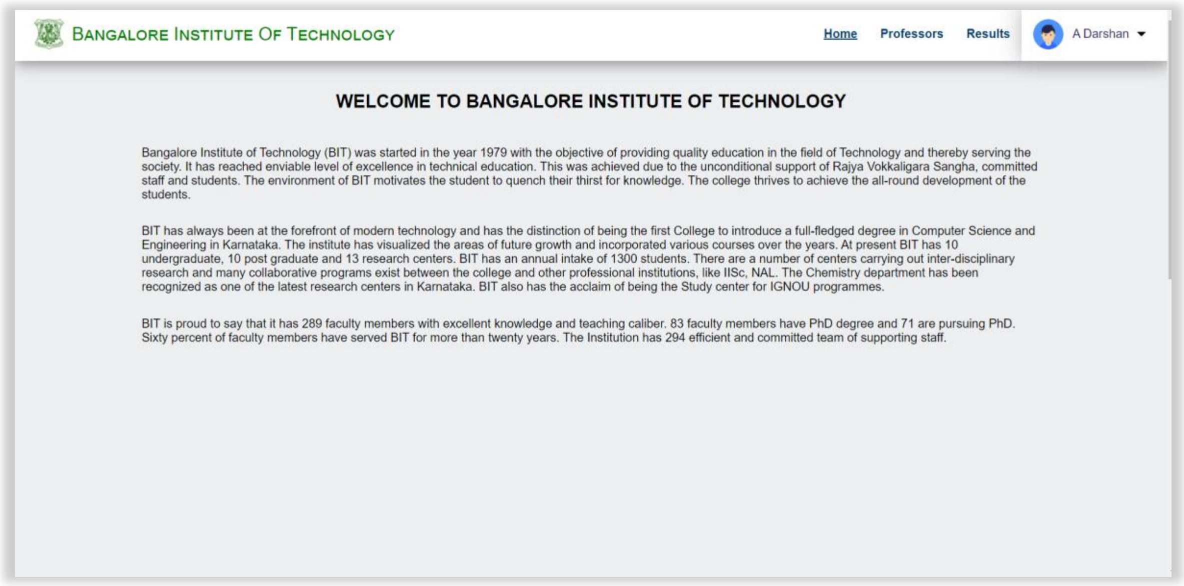
SNAPSHOTS

SNAPSHOTS

6.1 LOGIN PAGE



6.2 HOME PAGE



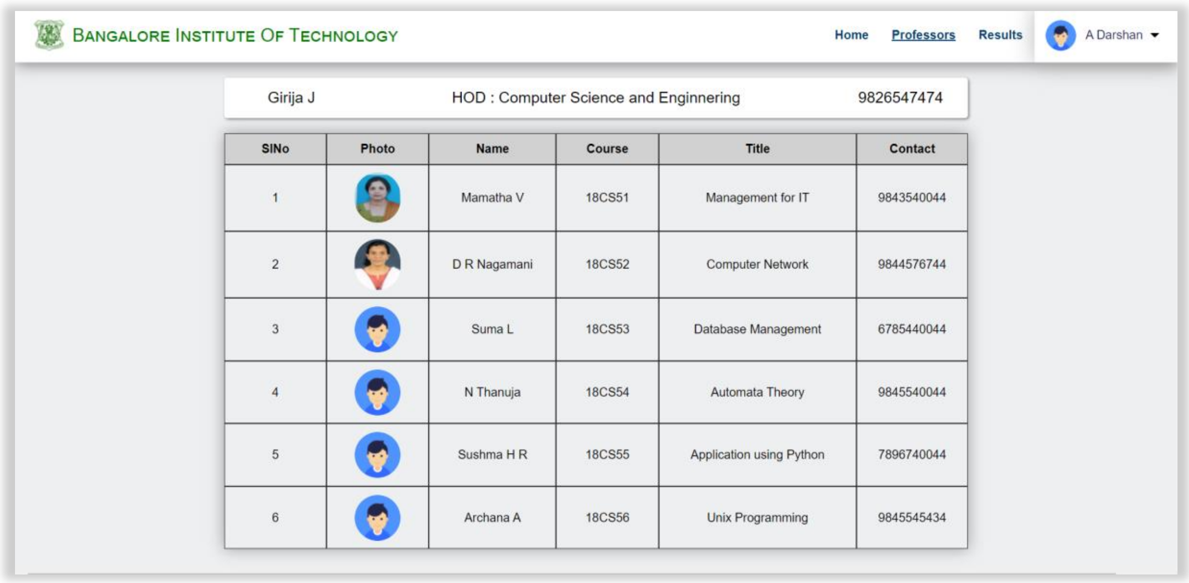
WELCOME TO BANGALORE INSTITUTE OF TECHNOLOGY

Bangalore Institute of Technology (BIT) was started in the year 1979 with the objective of providing quality education in the field of Technology and thereby serving the society. It has reached enviable level of excellence in technical education. This was achieved due to the unconditional support of Rajya Vokkaligara Sangha, committed staff and students. The environment of BIT motivates the student to quench their thirst for knowledge. The college thrives to achieve the all-round development of the students.

BIT has always been at the forefront of modern technology and has the distinction of being the first College to introduce a full-fledged degree in Computer Science and Engineering in Karnataka. The institute has visualized the areas of future growth and incorporated various courses over the years. At present BIT has 10 undergraduate, 10 post graduate and 13 research centers. BIT has an annual intake of 1300 students. There are a number of centers carrying out inter-disciplinary research and many collaborative programs exist between the college and other professional institutions, like IISc, NAL. The Chemistry department has been recognized as one of the latest research centers in Karnataka. BIT also has the acclaim of being the Study center for IGNOU programmes.

BIT is proud to say that it has 289 faculty members with excellent knowledge and teaching caliber. 83 faculty members have PhD degree and 71 are pursuing PhD. Sixty percent of faculty members have served BIT for more than twenty years. The Institution has 294 efficient and committed team of supporting staff.

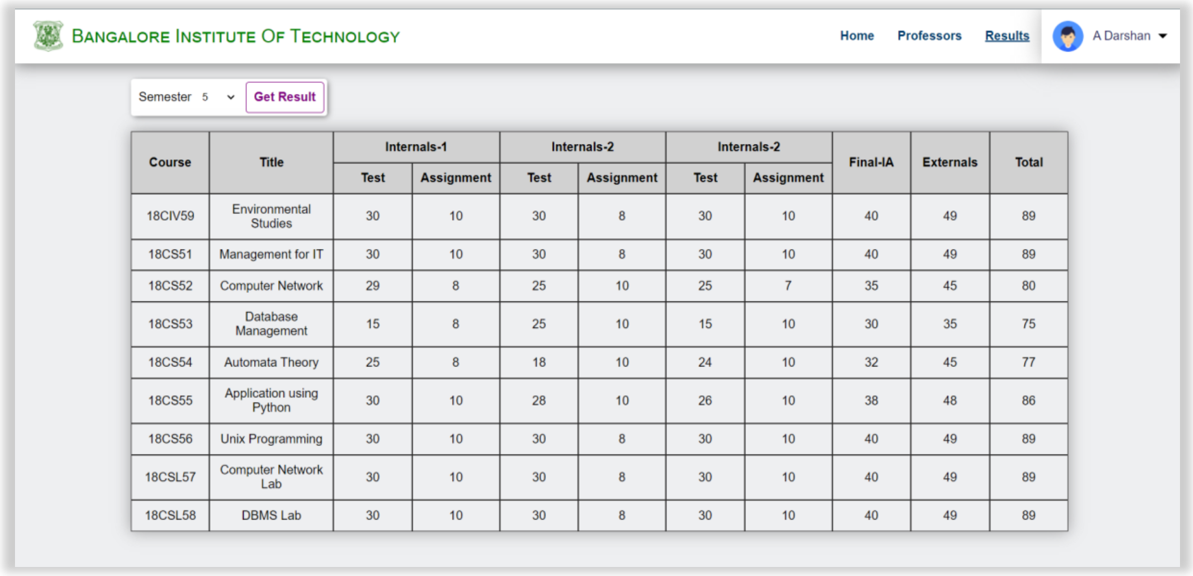
6.3 STUDENT - PROFESSOR PAGE



Girija J HOD : Computer Science and Enginnering 9826547474

SINo	Photo	Name	Course	Title	Contact
1		Mamatha V	18CS51	Management for IT	9843540044
2		D R Nagamani	18CS52	Computer Network	9844576744
3		Suma L	18CS53	Database Management	6785440044
4		N Thanuja	18CS54	Automata Theory	9845540044
5		Sushma H R	18CS55	Application using Python	7896740044
6		Archana A	18CS56	Unix Programming	9845545434

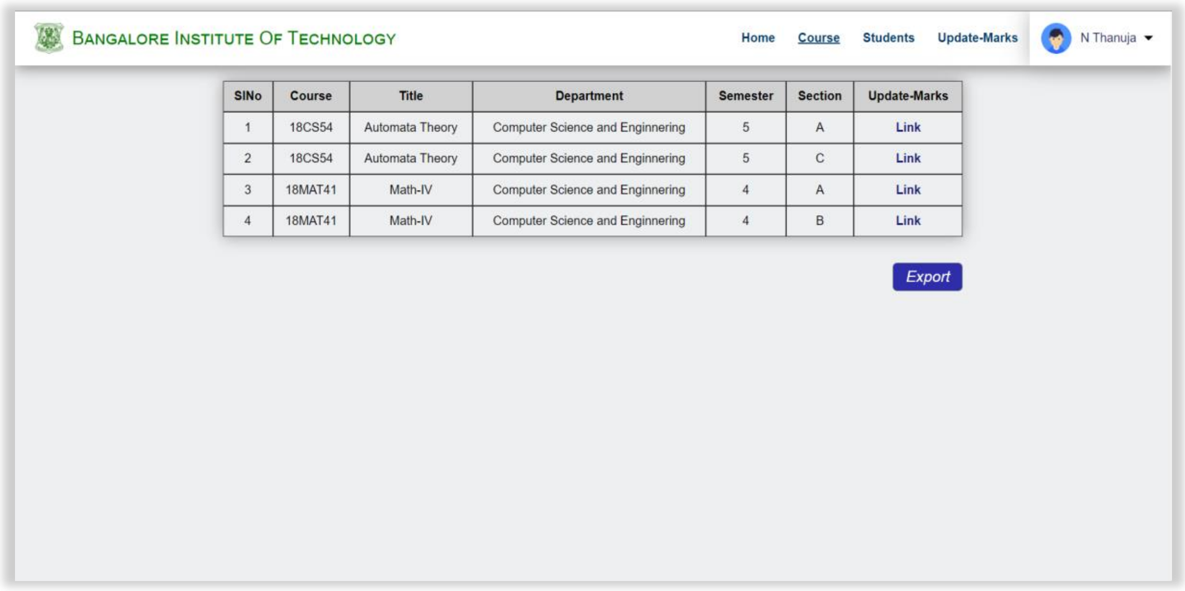
6.4 STUDENT - RESULT PAGE



Semester 5

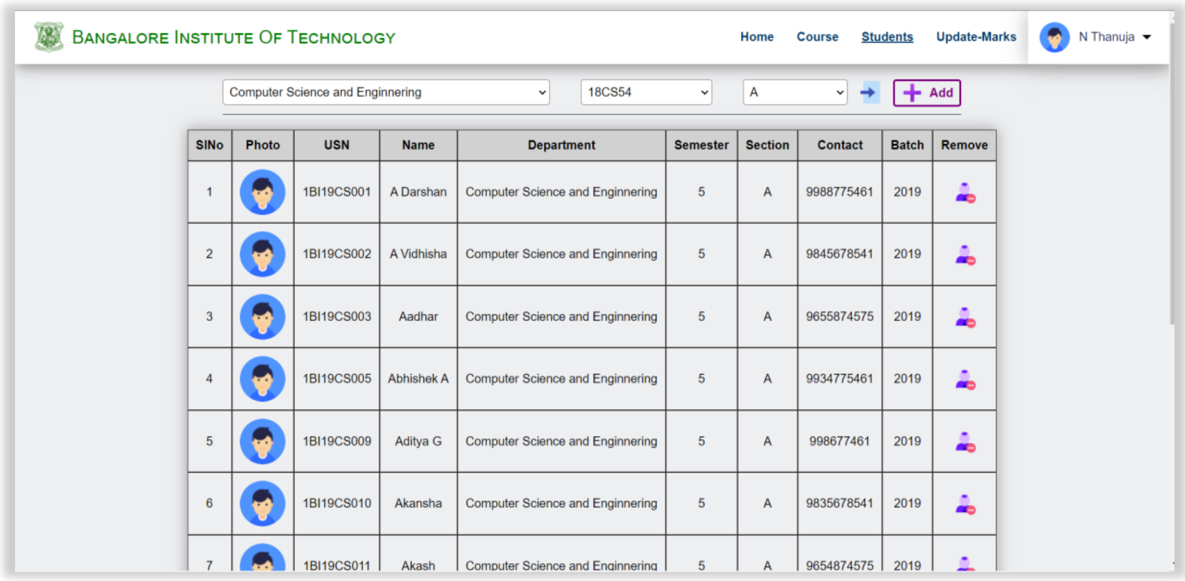
Course	Title	Internals-1		Internals-2		Internals-2		Final-IA	Externals	Total
		Test	Assignment	Test	Assignment	Test	Assignment			
18CIV59	Environmental Studies	30	10	30	8	30	10	40	49	89
18CS51	Management for IT	30	10	30	8	30	10	40	49	89
18CS52	Computer Network	29	8	25	10	25	7	35	45	80
18CS53	Database Management	15	8	25	10	15	10	30	35	75
18CS54	Automata Theory	25	8	18	10	24	10	32	45	77
18CS55	Application using Python	30	10	28	10	26	10	38	48	86
18CS56	Unix Programming	30	10	30	8	30	10	40	49	89
18CSL57	Computer Network Lab	30	10	30	8	30	10	40	49	89
18CSL58	DBMS Lab	30	10	30	8	30	10	40	49	89

6.5 FACULTY - COURSE PAGE



SINo	Course	Title	Department	Semester	Section	Update-Marks
1	18CS54	Automata Theory	Computer Science and Enginnering	5	A	Link
2	18CS54	Automata Theory	Computer Science and Enginnering	5	C	Link
3	18MAT41	Math-IV	Computer Science and Enginnering	4	A	Link
4	18MAT41	Math-IV	Computer Science and Enginnering	4	B	Link

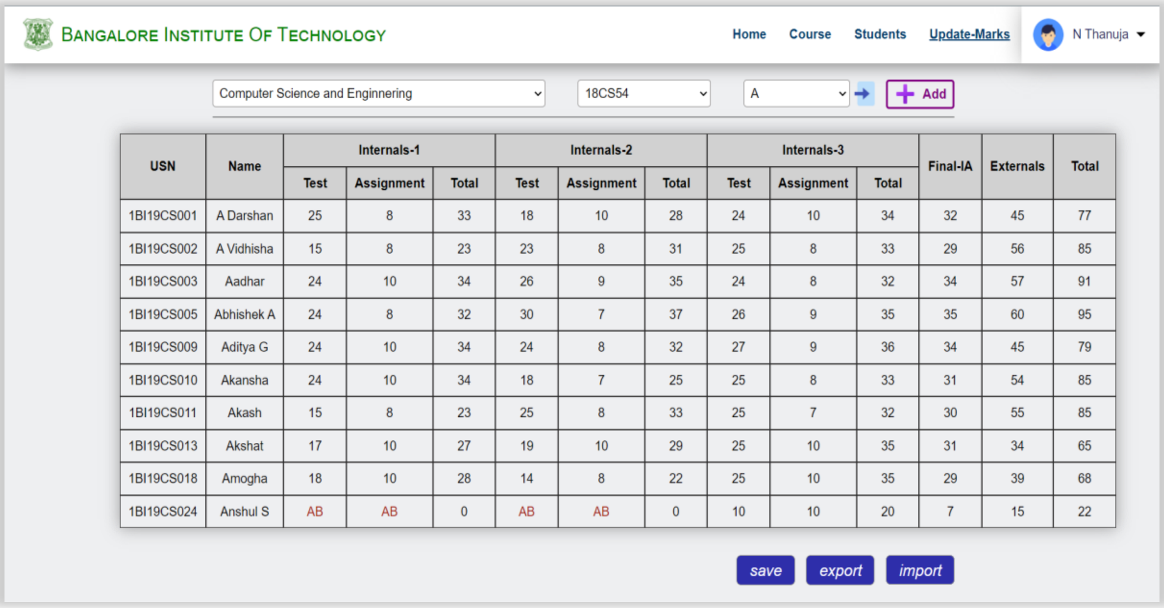
6.6 FACULTY - STUDENT LIST PAGE



Computer Science and Enginnering | 18CS54 | A

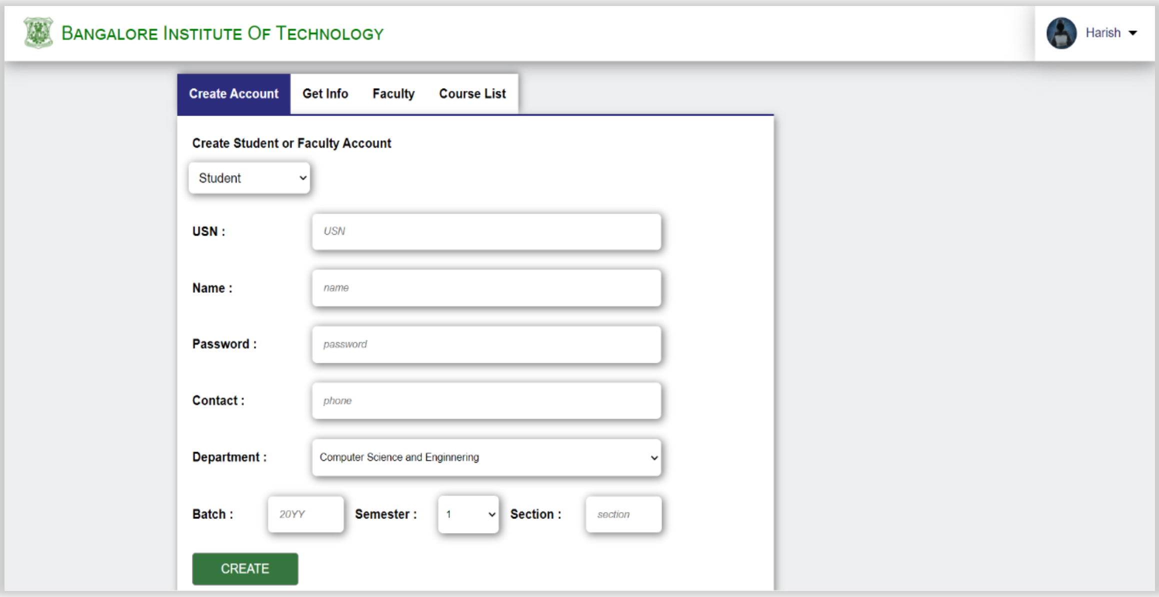
SINo	Photo	USN	Name	Department	Semester	Section	Contact	Batch	Remove
1		1BI19CS001	A Darshan	Computer Science and Enginnering	5	A	9988775461	2019	
2		1BI19CS002	A Vidhisha	Computer Science and Enginnering	5	A	9845678541	2019	
3		1BI19CS003	Aadhar	Computer Science and Enginnering	5	A	9655874575	2019	
4		1BI19CS005	Abhishek A	Computer Science and Enginnering	5	A	9934775461	2019	
5		1BI19CS009	Aditya G	Computer Science and Enginnering	5	A	998677461	2019	
6		1BI19CS010	Akansha	Computer Science and Enginnering	5	A	9835678541	2019	
7		1BI19CS011	Akash	Computer Science and Enginnering	5	A	9654874575	2019	

6.7 FACULTY - UPDATE MARKS PAGE


BANGALORE INSTITUTE OF TECHNOLOGY
Home
Course
Students
Update-Marks
N Thanuja
Computer Science and Enginnering
18CS54
A
Add
save
export
import

USN	Name	Internals-1			Internals-2			Internals-3			Final-IA	Externals	Total
		Test	Assignment	Total	Test	Assignment	Total	Test	Assignment	Total			
1BI19CS001	A Darshan	25	8	33	18	10	28	24	10	34	32	45	77
1BI19CS002	A Vidhisha	15	8	23	23	8	31	25	8	33	29	56	85
1BI19CS003	Aadhar	24	10	34	26	9	35	24	8	32	34	57	91
1BI19CS005	Abhishek A	24	8	32	30	7	37	26	9	35	35	60	95
1BI19CS009	Aditya G	24	10	34	24	8	32	27	9	36	34	45	79
1BI19CS010	Akansha	24	10	34	18	7	25	25	8	33	31	54	85
1BI19CS011	Akash	15	8	23	25	8	33	25	7	32	30	55	85
1BI19CS013	Akshat	17	10	27	19	10	29	25	10	35	31	34	65
1BI19CS018	Amogha	18	10	28	14	8	22	25	10	35	29	39	68
1BI19CS024	Anshul S	AB	AB	0	AB	AB	0	10	10	20	7	15	22

6.8 ADMIN – CREATE ACCOUNT PAGE



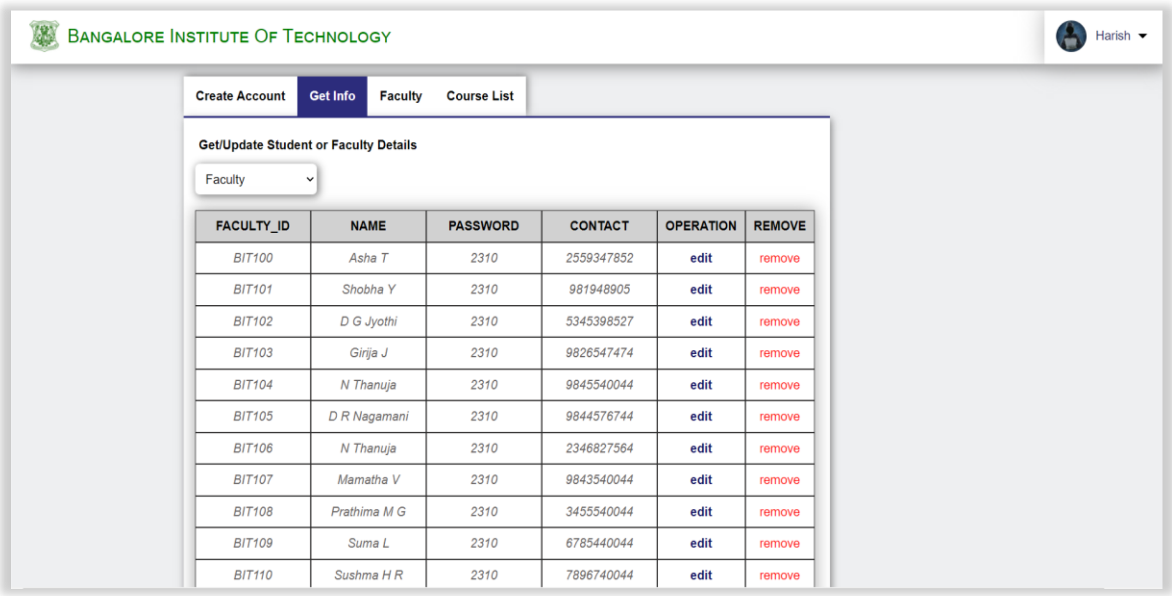
Create Student or Faculty Account

Student

USN :	USN
Name :	name
Password :	password
Contact :	phone
Department :	Computer Science and Enginnering

Batch : 20YY Semester : 1 Section : section

6.9 ADMIN – GET INFO PAGE

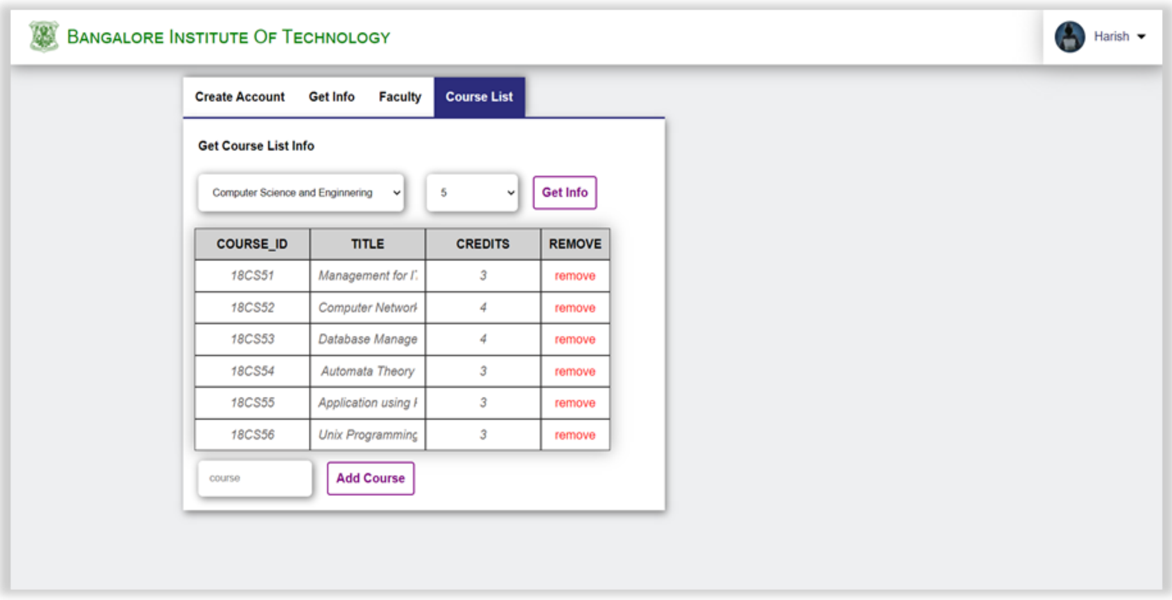


Get/Update Student or Faculty Details

Faculty

FACULTY_ID	NAME	PASSWORD	CONTACT	OPERATION	REMOVE
BIT100	Asha T	2310	2559347852	edit	remove
BIT101	Shobha Y	2310	981948905	edit	remove
BIT102	D G Jyothi	2310	5345398527	edit	remove
BIT103	Girija J	2310	9826547474	edit	remove
BIT104	N Thanuja	2310	9845540044	edit	remove
BIT105	D R Nagamani	2310	9844576744	edit	remove
BIT106	N Thanuja	2310	2346827564	edit	remove
BIT107	Mamatha V	2310	9843540044	edit	remove
BIT108	Prathima M G	2310	3455540044	edit	remove
BIT109	Suma L	2310	6785440044	edit	remove
BIT110	Sushma H R	2310	7896740044	edit	remove

6.10 ADMIN – COURSE LIST PAGE



Get Course List Info

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COURSE_ID	TITLE	CREDITS	REMOVE
18CS51	Management for I	3	remove
18CS52	Computer Network	4	remove
18CS53	Database Manage	4	remove
18CS54	Automata Theory	3	remove
18CS55	Application using	3	remove
18CS56	Unix Programming	3	remove

CHAPTER 7
APPLICATIONS

APPLICATIONS

- Collage result portal.
- Manage students result in school.
- Export Results as CSV file.
- Can be used to derive Student Management System

CHAPTER 8

CONCLUSION

CONCLUSION

- To conclude the description about the project: The project, developed using NODE JS and ORACLE 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.

- Student result management system is an online website and can be used at any place, any time and by any student or faculty. This application will avoid the calculation and simplify the process of visualizing results by students as well as faculty.