

**A Project Report
on
E-Certificates Issue Services Using Blockchain**

**submitted in partial fulfillment of the requirements for the award of the degree
of
BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE AND ENGINEERING**

by

17WH1A0591

Ms. MANDALA SUSMITHA

17WH1A05A6

Ms. AREPALLI SINDHURA

18WH5A0521

Ms. V KRISHNA GAYATRI

**under the esteemed guidance of
PROF. R S MURALINATH
Professor I/C Accreditations**



**Department of Computer Science and Engineering
BVRIT HYDERABAD
College of Engineering for Women
(NBA Accredited – EEE, ECE, CSE and IT)
(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)
Bachupally, Hyderabad – 500090**

June, 2021

DECLARATION

We hereby declare that the work presented in this project entitled **“E-CERTIFICATES ISSUE SERVICES USING BLOCKCHAIN”** submitted towards completion of Project Work in IV year of B.Tech., CSE at ‘BVRIT HYDERABAD College of Engineering For Women’, Hyderabad is an authentic record of our original work carried out under the guidance of Mr. K.Naresh, Assistant Professor, Department of CSE.

Sign. with date:

Ms. MANDALA SUSMITHA
(17WH1A0591)

Sign. with date:

Ms. AREPALLI SINDHURA
(17WH1A05A6)

Sign. with date:

Ms. V KRISHNA GAYATRI
(18WH5A0521)

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Bachupally, Hyderabad – 500090

Department of Computer Science and Engineering



Certificate

This is to certify that the Project Work report on “**E-CERTIFICATES ISSUE SERVICES USING BLOCKCHAIN**” is a bonafide work carried out by Ms. MANDALA SUSMITHA (17WH1A0591) ; Ms. AREPALLI SINDHURA (17WH1A05A6) ; Ms. V KRISHNA GAYATRI (18WH5A0521) in the partial fulfillment for the award of B.Tech. degree in **Computer Science and Engineering, BVRIT HYDERABAD College of Engineering for Women, Bachupally, Hyderabad**, affiliated to Jawaharlal Nehru Technological University Hyderabad, Hyderabad under my guidance and supervision.

The results embodied in the project work have not been submitted to any other University or Institute for the award of any degree or diploma.

Head of the Department
Dr. K Srinivasa Reddy
Professor and HoD,
Department of CSE

Guide
Prof. R S Muralinath
Professor I/C Accreditations

External Examiner

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Ms. MANDALA SUSMITHA

(17WH1A0591)

Ms. AREPALLI SINDHURA

(17WH1A05A6)

Ms. V KRISHNA GAYATRI

(18WH5A0521)

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ABSTRACT

Students often have to go to their colleges in order to collect their certificates. There might be many of them who might be working or studying at different places and may not be able to come to college to collect the documents needed. This project aims to reduce this difficulty by providing a website to students wherein they can request for the documents they need. The user will be authorized based on their college email id and password. They can then go to the home page and click on the certificate they need.

The student can request to get any of the following certificates: Academic certificates such as marks memo, certificates provided after graduation – CMM(Consolidated Marks Memo), OD(Original Degree), TC(Transfer certificate) and recommendation letters for higher studies. These requests to get certificates is sent to examination branch and/or concerned authorities who will upload the scanned copies. These certificates will be stored in blockchain to make them tamper-free. The students can download these certificates. The students can apply for recommendation letters from particular faculty member. The faculty member will be able to view the request and upload the letter.

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1. INTRODUCTION

E-Certificates Issue Services using Blockchain is an application that is made for students and faculty of a particular college. The process of giving away and collecting certificates is made easy through a digital platform. This ensures that students need not go to the college to collect their certificates and recommendation letters. Blockchain is used in this application to ensure the safety and tamper-free environment as the certificates are a sensitive matter.

1.1 Objectives

It is often noticed that students have to travel to colleges to request for a particular certificate or a recommendation letter. They might have to travel to institution again to collect them. This holds true even for people coming from a very long distance. This process is not only tedious but also time taking. An application that would help reduce this effort is a necessity. The main issue by digitalizing this process is the security issue. There is always a possibility that intruders may manipulate the certificate for whatever reason. This application is a solution for that. E-Certificates Issue Services using Blockchain is an application that is digitalizing the manual process and also providing security for our certificates. This system allows users to apply for certificates and recommendation letters online. While applying, they can choose the faculty they would like to receive the recommendation letter from. The respective faculty will be able to upload the letter. Students can also upload a sample format for the faculty member's reference. Using blockchain and some encryption techniques, this application is made secure from any manipulations.

1.2 Methodology

To store the user data MYSQL has been used as a database. HTML, CSS has been used for front end development. Cloud services have been used to store files. The files are encrypted before storing them in the cloud.

1.2.1 Introduction

The use of digital software has widely increasing in today's world. Many things that can be done manually is also being done in a digital way. Although, upto a while ago some things were done manually as it was more preferred, the pandemic halted these

activities. The need of the hour is digital solutions for almost everything that was manually done earlier. With the increase in technology, the attacks on applications are also widely increased. Attackers are trying to hack websites to modify content. Especially in the case of certificates a proper security measure is of at most importance. Blockchain technology is being introduced to make these attacks impossible.

1.2.2 Blockchain Technology

A blockchain is a growing list of records, called blocks, that are linked together using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data.

Blocks contain the hash of the previous block, forming a chain, with each additional block reinforcing the ones before it. Therefore, blockchains are resistant to modification of their data because once recorded, the data in any given block cannot be altered retroactively without altering all subsequent blocks.

The blockchain was invented by a person (or group of people) using the name Satoshi Nakamoto in 2008 to serve as the public transaction ledger of the cryptocurrency bitcoin.

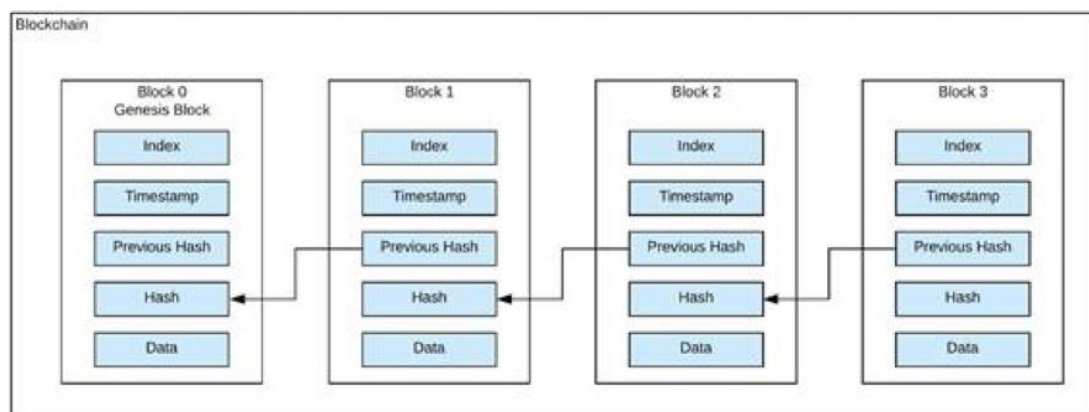


Fig 1.2.1: Blockchain

1.3 Organization of Project

The development of the project is done in a structured way.

We have three phases in our project.

- Project creation
- Database creation

- Developing front-end
- Connecting front-end to back-end
- Implementing blockchain

2. THEORETICAL ANALYSIS OF THE PROPOSED PROJECT

2.1 Requirements Gathering

2.1.1 Software Requirements

Programming Language : Java

Graphical User Interface: HTML, CSS with Bootstrap, JSP

Libraries : MYSQL connector jar file, Apache Tomcat jar file

Encryption Algorithm : SHA-1

API : JDBC

Framework : Java EE

Tool : Eclipse, MYSQL

2.1.2 Hardware Requirements

Operating System: Windows 10

Processor : Intel Core i5

CPU Speed : 2.30 GHz

Memory : 4 GB (RAM)

2.2 Technologies Description

Java

Python Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let application developers write once, run anywhere (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to byte code that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. The Java runtime provides dynamic capabilities (such as reflection and runtime code modification) that are typically not available in traditional compiled languages.

The most important features of Java language are Simple, Object-Oriented, Portable, Platform independent, Secured, Robust, Architecture neutral, Interpreted, High Performance, Multithreaded, Distributed, Dynamic

HTML

HTML stands for Hypertext Markup Language, and it is the most widely used language to write Web Pages.

- Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a Markup Language which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.

Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

CSS

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs, and variations in display for different devices and screen sizes as well as a variety of other effects.

JSP

Java Server Pages (JSP) is a server-side programming technology that enables the creation of dynamic, platform-independent method for building Web-based applications. JSP have access to the entire family of Java APIs, including the JDBC API to access enterprise databases. JSP is one of the most widely used language over the web. A JSP page consists of HTML tags and JSP tags. The JSP pages are easier to maintain than Servlet because we can separate designing and development. It provides some additional features such as Expression Language, Custom Tags, etc.

SHA-1 Encryption Algorithm

In cryptography, SHA-1 (Secure Hash Algorithm 1) is a cryptographic hash function which takes an input and produces a 160-bit (20-byte) hash value known as a message digest – typically rendered as a hexadecimal number, 40 digits long. It was designed by the United States National Security Agency, and is a U.S. Federal Information Processing Standard. SHA-1 produces a message digest based on principles similar to those used by Ronald L. Rivest of MIT in the design of the MD2, MD4 and MD5 message digest algorithms, but generates a larger hash value (160 bits vs. 128 bits).

JDBC

Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is a Java-based data access technology used for Java database connectivity. It is part of the Java Standard Edition platform, from Oracle Corporation. It provides methods to query and update data in a database, and is oriented toward relational databases.

Java EE Framework

The Java EE stands for Java Enterprise Edition, which was earlier known as J2EE and is currently known as Jakarta EE. It is a set of specifications wrapping around Java SE (Standard Edition). The Java EE provides a platform for developers with enterprise features such as distributed computing and web services. Java EE applications are usually run on reference run times such as microservers or application servers. Examples of some contexts where Java EE is used are e-commerce, accounting, banking information systems. Java EE has several specifications which are useful in making web pages, reading and writing from database in a transactional way, managing distributed queues. The Java EE contains several APIs which have the functionalities of base Java SE APIs such as Enterprise JavaBeans, connectors, Servlets, Java Server Pages and several web service technologies.

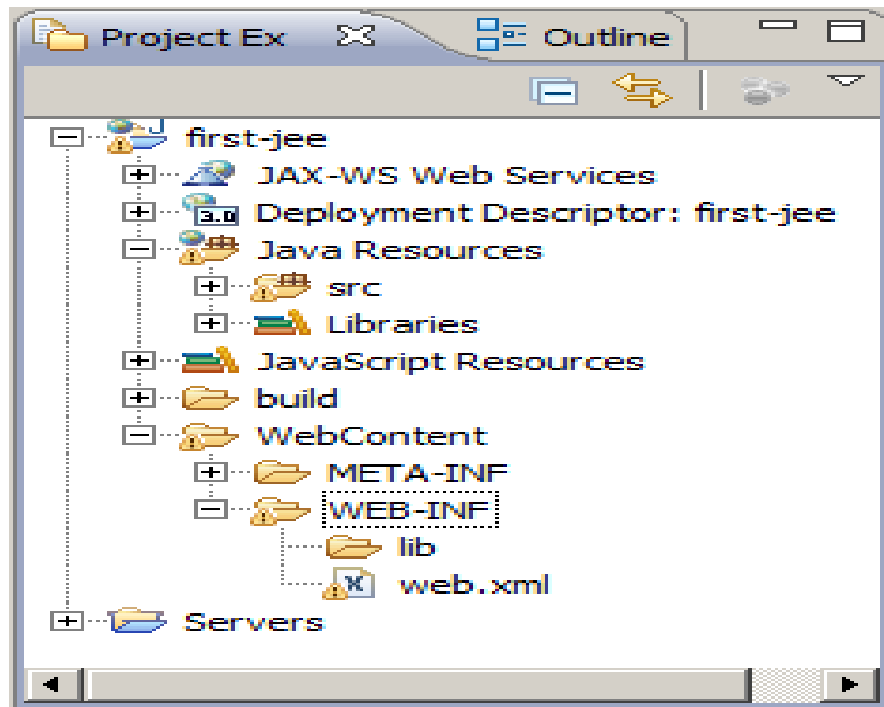


Fig 2.2: Java EE project structure

MYSQL Connector jar file

MySQL Connector/J is the official JDBC driver for MySQL. MySQL jar file has to be downloaded from the official website. This jar file would help to connect with the database. JDBC API should be used to connect to the database. JDBC consists of the code for this connection.

Eclipse

Eclipse is an integrated development environment (IDE) used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in Java and its primary use is for developing Java applications, but it may also be used to develop applications in other programming languages via plug-ins

The Eclipse software development kit (SDK), which includes the Java development tools, is meant for Java developers. Users can extend its abilities by installing plug-ins written for the Eclipse Platform, such as development toolkits for other programming languages, and can write and contribute their own plug-in modules.

MySQL

MySQL is an open-source relational database management system (RDBMS). A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation).

3. DESIGN

3.1 Introduction

Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm and area of application. Design is the first step in the development phase for any engineered product or system. The designer's goal is to produce a model or representation of an entity that will later be built. Beginning, once system requirement have been specified and analyzed, system design is the first of the three technical activities -design, code and test that is required to build and verify software.

The importance can be stated with a single word "Quality". Design is the place where quality is fostered in software development. Design provides us with representations of software that can assess for quality. Design is the only way that we can accurately translate a customer's view into a finished software product or system. Software design serves as a foundation for all the software engineering steps that follow. Without a strong design we risk building an unstable system – one that will be difficult to test, one whose quality cannot be assessed until the last stage.

During design, progressive refinement of data structure, program structure, and procedural details are developed reviewed and documented. System design can be viewed from either technical or project management perspective. From the technical point of view, design is comprised of four activities – architectural design, data structure design, interface design and procedural design.

3.2 Architecture Diagram

Web applications are by nature distributed applications, meaning that they are programs that run on more than one computer and communicate through network or server. Specifically, web applications are accessed with a web browser and are popular because of the ease of using the browser as a user client. For the enterprise, software on potentially thousands of client computers is a key reason for their popularity. Web applications are used for web mail, online retail sales, discussion boards, weblogs, online banking, and more. One web application can be accessed and used by millions of people.

Like desktop applications, web applications are made up of many parts and often contain mini programs and some of which have user interfaces. In addition, web applications frequently require an additional markup or scripting language, such as HTML, CSS, or JavaScript programming language.

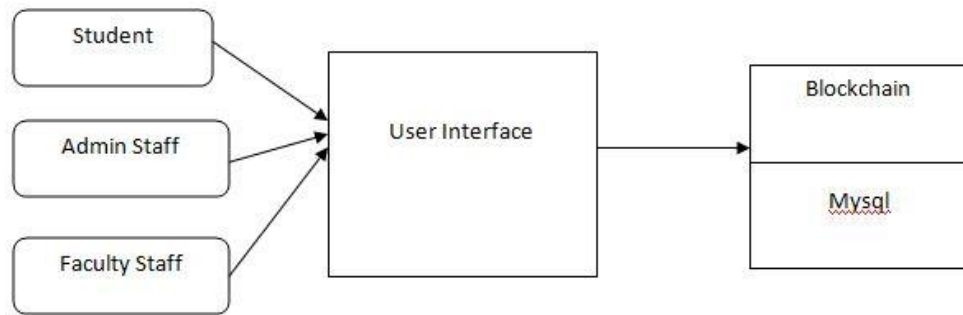


Fig 3.2: Architecture Diagram

3.3 UML Diagrams

3.3.1 Use Case Diagram

To model a system, the most important aspect is to capture the dynamic behavior. Dynamic behavior means the behavior of the system when it is running/operating.

Only static behavior is not sufficient to model a system rather dynamic behavior is more important than static behavior. In UML, there are five diagrams available to model the dynamic nature and use case diagram is one of them. Now as we have to discuss that the use case diagram is dynamic in nature, there should be some internal or external factors for making the interaction.

These internal and external agents are known as actors. Use case diagrams consist of actors, use cases and their relationships. The diagram is used to model the system/subsystem of an application. A single use case diagram captures a particular functionality of a system.

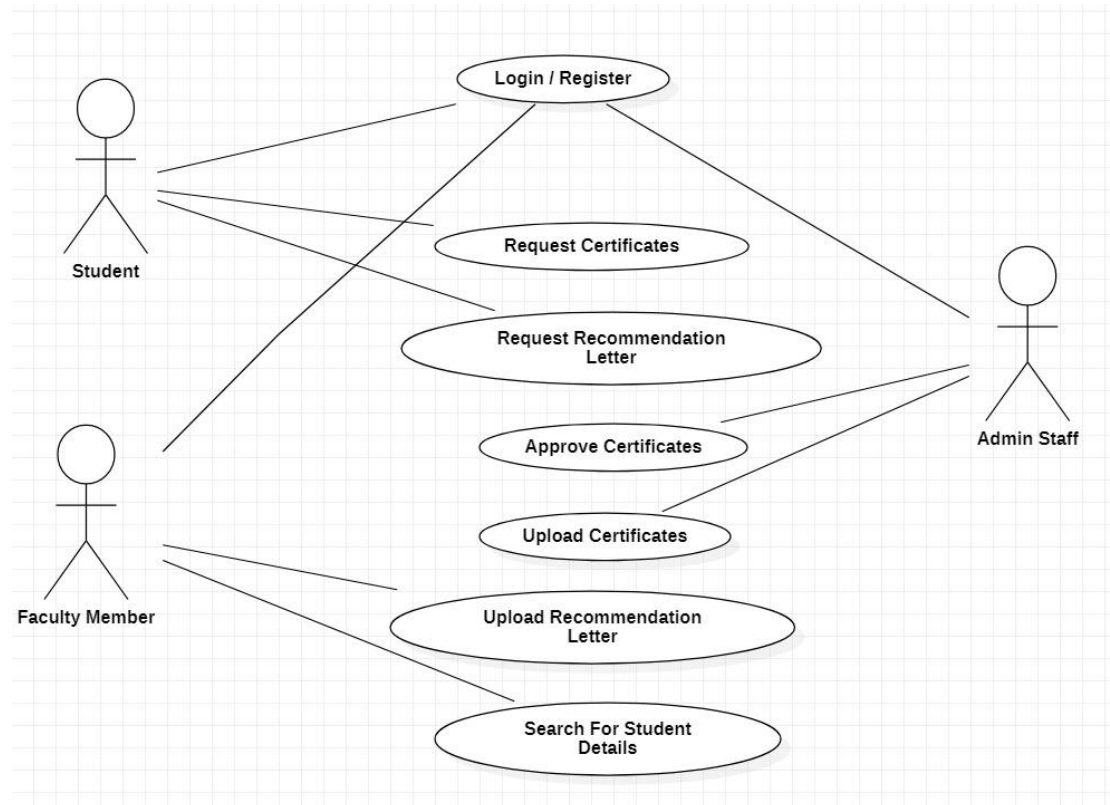


Fig 3.2.1: Use Case Diagram

3.3.2 Sequence Diagram

Sequence Diagrams Represent the objects participating the interaction horizontally and time vertically. A Use Case is a kind of behavioral classifier that represents a declaration of an offered behavior. Each use case specifies some behavior, possibly including variants that the subject can perform in collaboration with one or more actors. Use cases define the offered behavior of the subject without reference to its internal structure. These behaviors, involving interactions between the actor and the subject, may result in changes to the state of the subject and communications with its environment. A use case can include possible variations of its basic behavior, including exceptional behavior and error handling.

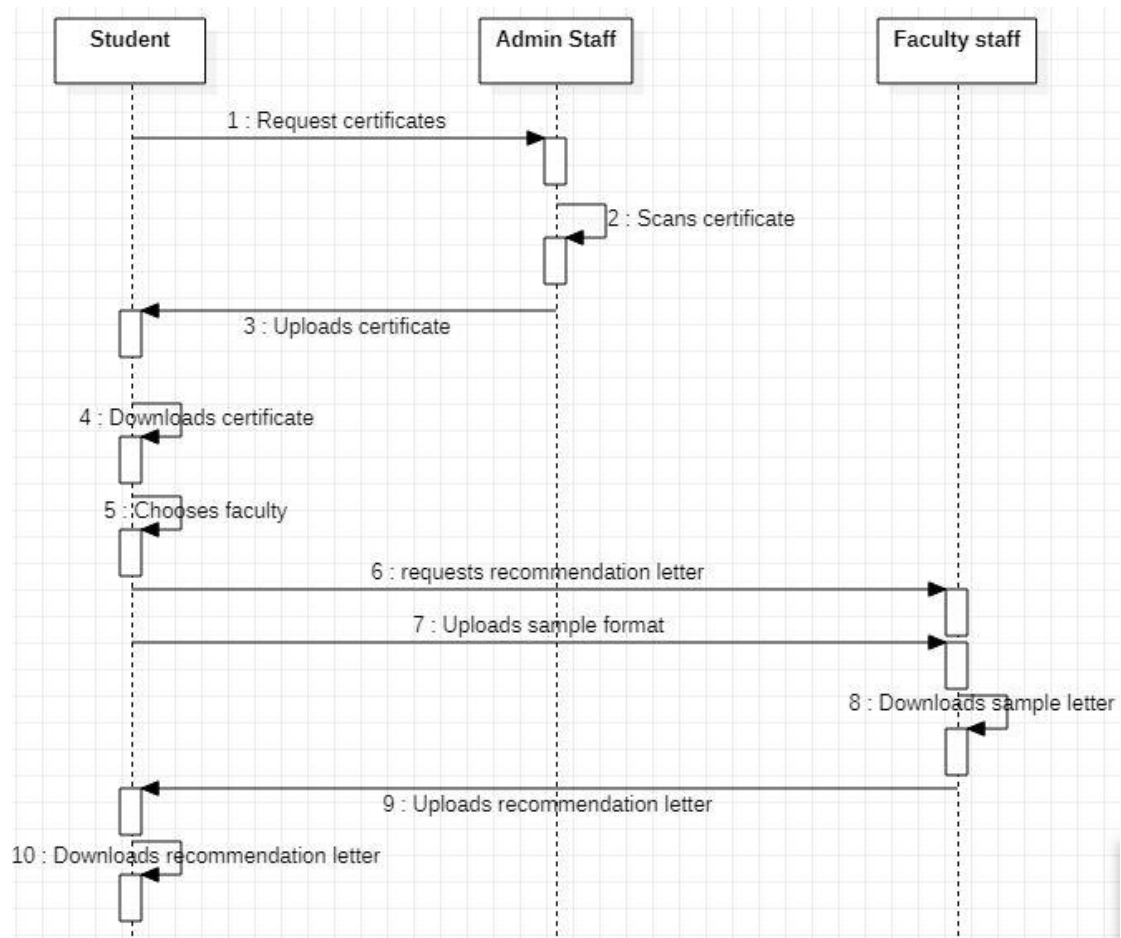
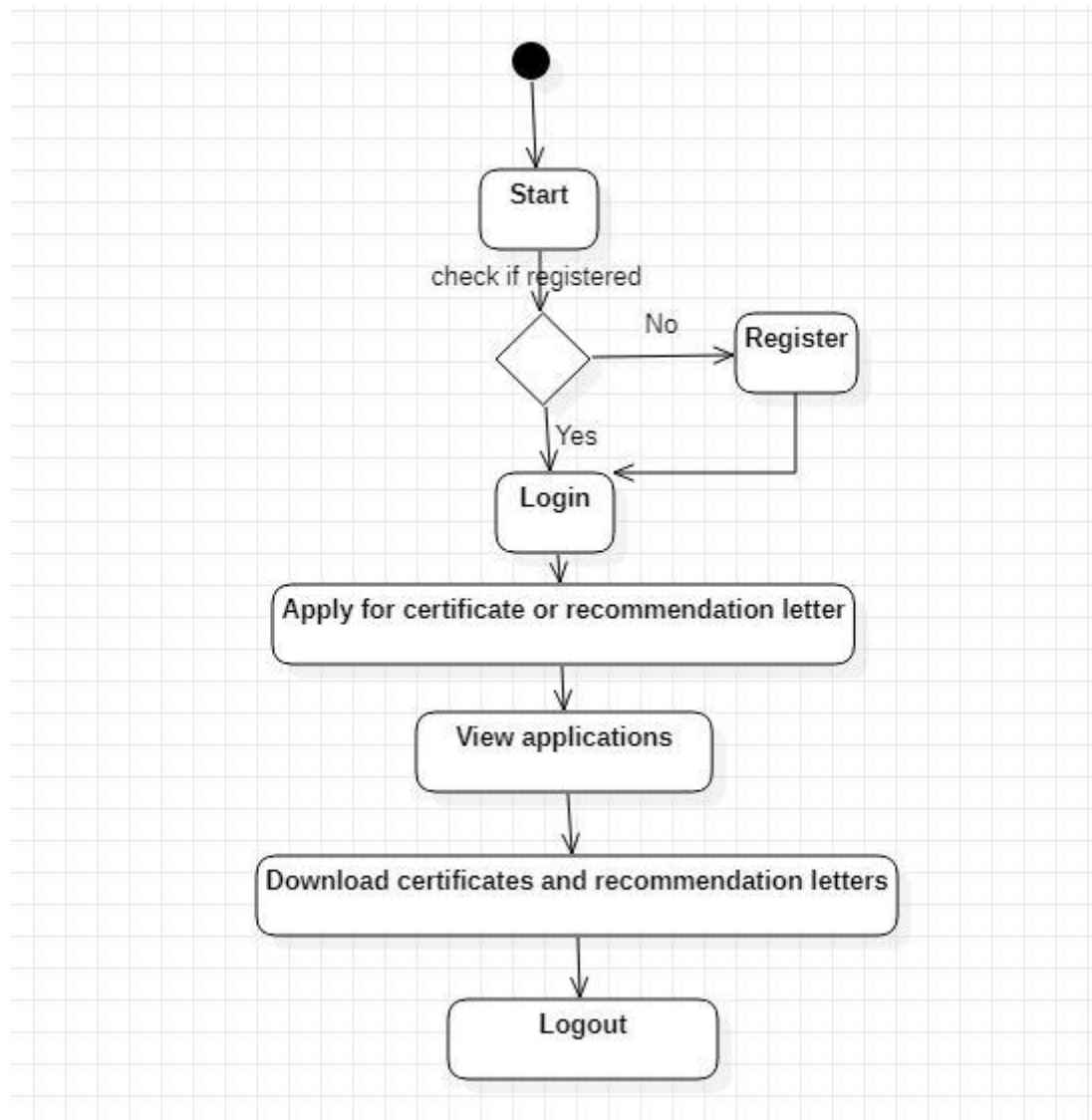


Fig 3.3.2: Sequence Diagram

3.3.3 Activity Diagram

Activity diagrams are graphical representations of Workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

**Fig 3.2.3: Activity Diagram**

4. IMPLEMENTATION

4.1 Coding

index.jsp

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <link rel="stylesheet" href="css/certificate.css"/>
    <title>BVRITH Student Services</title>
  </head>
  <body>
    <div class="wrapper col1">
      <div id="header">
        <div id="logo">
          <table style="text-align: center;">
            <tr>
              <td><img src = "https://www.noticebard.com/wp-content/uploads/2018/03/b-v-
raju.png" style="height: 100px; width: 100px;" alt=""></td>
              <td>
                <h1 style="margin-left:190px;font-size:35px">
                  <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                </h1>
                <br>
                <span id="project">E-Certificates Issue Services Using BlockChain</span>
              </td>
            </tr>
          </table>
        </div>
        <br class="clear" />
      </div>
    </div>
    <div>
      <div>
        <ul>
```

```

    <marquee behavior="scroll" direction="left" style="font-size:20px;color:white;">E-
Certificates issue services using blockchain is an application made for the students
and faculty of BVRITH for easy issue of certificates.</marquee>

```

```

</ul>

```

```

</div>

```

```

<br/>

```

```

<font color = "maroon" style = "font-
size:19px;"><b><center>Welcome</center></b></font><br/>

```

```

<font color="maroon" style="font-size:19px;"><b><center>Please choose one of
the options</center></b></font>

```

```

<div class = "wrapper col3">

```

```

<div class = "card">

```

```

<span></span>

```

```

<span></span>

```

```

<span></span>

```

```

<span></span>

```

```

<div class = "content">

```

```



```

```

<h5 class="card-title">Admin</h5>

```

```

<a href="alogin.jsp" class="btn btn-primary">ADMIN</a>

```

```

</div>

```

```

</div>

```

```

<div class = "card">

```

```

<span></span>

```

```

<span></span>

```

```

<span></span>

```

```

<span></span>

```

```

<div class = "content">

```

```



```

```

<h5 class="card-title">Student</h5>

```

```

<a href="stulogin.jsp" class="btn btn-primary">STUDENT</a>

```

```

</div>
</div>
<div class = "card">
<span></span>
<span></span>
<span></span>
<span></span>
<div class = "content">

<h5 class="card-title">Faculty</h5>
<a href="flogin.jsp" class="btn btn-primary">FACULTY</a>
</div>
</div>
</div>
</div>
</body>
</html>

```

stulogin.jsp

```

<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
<meta charset="utf-8">
<link rel="stylesheet" href="css/certificate.css"/>
<link rel="stylesheet" href="css/academic.css"/>
<title>BVRITH Student Services</title>
</head>
<body>
<div class="wrapper col1">
<div id="header">
<div id="logo">
<table style="text-align: center;">

```


[illegible]

```

<input type="reset" value="Reset" class="button" style="margin-right: 170px;"/>
<br/><br/><br/>
<a href="reg.jsp" style="float: left;margin-bottom: 15px;margin-left: 190px;text-
decoration: none;color: white">Register Here</a>
<a href="forgotstu.jsp" style="float: right;margin-bottom: 150px;margin-right:
180px;text-decoration: none;color: white">ForgotPassword</a></center></form>
</div></div>
<div>
<p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-
decoration: none;color: red"></a></p>
</div>
</body>
</html>

```

Studentaction.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<%
String uname = null;
String email = request.getParameter("uname");
String pass = request.getParameter("pass");
Connection con = Database.getConnection();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from Student where email=" + email +
""");
if (rs.next()) {
    uname = rs.getString("name");
    if (rs.getString("email").equals(email) && (rs.getString("pass").equals(pass))) {
        session.setAttribute("n1", uname);
        System.out.println(uname);
        session.setAttribute("v", email);
        System.out.println(email);
    }
}

```

```

        System.out.println("Success");
        response.sendRedirect("stuvview.jsp?msg=Login Successfully");
    } else {
        System.out.println("Failed");
        response.sendRedirect("stulogin.jsp?msgg=Incorrect Username or
Password");
    }
} else {
    System.out.println("Not Enter");
    response.sendRedirect("stulogin.jsp?err=User does not exist");
}
%>

```

reg.jsp

```

<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
    <meta charset="utf-8">
    <link rel="stylesheet" href="css/regform.css"/>
    <link rel="stylesheet" href="css/academic.css"/>
    <title>BVRITH Student Services</title>
</head>
<body>
    <div class="wrapper col1">
        <div id="header">
            <div id="logo">
                <table style="text-align: center;">
                    <tr>
                        <td></td>
                        <td>
                            <h1 style="margin-left:190px;font-size:35px">
                                <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>

```

```

</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /></div></div>
<div>
<ul>
<li class="active"><a href="index.jsp">Home</a></li>
<li><a href="stulogin.jsp">Student</a></li>
<li><a href="flogin.jsp">Faculty</a></li>
<li><a href="alogin.jsp">Admin</a></li>
</ul>
</div> <br/>
<font color="maroon"style="font-size:19px;"><b><center>Please Register
Here</center></b></font><br/> <br/>
<div class="container">
<div class="title"></div>
<div class="content">
<form action="regaction.jsp" method="get">
<div class="user-details">
<div class="input-box">
<span class="details">Roll no</span>
<input type="text" placeholder="Enter Roll Number" name="rollno"
required>
</div>
<div class="input-box">
<span class="details">Name</span>
<input type="text" placeholder="Enter your name" name="name" required>
</div>
<div class="input-box">
<span class="details">Password</span>
<input type="password" placeholder="Enter your password" name="pass"
required>
</div>
<div class="input-box">

```

```
<span class="details">Email Id</span>  
<input type="text" placeholder="Enter your email" name="email" required>  
</div>  
<div class="input-box">  
    <span class="details">course</span>  
    <input type="text" placeholder="ex:cse" name="course" required>  
</div>  
<div class="input-box">  
    <span class="details">Location</span>  
    <input type="text" placeholder="location" name="loc" required>  
</div>  
<div class="input-box">  
    <span class="details">contact No</span>  
    <input type="text" placeholder="mobile number" name="cno"required>  
</div>  
<div class="input-box">  
    <span class="details">cgpa</span>  
    <input type="text" placeholder="cgpa" name="cgpa"required>  
</div>  
<div class="input-box">  
    <span class="details">Home City</span>  
    <input type="text" placeholder="city" name="sques1" required>  
</div>  
<div class="input-box">  
    <span class="details">Nick Name</span>  
    <input type="text" placeholder="nick" name="sques2" required>  
</div>  
</div>  
  
    <input type="submit" class="button" value="SignUp"/>  
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&~  
    <input type="Reset" class="button" value="Clear" />  
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&~  
&nbsp;&nbsp;&nbsp;&nbsp;&~
```

```

    <a href="index.jsp"><input type="button" class="button" value="Exit" style =
width: 100px; height: 35px; border-radius: 10px; transform-style: preserve-3d;
border-bottom-width: 4px; font-size: 20px; margin-left:20px;/></a>

    </form> </div> </div>

    <div>

        <p style="margin-left: 650px;color: red">&nbsp;<a href="" style="text-
decoration: none;color: red"></a></p>

    </div>

</body>

</html>

```

Regaction.jsp

```

<% @page import="java.sql.Statement"%>
<% @page import="action.Database"%>
<% @page import="java.sql.Connection"%>
<%

    String rollno = request.getParameter("rollno");
    System.out.println("rollno " + rollno);
    String name = request.getParameter("name");
    System.out.println("name " + name);
    String pass = request.getParameter("pass");
    System.out.println("Pass " + pass);
    String email = request.getParameter("email");
    System.out.println("Email " + email);
    String course = request.getParameter("course");
    System.out.println("course " + course);
    String loc = request.getParameter("loc");
    System.out.println("Loc " + loc);
    String cno = request.getParameter("cno");
    System.out.println("Cno " + cno);
    String cgpa = request.getParameter("cgpa");
    System.out.println("cgpa" + cgpa);
    String sques1 = request.getParameter("sques1");
    System.out.println("sques1 " + sques1);

```

```

String sques2 = request.getParameter("sques2");
System.out.println("sques2 " + sques2);
Connection con = Database.getConnection();
Statement st = con.createStatement();
int i = st.executeUpdate("insert into Student
(rollno,name,pass,email,course,location,contactno,cgpa,status,sques1,sques2)
values('"+rollno+"','"+name+"','"+pass+"','"+email+"','"+course+"','"+loc+"','"+cno+"',
 '"+cgpa+"','completed','"+sques1+"','"+sques2+"')");
if(i!=0){
    response.sendRedirect("reg.jsp?msg=Student Registration Successfully");
}else{
    response.sendRedirect("reg.jsp?msg=Registration Failed");
}
%>

```

forgotstu.jsp

```

<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
    <meta charset="utf-8">
    <link rel="stylesheet" href="css/regform.css"/>
    <link rel="stylesheet" href="css/academic.css"/>
    <title>BVRITH Student Services</title>
</head>
<body>
    <div class="wrapper col1">
        <div id="header">
            <div id="logo">
                <table style="text-align: center;">
                    <tr>
                        <td></td>
                        <td>
                            <h1 style="margin-left:190px;font-size:35px">

```

```

<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /> </div> </div> <div>
<ul>
<li class="active"><a href="index.jsp">Home</a></li>
<li><a href="stulogin.jsp">Student</a></li>
<li><a href="flogin.jsp">Faculty</a></li>
<li><a href="alogin.jsp">Admin</a></li>
</ul>
</div> <br>
<font color="maroon" style="font-size:19px;"><b><center>Forgot password? No
Worries</center></b></font><br>
<div class="container">
<div class="title"></div>
<div class="content">
<form action="forgotstaction.jsp" method="get">
<div class="user-details">
<div class="input-box">
<span class="details">Home City</span>
<input type="text" placeholder="city" name="sques1" required>
</div>
<div class="input-box">
<span class="details">Nick Name</span>
<input type="text" placeholder="nick" name="sques2" required>
</div>
<div class="input-box">
<span class="details">Email Id</span>
<input type="text" placeholder="Enter your email" name="email" required>
</div>
<div class="input-box">
<span class="details">Password</span>
<input type="text" placeholder="Enter your password" name="pass" required>

```


[illegible]

Forgotstaction.jsp

```
<% @page import="java.sql.Statement"%>
<% @page import="action.Database"%>
<% @page import="java.sql.Connection"%>
<% @page import="java.sql.PreparedStatement"%>
<%

String pass = request.getParameter("pass");

System.out.println("Pass " + pass);

String email = request.getParameter("email");

System.out.println("Email " + email);

String sques1 = request.getParameter("sques1");

System.out.println("sques1 " + sques1);

String sques2 = request.getParameter("sques2");

System.out.println("sques2 " + sques2);

Connection con = Database.getConnection();

PreparedStatement pst = con.prepareStatement("Update Student set pass=? where
sques1=? and sques2=? , email=?");

pst.setString(1,pass);
```

```

pst.setString(2,sques1);
pst.setString(3,sques2);
pst.setString(4,email);
int i = pst.executeUpdate();
if(i!=0){
    response.sendRedirect("forgotstu.jsp?msg= Student Password Updated");
}else{
    response.sendRedirect("forgotstu.jsp?msg=Pasword Updation Failed");
}
%>

```

Stuview.jsp

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title></title>
    <meta name="author" content="templatemo">
    <link href="css/studentcer.css" rel="stylesheet">
    <link href="css/regform.css" rel="stylesheet">
</head>
<body>
<div class="wrapper col1">
<div id="header">
<div id="logo">
<table style="text-align: center;">
<tr>
<td></td>
<td>
<h1 style="margin-left:190px;font-size:35px">
<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>

```

```

</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /></div></div>
<div class="wrapper col2">
<div id="topbar">
<div id="topnav">
<ul>
<li class="active"><a href="stuvview.jsp">Home</a></li>
<li><a href="studetails.jsp">Profile</a></li>
<li><a href="studentcer.jsp">ApplyCertificate</a></li>
<li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
<li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
<li><a href="studntviewrecdetails.jsp">
ViewRecommendationLetter</a></li>
<li><a href="index.jsp">Logout</a></li>
</ul>
</div><br />
<div style="border:1px solid white;width: 1250px;height: 400px;margin-left:
30px;border-radius: 40px;background-color:grey;">
<br><h1 style="color: white;margin-right: 120px;margin-left: 500px;margin-
top: -4px">Welcome student</h1></div>
</div> <!-- /container -->
<div>
<p style="margin-left: 650px;color: red">&nbsp;<a href="" style="text-
decoration: none;color: red"></a></p>
</div>
</body>
</html>

```

Studetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
% @page import="action.Database"%
<!DOCTYPE html>
<html lang="en">
<head>

```

```

    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta name="author" content="templatemo">
    <link href="css/studentcer.css" rel = "stylesheet"/>
    <link href="css/regform.css" rel = "stylesheet"/>
    <title>BVRITH Student Services</title>
</head>
<body>
    <div class="wrapper col1">
    <div id="header">
    <div id="logo">
    <table style="text-align: center;">
    <tr>
    <td></td>
    <td>
    <h1 style="margin-left:190px;font-size:35px">
    <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
    </h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
    <br class="clear" /></div></div>
    <div>
    <ul>
    <li class="active"><a href="stuvview.jsp">Home</a></li>
    <li><a href="studetails.jsp">Profile</a></li>
    <li><a href="studentcer.jsp">ApplyCertificate</a></li>
    <li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
    <li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
    <li><a href="studntviewrecdetails.jsp">ViewRecommendationLetter</a></li>
    <li><a href="index.jsp">Logout</a></li></ul></div><br />
    <%
        String name = null, email = null, loc = null,rollno=null, cno = null;
        String n = session.getAttribute("n1").toString();
        String s = session.getAttribute("v").toString();
        Connection con = Database.getConnection();
        Statement st = con.createStatement();
        ResultSet rs = st.executeQuery("select * from student where email='"+ s +
""");
        if (rs.next()== true) {
            name = rs.getString("name");
            System.out.println("Name " + name);
            email = rs.getString("email");
            System.out.println("Email " + email);
            loc = rs.getString("location");
            System.out.println("Location " + loc);
            cno = rs.getString("contactno");
            rollno = rs.getString("rollno");
            System.out.println("Contact No " + cno);
        }
    %>

```

```

<div class="container">
  <div class="title"><center><%=name%> Details</center></div>
  <br/>
  <div class="content">
    <div class="user-details">
      <div class="input-box">
        <span class="details">Name</span>
        <input type="text" value="<%=name%>" readonly=""/>
      </div>
      <div class="input-box">
        <span class="details">Email Id</span>
        <input type="text" value="<%=email%>" readonly=""/>
      </div>
      <div class="input-box">
        <span class="details">Roll Number</span>
        <input type="text" value="<%=rollno%>" readonly=""/>
      </div>
      <div class="input-box">
        <span class="details">Location</span>
        <input type="text" value="<%=loc%>" readonly=""/>
      </div>
      <div class="input-box">
        <span class="details">Contact Number</span>
        <input type="text" value="<%=cno%>" readonly=""/>
      </div>
    </div>
  </div>
  <div>
    <p style="margin-left: 650px;color: red">Copyright © SGS&nbsp;<a href=""
style="text-decoration: none;color: red"></a></p>
  </div>
</body>
</html>

```

Studentcer.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title></title>
    <meta name="description" content="">
    <meta name="author" content="templatemo">
    <link href="css/studentcer.css" rel="stylesheet">
    <link href="css/regform.css" rel="stylesheet">

```

```

<script class="jsbin"
src="http://ajax.googleapis.com/ajax/libs/jquery/1/jquery.min.js"></script>
<script class="jsbin"
src="http://ajax.googleapis.com/ajax/libs/jqueryui/1.8.0/jquery-ui.min.js"></script>
</head>
<body>
<script>
function readURL(input) {
if (input.files && input.files[0]) {
var reader = new FileReader();

reader.onload = function (e) {
$('#blah')
.attr('src', e.target.result)
.width(450)
.height(300);
};
reader.readAsDataURL(input.files[0]);
}
}
<div class="wrapper col1">
<div id="header">
<div id="logo">
<table style="text-align: center;">
<tr>
<td></td>
<td>
<h1 style="margin-left:190px;font-size:35px">
<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /> </div></div>
<div class="wrapper col2">
<div id="topbar">
<div id="topnav">
<ul>
<li class="active"><a href="stuvview.jsp">Home</a></li>
<li><a href="studetails.jsp">Profile</a></li>
<li><a href="studentcer.jsp">ApplyCertificate</a></li>
<li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
<li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
<li><a
href="studntviewrecdetails.jsp">ViewRecommendationLetter</a></li>
<li><a href="index.jsp">Logout</a></li></ul></div></div></div><br />
<div class="container">
<div class="title">Student Apply Certificate Details</div>
<div class="content">
<form action="studentcertificateaction.jsp" method="post">
<div class="user-details">

```

[illegible]

Studentcertificateaction.jsp

```
<%@page import="java.sql.ResultSet"%>
<%@page import="java.sql.PreparedStatement"%>
<%@page import="java.sql.Connection"%>
<%@page import="action.Database"%>
<%
try {
    Connection cn = Database.getConnection();
```

```

        PreparedStatement ps = cn.prepareStatement("insert into
StudentCertificate(rollno, name,emailid, usertype,cname,
Description,status)values(?,?,?,?,?,?,?)");
        ps.setString(1,request.getParameter("rollno"));
        ps.setString(2,request.getParameter("name"));
        ps.setString(3, request.getParameter("email"));
        ps.setString(4,request.getParameter("utype"));
        ps.setString(5,request.getParameter("cname"));
        ps.setString(6,request.getParameter("Description"));
        ps.setString(7,"No");

        int i = ps.executeUpdate();
        if (i == 1) {

response.sendRedirect("studentcer.jsp?msg=StudentAppliedCertificate
Successfully");
        } else {

response.sendRedirect("studentcer.jsp?msgg=StudentAppliedCertificate Failed");
        }
        cn.close();

    } catch (Exception e) {
        System.out.println(e.toString());
    }
}
%>

```

Studntviewcerdetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <meta name="author" content="templatemo">
        <link href="css/studentcer.css" rel="stylesheet">
    </head>
    <body>
        <div class="wrapper col1">
            <div id="header">
                <div id="logo">
                    <table style="text-align: center;">
                        <tr>
                            <td></td>
                            <td>
                                <h1 style="margin-left:190px;font-size:35px">

```



```

<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /></div></div>
<div>
<ul>
<li class="active"><a href="stuvview.jsp">Home</a></li>
<li><a href="studetails.jsp">Profile</a></li>
<li><a href="studentcer.jsp">ApplyCertificate</a></li>
<li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
<li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
<li><a href="studntviewrecdetails.jsp">ViewRecommendationLetter</a></li>
<li><a href="index.jsp">Logout</a></li> </ul>
</div><br />
<div class="abstract" style="background: ;margin-left:2%;"><br><br>
<center><h1 style="color: white;margin-top: -10px">Certificate
Details</h1></center><br>
<br><table style="margin-left: 35%;margin-top: -20px">
<tr>
<th style="background-color: blue">CertiFicateName</th>
<th style="background-color: blue">Description</th>
<th style="background-color: blue">Download</th></tr>
<tr>
<%
try {
Connection con = Database.getConnection();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from StudentCertificate");
while (rs.next()) { %>
<td style="color:white;"><%=rs.getString("cName")%></td>
<td style="color:white;"><%=rs.getString("DEscription")%></td>
<td> <a href="downloadCER.jsp?rollno=<%=rs.getString("rollno")%>"
style="width:60px;height:45px;">Download</a></td> </tr>
<% }
} catch (Exception e) {
e.printStackTrace();
System.out.println("leave details Page" + e.getMessage());
}
%>
</table></div></div> <!-- /container -->
<div>
<p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div>
</body>
</html>

```

downloadCER.jsp

```

<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>

```

```

<% @page import="action.Database"%>
<% @page import="java.sql.Connection"%>
<% @page import="java.sql.PreparedStatement"%>
<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Blob"%>
<% @page import="java.io.OutputStream"%>
<% @page import="java.io.InputStream"%>
<% @page import="java.io.FileInputStream"%>
<% @page import="java.io.File"%>
<% @page import="java.security.MessageDigest"%>
<% @page import="java.math.BigInteger"%>
<% @page import="java.security.Key"%>
<% @page import="javax.crypto.spec.SecretKeySpec"%>
<% @page import="javax.crypto.Cipher"%>
<% @page import="org.bouncycastle.util.encoders.Base64"%>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title></title>
</head>
<body>
<%
String roll=request.getParameter("rollno").toString();
String keyWord = "5765586965748666502846";
keyWord = keyWord.substring(0, 16);
byte[] keyValue = keyWord.getBytes();
Key key = new SecretKeySpec(keyValue, "AES");
Cipher c = Cipher.getInstance("AES");
c.init(Cipher.ENCRYPT_MODE, key);
roll = new String(Base64.encode(roll.getBytes()));
System.out.println("roll is "+roll);
String query = "select fname from certificate where rollno=?";
Connection con =Database.getConnection();
PreparedStatement pstmt=con.prepareStatement(query);
pstmt.setString(1,roll);
ResultSet rs=pstmt.executeQuery();
if (rs.next()){
    response.reset();
    response.setContentType("application/pdf");
    response.addHeader("Content-Disposition","attachment; filename="+ "123.pdf");
    // create the byte array from Blob
    Blob blb = rs.getBlob(1);
    byte[] bdata = blb.getBytes(1, (int) blb.length());
    // get the response Output stream object to write the content of the file into header
    OutputStream output = response.getOutputStream();
    output.write(bdata);
    output.close();
}
else{response.sendRedirect("stuvview.jsp");}
%>

```

```
</body></html>
```

Studentrec.jsp

```
<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<% @page import="java.sql.SQLException"%>
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta name="author" content="templatemo">
    <link href="css/studentcer.css" rel="stylesheet">
    <link href="css/regform.css" rel="stylesheet">
    <script class="jsbin"
src="http://ajax.googleapis.com/ajax/libs/jquery/1/jquery.min.js"></script>
    <script class="jsbin"
src="http://ajax.googleapis.com/ajax/libs/jqueryui/1.8.0/jquery-ui.min.js"></script>
  </head>
  <body>
    <script>
      function readURL(input) {
        if (input.files && input.files[0]) {
          var reader = new FileReader();
          reader.onload = function (e) {
            $('#blah')
              .attr('src', e.target.result)
              .width(450)
              .height(300);
          };
          reader.readAsDataURL(input.files[0]);
        }
      }
    </script>
    <div class="wrapper col1">
      <div id="header">
        <div id="logo">
          <table style="text-align: center;">
            <tr>
              <td></td>
              <td>
                <h1 style="margin-left:190px;font-size:35px">
                  <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                </h1> <br><span id="project">E-Certificates Issue Services Using
                  BlockChain</span></td></tr></table></div>
                <br class="clear" />
              </div></div>
```

```

<div class="wrapper col2">
<div id="topbar">
<div id="topnav">
<ul>
<li class="active"><a href="stuvview.jsp">Home</a></li>
<li><a href="studetails.jsp">Profile</a></li>
<li><a href="studentcer.jsp">ApplyCertificate</a></li>
<li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
<li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
<li><a href="studntviewrecdetails.jsp">ViewRecommendationLetter</a></li>
<li><a href="index.jsp">Logout</a></li></ul></div></div></div><br />
<div class="container">
<div class="title">Student Apply Recommendation Letter</div>
<div class="content">
<form action="studentRECAction.jsp" method="post">
<div class="user-details">
<div class="input-box">
<span class="details">Roll no</span>
<input type="text" placeholder="Enter Roll Number" name="rollno"
required>
</div>
<div class="input-box">
<span class="details">Name</span>
<input type="text" placeholder="Enter your name" name="name" required>
</div>
<div class="input-box">
<span class="details">Email Id</span>
<input type="text" placeholder="Enter your email" name="email" required>
</div>
<%
    try {
        Connection con = Database.getConnection();
        Statement st = con.createStatement();
        ResultSet rs = st.executeQuery("select * from Faculty");
    %>
<div class="input-box">
<span class="details">Select Faculty</span>
<select name="utype" required style="width:200px;height:30px">
<%
        while (rs.next()){
            String name=rs.getString("name");
        %>
<option value="<%=name%>"><%=name%></option>
<% } %>
</select>
<% }
    catch(SQLException se){
    }
    %>
</div>

```

```
<div class="input-box">  
    <span class="details">Letter Name</span>  
    <input type="text" placeholder="letter for?" name="cname" required>  
</div>  
<div class="input-box">  
    <span class="details">Sample Letter</span>  
    <input type="file" name="fname" required>  
</div>  
<div class="input-box">  
    <span class="details">Description</span>  
    <textarea rows="3" cols="40" name="Description" required></textarea>  
</div>  
    <input type="submit" class="button" value="Add"/>  
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&~  
    <input type="Reset" class="button" value="Reset" />  
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&~  
&nbsp;&~  
</form>  
</div>  
</div>  
  
    <div style="margin-left: 750px;margin-top: -350px;">  
          
    </div>  
</div> <!-- /container -->  
<div>  
    <p style="margin-left: 550px;color: red">&nbsp;&nbsp;&<a href="" style="text-decoration: none;color: red"></a></p>  
</div>  
</body>  
</html>
```

studentREAction.jsp

```
<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.PreparedStatement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<% @page import="java.io.File"%>
<% @page import="java.io.InputStream"%>
<% @page import="java.io.FileInputStream"%>
<%
try {
    Connection cn = Database.getConnection();
    PreparedStatement ps = cn.prepareStatement("insert into
Studentrecletter(rollno, name,emailid, usertype,cname, Description,status,
lname)values(?,?,?, ?, ?, ?, ?)");
    ps.setString(1,request.getParameter("rollno"));
    ps.setString(2,request.getParameter("name"));
    ps.setString(3, request.getParameter("email"));
    ps.setString(4,request.getParameter("utype"));
    ps.setString(5,request.getParameter("cname"));
}
```

```

        ps.setString(6,request.getParameter("Description"));
        ps.setString(7,"No");
String f=request.getParameter("fname");
String path="E:\\sriproj\\SriCertiFicate\\WebRoot\\file\\";
String fil=path+f;
File file = new File(fil);
FileInputStream fis=new FileInputStream(file);
ps.setBinaryStream(8,(InputStream)fis,(int)(file.length()));
        int i = ps.executeUpdate();
        if (i == 1) {
response.sendRedirect("studentrec.jsp?msg=StudentAppliedRecletter Successfully");
        } else {
response.sendRedirect("studentrec.jsp?msgg=StudentAppliedRecletter Failed");
        }
        cn.close();
    } catch (Exception e) {
        System.out.println(e.toString());
    }
}
%>

```

Studntviewrecdetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <meta name="author" content="templatemo">
        <link href="css/studentcer.css" rel="stylesheet">
    </head>
    <body>
        <div class="wrapper col1">
            <div id="header">
                <div id="logo">
                    <table style="text-align: center;">
                        <tr>
                            <td></td>
                            <td>
                                <h1 style="margin-left:190px;font-size:35px">
                                    <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                                </h1> <br><span id="project">E-Certificates Issue Services Using
                                    Blockchain</span></td></tr></table></div>
                                <br class="clear" />
                            </div></div> <div><ul>
                                <li class="active"><a href="stuvview.jsp">Home</a></li>
                                <li><a href="studetails.jsp">Profile</a></li>

```

```

<li><a href="studentcer.jsp">ApplyCertificate</a></li>
<li><a href="studntviewcerdetails.jsp">ViewCertificateDetails</a></li>
<li><a href="studentrec.jsp">ApplyRecommendationLetter</a></li>
<li><a href="studntviewrecdetails.jsp">ViewRecommendationLetter</a></li>
<li><a href="index.jsp">Logout</a></li>
</ul>
</div><br />
<div class="abstract" style="background: ;margin-left:2%"><br><br>
<center><h1 style="color: white;margin-top: -10px">Letter Details</h1></center>
<br>
<br><table style="margin-left: 26%;margin-top: -20px">
<tr>
<th style="background-color: blue">Faculty Name</th>
<th style="background-color: blue">LetterName</th>
<th style="background-color: blue">Description</th>
<th style="background-color: blue">Download</th>
</tr>
<tr>
<%
try {
Connection con = Database.getConnection();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from StudentRecLetter");
while (rs.next()) { %>
<td style="color:white;"><%=rs.getString("UserType")%></td>
<td style="color:white;"><%=rs.getString("cName")%></td>
<td style="color:white;"><%=rs.getString("DEscription")%></td>
<td> <a href="downloadCER.jsp?rollno=<%=rs.getString("rollno")%>"
style="width:60px;height:45px;">Download</a></td>
</tr>
<% }
} catch (Exception e) {
e.printStackTrace();
System.out.println("leave details Page" + e.getMessage());
}
%>
</table></div>
</div> <!-- /container -->
<div>
<p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div>
</body>
</html>

```

downloadRL.jsp

```

<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<% @page import="action.Database"%>
<% @page import="java.sql.Connection"%>

```

```

<% @page import="java.sql.PreparedStatement"%>
<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Blob"%>
<% @page import="java.io.OutputStream"%>
<% @page import="java.io.InputStream"%>
<% @page import="java.io.FileInputStream"%>
<% @page import="java.io.File"%>
<% @page import="java.security.MessageDigest"%>
<% @page import="java.math.BigInteger"%>
<% @page import="java.security.Key"%>
<% @page import="javax.crypto.spec.SecretKeySpec"%>
<% @page import="javax.crypto.Cipher"%>
<% @page import="org.bouncycastle.util.encoders.Base64"%>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
</head>
<body>
<%
String roll=request.getParameter("rollno").toString();
String keyWord = "5765586965748666502846";
keyWord = keyWord.substring(0, 16);
byte[] keyValue = keyWord.getBytes();
Key key = new SecretKeySpec(keyValue, "AES");
Cipher c = Cipher.getInstance("AES");
c.init(Cipher.ENCRYPT_MODE, key);
roll = new String(Base64.encode(roll.getBytes()));
System.out.println("roll is "+roll);
String query = "select fname from RECLETTER where rollno=?";
Connection con =Database.getConnection();
PreparedStatement pstmt=con.prepareStatement(query);
pstmt.setString(1,roll);
ResultSet rs=pstmt.executeQuery();
if (rs.next()){
    response.reset();
    response.setContentType("application/pdf");
    response.addHeader("Content-Disposition","attachment; filename="+roll+".pdf");
    // create the byte array from Blob
    Blob blb = rs.getBlob(1);
    byte[] bdata = blb.getBytes(1, (int) blb.length());
    // get the response Output stream object to write the content of the file into header
    OutputStream output = response.getOutputStream();
    output.write(bdata);
    output.close();
}
else{response.sendRedirect("stuvview.jsp");}
%>
</body>
</html>

```


Database.java

```

package action;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
public class Database {
    public static Connection getConnection() throws SQLException,
    ClassNotFoundException, InstantiationException, IllegalAccessException {
        Connection con = null;
        try {
            String url = "jdbc:mysql://localhost:3306/srisindhu";
            String driver = "com.mysql.jdbc.Driver";
            Class.forName(driver).newInstance();
            con = DriverManager.getConnection(url, "root", "root");
            System.out.println("Database Connected Successfully");
        } catch (Exception e) {
            System.out.println("Error in Database" + e.getMessage());
        }
        return con;
    }
    public static void main(String[] args) throws ClassNotFoundException,
    SQLException, InstantiationException, IllegalAccessException
    {
        Database.getConnection();
    }
}

```

Block.java

```

package action;
import java.util.Arrays;
public class Block {
    private String[] transactions;
    private int blockHash;
    private int previousBlockHash;
    @Override
    public String toString() {
        return "Block [blockHash=" + blockHash + ", previousBlockHash="
            + previousBlockHash + ", transactions="
            + Arrays.toString(transactions) + "]";
    }
    public Block(String[] transactions, int previousBlockHash) {
        super();
        this.transactions = transactions;
        this.previousBlockHash = previousBlockHash;
        this.blockHash = Arrays.hashCode( new int[]
        { Arrays.hashCode(transactions), this.previousBlockHash });
    }
    public String[] getTransactions() {
        return transactions;
    }
}

```

```

    public void setTransactions(String[] transactions) {
        this.transactions = transactions;
    }
    public int getBlockHash() {
        return blockHash;
    }
    public void setBlockHash(int blockHash) {
        this.blockHash = blockHash;
    }
    public int getPreviousBlockHash() {
        return previousBlockHash;
    }
    public void setPreviousBlockHash(int previousBlockHash) {
        this.previousBlockHash = previousBlockHash;
    }
}

```

Cloud.java

```

package action;
import java.io.File;
import java.io.FileInputStream;
import org.apache.commons.net.ftp.FTPClient;
public class Cloud {
    FTPClient client = new FTPClient();
    FileInputStream fis = null;
    boolean status;
    public boolean upload(File file,String fname) {
        try {
            client.connect("ftp.drivehq.com");
            client.login("EcertificatesMajorProject", "projectdemo123");
            client.enterLocalPassiveMode();
            fis = new FileInputStream(file);
            //status = client.storeFile("/kk/"
+"E:\\sriproj\\SriCertiFicate\\WebRoot\\file\\sindhu.pdf", fis);
            status = client.storeFile("/new/"+ fname, fis);
            client.logout();
            fis.close();
        } catch (Exception e) {
            e.printStackTrace();
            System.out.println();
        }
        if (status) {
            System.out.println("success");
            return true;
        } else {
            System.out.println("failed");
            return false;
        }
    }
}

```

```

    public static void main(String args[]){
        boolean f= new Cloud().upload(new
File("E:\\sriproj\\SriCertiFicate\\WebRoot\\file\\sindhu.pdf"),"sindhu");
        System.out.println("====="+f);
    }
}

```

Flogin.jsp

```

<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <title></title>
        <meta name="description" content="">
        <meta name="author" content="templatemo">
        <link href="css/certificate.css" rel="stylesheet">
        <link href="css/academic.css" rel = "stylesheet"/>
        <title>BVRITH Student Services</title>
    </head>
    <body>
        <div class="wrapper col1">
            <div id="header">
                <div id="logo">
                    <table style="text-align: center;">
                        <tr>
                            <td></td>
                            <td>
                                <h1 style="margin-left:190px;font-size:35px">
                                    <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                                </h1> <br><span id="project">E-Certificates Issue Services Using
                                Blockchain</span>
                            </td></tr></table></div>
                        <br class="clear" />
                    </div></div><div>
                        <ul>
                            <li class="active"><a href="index.jsp">Home</a></li>
                            <li><a href="stulogin.jsp">Student</a></li>
                            <li><a href="flogin.jsp">Faculty</a></li>
                            <li><a href="alogin.jsp">Admin</a></li>
                        </ul></div><br><br /><br/>
                        <div style="border:1px solid white;width: 700px;height: 400px;margin-left:
                        25%;border-radius: 9px;background-color:grey;"><br /><br/>
                        <center><h1 style="color: white;">Welcome to Faculty Login</h1></center>
                        <form action="facultyaction.jsp" method="post" style="width: 600px;height:
                        300px;margin-left: 80px;"><br /><br/>
                        <center>
                            <label style="font-size: 25px;margin-right:10px;color: white;margin-top:
                            50px">Faculty email </label>

```

```

<input type="text" placeholder="Enter Email Id" required="" class="textbox"
name="uname" style="margin-right:55px"/><br /><br />
<label style="font-size: 25px;margin-right:16px;color: white">Password </label>
<input type="password" placeholder="Enter Password" required="" class="textbox"
name="pass" style="margin-right: 18px"/><br /><br /><br />
<input type="submit" value="SignIn" class="button"style="margin-left: 140px;"/>
<input type="reset" value="Reset" class="button" style="margin-right: 170px;"/>
<br/><br/>
<h4 style="color: white;font-size:20px;margin-top: 5px">New Faculty??</h4><a
href="facultyreg.jsp" style="float: right;margin-top: -17px;margin-right: 150px;text-
decoration: none;color: white">Click Here</a>
</center></form></div>
</div> <!-- /container -->
<div>
<p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div></body></html>

```

Facultyaction.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<%
String uname = null;
String email = request.getParameter("uname");
String pass = request.getParameter("pass");
Connection con = Database.getConnection();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from faculty where email='" + email + "'");
if (rs.next()) {
    uname = rs.getString("name");
    if (rs.getString("email").equals(email) && (rs.getString("pass").equals(pass))) {
        session.setAttribute("n1", uname);
        System.out.println(uname);
        session.setAttribute("v", email);
        System.out.println(email);
        System.out.println("Success");
        response.sendRedirect("fview.jsp?msg=Login Successfully");
    } else {
        System.out.println("Failed");
        response.sendRedirect("flogin.jsp?msgg=Incorrect Username or Password");
    } } else {
    System.out.println("Not Enter");
    response.sendRedirect("flogin.jsp?err=User does not exist");
}
%>

```

Facultyreg.jsp

```
<!DOCTYPE html>
```

```

<html lang="en" dir="ltr">
<head>
  <meta charset="utf-8">
  <link rel="stylesheet" href="css/regform.css"/>
  <link rel="stylesheet" href="css/academic.css"/>
  <title>BVRITH Student Services</title>
</head>
<body>
  <div class="wrapper col1">
    <div id="header">
      <div id="logo">
        <table style="text-align: center;">
          <tr>
            <td></td>
            <td>
              <h1 style="margin-left: 190px; font-size: 35px">
                <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
              </h1> <br>
              <span id="project">E-Certificates Issue Services Using
              BlockChain</span>
            </td></tr></table></div>
            <br class="clear" /></div></div>
            <div>
              <ul>
                <li class="active"><a href="index.jsp">Home</a></li>
                <li><a href="stulogin.jsp">Student</a></li>
                <li><a href="flogin.jsp">Faculty</a></li>
                <li><a href="alogin.jsp">Admin</a></li></ul></div> <br>
                <font color="maroon" style="font-size: 19px;"><b><center>Please Register
                Here</center></b></font><br>
                <br>
                <div class="container">
                  <div class="title"></div>
                  <div class="content">
                    <form action="facultyregaction.jsp" method="get">
                      <div class="user-details">
                        <div class="input-box">
                          <span class="details">Name</span>
                          <input type="text" placeholder="Enter your name" name="name" required>
                        </div>
                        <div class="input-box">
                          <span class="details">Password</span>
                          <input type="password" placeholder="Enter your password" name="pass"
                          required>
                        </div>
                        <div class="input-box">
                          <span class="details">Email Id</span>
                          <input type="text" placeholder="Enter your email" name="email" required>
                        </div>
                        <div class="input-box">

```

[illegible]

Facultyregaction.jsp

```
<% @page import="java.sql.Statement"%>
<% @page import="action.Database"%>
<% @page import="java.sql.Connection"%>
<%
    String name = request.getParameter("name");
    System.out.println("name " + name);
    String pass = request.getParameter("pass");
    System.out.println("Pass " + pass);
    String email = request.getParameter("email");
    System.out.println("Email " + email);
    String loc = request.getParameter("loc");
    System.out.println("Loc " + loc);
    String cno = request.getParameter("cno");
    System.out.println("Cno " + cno);
    String sques1 = request.getParameter("sques1");
    System.out.println("sques1 " + sques1);
    %>
```

```

String sques2 = request.getParameter("sques2");
System.out.println("sques2 " + sques2);
Connection con = Database.getConnection();
Statement st = con.createStatement();
int i = st.executeUpdate("insert into Faculty
(name,pass,email,location,contactno,sques1,sques2)
values('"+name+"','"+pass+"','"+email+"','"+loc+"','"+cno+"','"+sques1+"','"+sques2+"
')");
if(i!=0){
    response.sendRedirect("facultyreg.jsp?msg=Faculty Registration Successfully");
}else{
    response.sendRedirect("facultyreg.jsp?msg=Registration Failed");
}
%>

```

Fview.jsp

```

<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <meta name="author" content="templatemo">
        <link href="css/academic.css" rel="stylesheet">
    </head>
    <body>
        <div class="wrapper col1">
            <div id="header">
                <div id="logo">
                    <table style="text-align: center;">
                        <tr>
                            <td></td>
                        </tr>
                        <tr>
                            <td>
                                <h1 style="margin-left:190px;font-size:35px">
                                    <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                                </h1>
                                <br>
                                <span id="project">E-Certificates Issue Services Using
                                    BlockChain</span>
                            </td>
                        </tr>
                    </table>
                </div>
                <br class="clear" />
            </div>
        </div>
        <div>
            <ul>
                <li class="active"><a href="fview.jsp">Home</a></li>
                <li><a href="fdetails.jsp">Profile</a></li>
                <li><a href="fviewRecdetails.jsp">ViewRecommendationLetterDetails</a></li>
                <li><a href="index.jsp">Logout</a></li>
            </ul>
        </div>
        <br />
        <div style="border:1px solid white;width: 1250px;height: 400px;margin-left:
        30px;border-radius: 40px;background-color: grey;">

```

```

<br><h1 style="color: white;margin-right: 120px;margin-left: 500px;margin-top: -
4px">Welcome faculty</h1>
</div>
</div> <!-- /container -->
<div>
<p style="margin-left: 650px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div>
</body>
</html>

```

Fdetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en" dir="ltr">
<head>
<meta charset="utf-8">
<link rel="stylesheet" href="css/regform.css"/>
<link rel="stylesheet" href="css/academic.css"/>
<title>BVRITH Student Services</title>
</head>
<body>
<div class="wrapper col1">
<div id="header">
<div id="logo">
<table style="text-align: center;">
<tr>
<td></td>
<td>
<h1 style="margin-left: 190px;font-size: 35px">
<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
</h1> <br><span id="project">E-Certificates Issue Services Using
BlockChain</span></td></tr></table></div>
<br class="clear" /></div></div>
<div>
<ul>
<li class="active"><a href="fview.jsp">Home</a></li>
<li><a href="fdetails.jsp">Profile</a></li>
<li><a href="fviewRecdetails.jsp">ViewRecommendationLetterDetails</a></li>
<li><a href="index.jsp">Logout</a></li>
</ul>
</div><br />
<%
String name = null, email = null, loc = null, cno = null;
String n = session.getAttribute("n1").toString();

```



```

String s = session.getAttribute("v").toString();
System.out.println("Name " + n+ " "+s);
Connection con = Database.getConnection();
Statement st = con.createStatement();
ResultSet rs = st.executeQuery("select * from Faculty where email='"+ s +
""");
    if (rs.next()== true) {
        name = rs.getString("name");
        System.out.println("Name " + name);
        email = rs.getString("email");
        System.out.println("Email " + email);
        loc = rs.getString("location");
        System.out.println("Location " + loc);
        cno = rs.getString("contactno");
        System.out.println("Contact No " + cno);
    }
    %>
<div class="container">
    <div class="title"><center><%=name%> Details</center></div>
    <br/>
    <div class="content">
        <div class="user-details">
            <div class="input-box">
                <span class="details">Name</span>
                <input type="text" value="<%=name%>" readonly=""/>
            </div>
            <div class="input-box">
                <span class="details">Email Id</span>
                <input type="text" value="<%=email%>" readonly=""/>
            </div>
            <div class="input-box">
                <span class="details">Location</span>
                <input type="text" value="<%=loc%>" readonly=""/>
            </div>
            <div class="input-box">
                <span class="details">Contact Number</span>
                <input type="text" value="<%=cno%>" readonly=""/></div></div></div>
        </div> <!-- /container -->
    <div>
        <p style="margin-left: 650px;color: red">copyright @SGS&nbsp;<a href=""
style="text-decoration: none;color: red"></a></p>
    </div></body></html>

```

fviewRecDetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en" dir="ltr">

```

```

<head>
  <meta charset="utf-8">
  <link rel="stylesheet" href="css/academic.css"/>
  <title>BVRITH Student Services</title>
</head>
<body>
  <div class="wrapper col1">
    <div id="header">
      <div id="logo">
        <table style="text-align: center;">
          <tr>
            <td></td>
            <td>
              <h1 style="margin-left:190px;font-size:35px">
                <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
              </h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
              <br class="clear" /></div></div><div>
                <ul>
                  <li class="active"><a href="fview.jsp">Home</a></li>
                  <li><a href="fdetails.jsp">Profile</a></li>
                  <li><a href="fviewRecdetails.jsp">ViewRecommendationLetterDetails</a></li>
                  <li><a href="index.jsp">Logout</a></li></ul>
                </div><br />
                <div class="abstract" style="background: ;margin-left:2%;"><br><br>
                <center><h1 style="color: white;margin-top: -10px">Recommendation Letter
Details</h1></center><br>
                <br><table style="margin-left: 4%;margin-top: -20px">
                  <tr>
                    <th style="background-color: blue">Rollno</th>
                    <th style="background-color: blue">Name</th>
                    <th style="background-color: blue">Emailid</th>
                    <th style="background-color: blue">LetterName</th>
                    <th style="background-color: blue">Download sample</th>
                    <th style="background-color: blue">UploadLetter</th></tr>
                  <tr>
                    <%
                      String n = session.getAttribute("n1").toString();

                      String s = session.getAttribute("v").toString();
                      System.out.println("Name " + n+ " "+s);
                      try {
                        Connection con = Database.getConnection();
                        Statement st = con.createStatement();
                        ResultSet rs = st.executeQuery("select *from StudentRecLetter
where usertype='"+n+"'");
                        // st.setString(1,n);
                        while (rs.next()) {%>
                      <td style="color:white;"><%=rs.getString("rollno")%></td>

```

```

<td style="color:white;"><%=rs.getString("name")%></td>
<td style="color:white;"><%=rs.getString("emailid")%></td>
<td style="color:white;"><%=rs.getString("cName")%></td>
<td style="color:white;"> <a href=
"Fdownload1.jsp?id=<%=rs.getString("DEscription")%>&sno=<%=rs.getString("sno
")%>&emailid=<%=rs.getString("emailid")%>" style="width:60px;height:45px;">Do
wnload sample</a></td>
<td style="color:white;"><%=rs.getString("DEscription")%></td>
<td style="color:white;"> <a
href="FRupload.jsp?id=<%=rs.getString("DEscription")%>&rollno=<%=rs.getString
("rollno")%>&fname=<%=rs.getString("cName")%>"
style="width:60px;height:45px;">Upload</a></td></tr>
<% }
} catch (Exception e) {
e.printStackTrace();
System.out.println("student details Page" + e.getMessage());
}
%>
</table></div>
</div> <!-- /container --><div>
<p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p></div>
</body></html>

```

Fdownload1.jsp

```

<% @ page import="java.sql.*, java.util.HashSet, java.util.ArrayList, java.util.Iterator,
java.io.*"%>
<% @page import="action.Database"%>
<html>
<head>
<title></title>
<script language="JavaScript">
</script>
</head>
<body>
<%
Thread.sleep(2000);
%>
<%
String sno = request.getParameter("sno");
System.out.println("sno " + sno);
String query = "select lname from Studentrecletter where sno=?";
Connection con = Database.getConnection();
PreparedStatement pstmt=con.prepareStatement(query);
pstmt.setString(1,sno);
ResultSet rs=pstmt.executeQuery();
while (rs.next()){
response.reset();
response.setContentType("application/msword");

```

```

    response.addHeader("Content-Disposition","attachment;
filename="+ "sample.docx");
    // create the byte array from Blob
    Blob blb = rs.getBlob("lname");
    byte[] bdata = blb.getBytes(1, (int) blb.length());
    // get the response Output stream object to write the content of the file into header
    OutputStream output = response.getOutputStream();
    output.write(bdata);
    output.close();
    // close the object of ResultSet
    rs.close();
    // close the connection object..
    con.close();
}
//else{ }
%>
response.sendRedirect("fview.jsp");
</body>
</html>

```

FRupload.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <link rel="stylesheet" href="css/certificate.css"/>
    <link rel="stylesheet" href="css/academic.css"/>
    <title>BVRITH Student Services</title>
  </head>
  <body>
    <div class="wrapper col1">
      <div id="header">
        <div id="logo">
          <table style="text-align: center;">
            <tr>
              <td></td>
              <td>
                <h1 style="margin-left:190px;font-size:35px">
                  <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                </h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
                <br class="clear" />
              </div></div><div>
                <ul>
                  <li class="active"><a href="fview.jsp">Home</a></li>

```

```

<li><a href="fdetails.jsp">Profile</a></li>
<li><a href="fviewRecdetails.jsp">ViewRecommendationLetterDetails</a></li>
<li><a href="index.jsp">Logout</a></li>
</ul>
</div><br />
<div style="border: 1px solid white; width: 600px; height: 400px; margin-left:
320px; background-color: grey; border-radius: 50px;"><br /><br />
<center>
<div style="height: 300px; color: white">s
<h1>RecommendationLetter Details</h1><br/>
<form action="FRecaction.jsp" method="post" style="margin-left: 50px">
<label style="font-size: 20px; color: white"></label>&nbsp;&nbsp;&nbsp;<input
type="hidden" name="rollno" value=<%= request.getParameter("rollno")%>
style="width: 200px; height: 20px; font-size: 20px; margin-left: 17px"/><br /><br />
<label style="font-size: 20px; color: white"></label>&nbsp;&nbsp;&nbsp;<input
type="hidden" value=<%= request.getParameter("cName")%> name="lname"
style="width: 200px; height: 20px; font-size: 20px; margin-left: 17px"/><br /><br />
<label style="font-size: 20px; color: white"></label><input type="hidden"
value=<%= request.getParameter("DEscription")%> textarea rows="2" cols="3"
name="Description" style="width: 200px; height: 20px; font-size: 20px; margin-left:
18px"/></textarea><br />
<label style="font-size: 20px; color:
white">Upload</label>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type="file"
name="fname" style="width: 200px; height: 30px; font-size: 20px; margin-right:
25%"/><br /><br />
<input type="submit" value="submit" style="width: 130px; height: 35px; border-
radius: 8px; font-size: 20px; background: white; margin-top: 10px"/>&nbsp;&nbsp;&nbsp;
<input type="reset" value="Reset" style="width: 130px; height: 35px; border-radius:
8px; font-size: 20px; background: white"/>
</form></div></center></div>
</div> <!-- /container --><div>
<p style="margin-left: 650px; color: red">&nbsp;&nbsp;&nbsp;<a href="" style="text-decoration:
none; color: red"></a></p>
</div></body></html>

```

Alogin.jsp

```

<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta name="author" content="templatemo">
    <link href="css/certificate.css" rel="stylesheet">
    <title>BVRITH Student Services</title>
  </head>
  <body>
    <div class="wrapper col1">
      <div id="header">
        <div id="logo">
          <table style="text-align: center;">

```

```
<tr>  
<td></td>  
<td>  
<h1 style="margin-left:190px;font-size:35px">  
<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>  
</h1> <br><span id="project">E-Certificates Issue Services Using  
BlockChain</span>  
</td></tr></table></div><br class="clear" /></div></div>  
<div>  
<ul>  
<li class="active"><a href="index.jsp">Home</a></li>  
<li><a href="stulogin.jsp">Student</a></li>  
<li><a href="flogin.jsp">Faculty</a></li>  
<li><a href="alogin.jsp">Admin</a></li></ul>  
</div>  
<br><br />  
<br/>  
<div style="border:1px solid white;width: 700px;height: 400px;margin-  
left:25%;border-radius: 9px;background-color:grey;"><br />  
<br/>  
<center><h1 style="color: white;">Welcome to Admin Login</h1></center>  
<form action="adminaction.jsp" method="post" style="width: 600px,height:  
300px;margin-left: 80px;"><br />  
<center>  
<br></br>  
<label style="font-size: 25px;color: white;margin-top:50px">Admin Name </label>  
<input type="text" placeholder="Enter Email Id" required="" class="textbox"  
name="aname" /><br /><br />  
<label style="font-size: 25px;color: white">Password </label>  
<input type="password" placeholder="Enter Password" required="" class="textbox"  
name="apass" style="margin-left: 56px"/><br /><br /><br />  
<input type="submit" value="SignIn" class="button" style="margin-left:  
140px,"/>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&~  
<input type="reset" value="Reset" class="button" style="margin-right: 170px,"/>  
</center></form></div>  
</div> <!-- /container -->  
<div>  
<p style="margin-left: 550px;color: red">&nbsp;&nbsp;&nbsp;&~<a href="" style="text-decoration:  
none;color: red"></a></p>  
</div></body></html>
```

Adminaction.jsp

```
<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<%
    String uname = "Admin";
    String email = request.getParameter("aname");
```

```

String pass = request.getParameter("apass");
if (email.equals("admin@gmail.com") && pass.equals("admin")) {
    session.setAttribute("n1", uname);
    System.out.println(uname);
    session.setAttribute("v", email);
    System.out.println(email);
    System.out.println("Success");
    response.sendRedirect("ahome.jsp?Login Successfully");
} else {
    System.out.println("Failed");
    response.sendRedirect("alogin.jsp?Login Failed");
}
%>

```

Ahome.jsp

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title></title>
    <meta name="description" content="">
    <meta name="author" content="templatemo">
    <link href="css/certificate.css" rel="stylesheet">
    <link href="css/academic.css" rel="stylesheet"/>
    <title>BVRITH Student Services</title>
</head>
<body>
    <div class="wrapper col1">
    <div id="header">
    <div id="logo">
    <table style="text-align: center;">
    <tr>
    <td></td>
    <td>
    <h1 style="margin-left:190px;font-size:35px">
    <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
    </h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
    <br class="clear" /></div></div>
    <div>
    <ul>
    <li><a href="ahome.jsp">Home</a></li>
    <li><a href="advviewdetails.jsp">ViewCertificateDetails</a></li>
    <li><a href="index.jsp">Logout</a></li>
    </ul>
    </div><br />
    <div class="abstract" style="background-color:grey;margin-left:6%;"><br />
    <center><h1 style="color: white">Welcome Admin</h1> </center></div>

```

```

</div> <!-- /container --><div>
<p style="margin-left: 650px;color: red">&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div></body></html>

```

Advviewdetails.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta name="author" content="templatemo">
    <link href="css/academic.css" rel = "stylesheet"/>
    <title>BVRITH Student Services</title>
  </head>
  <body>
    <div class="wrapper col1">
      <div id="header">
        <div id="logo">
          <table style="text-align: center;">
            <tr>
              <td></td>
              <td>
                <h1 style="margin-left:190px;font-size:35px">
                  <a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
                </h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
              <br class="clear" /></div></div><div><ul>
                <li><a href="ahome.jsp">Home</a></li>
                <li><a href="advviewdetails.jsp">ViewStudentCertificateDetails</a></li>
                <li><a href="index.jsp">Logout</a></li></ul></div><br />
              <div class="abstract" style="background: ;margin-left:2% "><br><br>
                <center><h1 style="color: white;margin-top: -10px">StudentCertificate
Details</h1></center><br><br>
                <table style="margin-left: 12%;margin-top: -20px">
                  <tr>
                    <th style="background-color: blue">Rollno</th>
                    <th style="background-color: blue">Name</th>
                    <th style="background-color: blue">Emailid</th>
                    <th style="background-color: blue">CertificateName</th>
                    <th style="background-color: blue">Description</th>
                    <th style="background-color: blue">UploadCertificate</th></tr>
                  <tr>
                    <%
                      try {

```



```

        Connection con = Database.getConnection();
        Statement st = con.createStatement();
        ResultSet rs = st.executeQuery("select * from studentcertificate");
        while (rs.next()) { %>
            <td style="color:white;"><%=rs.getString("rollno")%></td>
            <td style="color:white;"><%=rs.getString("name")%></td>
            <td style="color:white;"><%=rs.getString("emailid")%></td>
            <!-- <td><%=rs.getString("UserType")%></td> -->
            <td style="color:white;"><%=rs.getString("cName")%></td>
            <td style="color:white;"><%=rs.getString("DEscription")%></td>

            <td style="color:white;"> <a
href="adupload.jsp?rollno=<%=rs.getString("rollno")%>"
style="width:60px;height:45px;">UploadHere</a></td>
        </tr>
        <% }
        } catch (Exception e) {
            e.printStackTrace();
            System.out.println("Admin viewcerti details Page" +
e.getMessage());
        }
        %>
    </table>
</div>
</div> <!-- /container -->
<div>
    <p style="margin-left: 550px;color: red">&nbsp;<a href="" style="text-
decoration: none;color: red"></a></p>
</div>
</body>
</html>

```

Adupload.jsp

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.Connection"%>
<% @page import="action.Database"%>
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <meta name="author" content="templatemo">
        <link href="css/academic.css" rel = "stylesheet"/>
        <title>BVRITH Student Services</title>
    </head>
    <body>
        <div class="wrapper col1">
            <div id="header">
                <div id="logo">

```

```
<table style="text-align: center;">
<tr>
<td></td>
<td>
<h1 style="margin-left:190px;font-size:35px">
<a href="#">BVRIT HYDERABAD College of Engineering For Women</a>
</h1> <br><span id="project">E-Certificates Issue Services Using
Blockchain</span></td></tr></table></div>
<br class="clear" /></div>
</div>
<div>
<ul>
<li><a href="ahome.jsp">Home</a></li>
<li><a href="adviewdetails.jsp">ViewStudentCertificateDetails</a></li>
<li><a href="index.jsp">Logout</a></li></ul>
</div><br />
<div class="abstract" style="width:60%;margin-left:20%"><br><br>
<center><h1 style="color: white;margin-top: -10px">StudentCertificate
Details</h1></center><br>
<br><table style="margin-left: 280px;margin-top: -20px">
<tr></tr>
<tr>
</table>
<center>
<br>
<div style="height: 300px;color: white">
<h2>Certificate Details</h2>
<form action="ARcaction.jsp" method="post" style="margin-left: 50px">
<label style="font-size: 20px;color: white"></label>&nbsp;&nbsp;&nbsp;<input
type="hidden" name="rollno" value=null style="width: 200px;height: 20px;font-size:
20px;margin-left: 17px"/><br /><br />
<label style="font-size: 20px;color: white">Upload</label>
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type="file" name="fname" style="width:
200px;height: 30px;font-size: 20px;margin-left: 15px"/><br /><br />
<input type="submit" value="submit" style="width: 130px;height: 35px;margin-left:
80px;border-radius: 8px;font-size: 20px;background: white;margin-top:
10px"/>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
<input type="reset" value="Reset" style="width: 130px;height: 35px;border-radius:
8px;font-size: 20px;background: white"/>
</form></div></center></div>
</div> <!-- /container -->
</div>
<p style="margin-left: 550px;color: red">&nbsp;&nbsp;&nbsp;<a href="" style="text-decoration:
none;color: red"></a></p>
</div></body></html>
```

ARreaction.jsp

```
<% @ page import="java.sql.*"%>
<% @page import="java.text.DateFormat"%>
```

```

<% @page import="java.util.*"%>
<% @page import="java.text.SimpleDateFormat"%>
<% @page import="java.util.Calendar" %>
<% @page import="action.Database"%>
<% @page import="java.io.InputStream"%>
<% @page import="java.io.FileInputStream"%>
<% @page import="java.io.File"%>
<% @page import="java.security.MessageDigest"%>
<% @page import="java.math.BigInteger"%>
<% @page import="java.security.Key"%>
<% @page import="javax.crypto.spec.SecretKeySpec"%>
<% @page import="javax.crypto.Cipher"%>
<% @page import="org.bouncycastle.util.encoders.Base64"%>
<% @ page import="action.Block"%>
<% @ page import="java.util.*"%>
<% @page import="action.Cloud"%>
<% @page import="java.io.FileWriter"%>
<% @ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%
    ArrayList<Block> blockchain = new ArrayList<Block>();
    try {
    String[] initialValues = { "Block" };
    Block blockb = new Block(initialValues, 19998988);
    blockchain.add(blockb);
    System.out.println("Block is" + blockchain.toString());
    String rollno=request.getParameter("rollno");
    System.out.println("rollno"+rollno);
    //String lname =request.getParameter("lname");
    //System.out.println("+++++++"+lname);
    //String Description =request.getParameter("Description");
    //System.out.println("+++++++"+Description);
    String keyWord = "5765586965748666502846";
    keyWord = keyWord.substring(0, 16);
    byte[] keyValue = keyWord.getBytes();
    Key key = new SecretKeySpec(keyValue, "AES");
    Cipher c = Cipher.getInstance("AES");
    c.init(Cipher.ENCRYPT_MODE, key);
    rollno = new String(Base64.encode(rollno.getBytes()));
    System.out.println("After Encrypt : " + rollno );
    String filedata =request.getParameter("fname");
    System.out.println("+++++++"+filedata);
    MessageDigest md = MessageDigest.getInstance("SHA1");
    System.out.println("===*****=>" +md.digest());
    BigInteger bi1 = new BigInteger(md.digest());
    Random rr = new Random();
    String str = String.valueOf(rr.nextInt(10)) + String.valueOf(rr.nextInt(10));
    System.out.println("==>" +str);
    String spl1 = bi1.toString();
    String hash = bi1.toString(16);
    System.out.println("=====>" +hash);

```

```

String hkey=hash+str;
System.out.println("====>"+hkey);
Connection cn = Database.getConnection();
PreparedStatement pstmt = cn.prepareStatement("INSERT INTO CERTIFICATE
VALUES(?,?,?)");
String f=request.getParameter("fname");
String path="E:\\sriproj\\SriCertiFicate\\WebRoot\\file\\";
String fil=path+f;
File file = new File(fil);
FileInputStream fis=new FileInputStream(file);
FileWriter fw = new FileWriter(file);
fw.write(f);
fw.close();
pstmt.setString(1,rollno);
new Cloud().upload(file, f);
pstmt.setBinaryStream(2,(InputStream)fis,(int)(file.length()));
out.println("Generated hash Value is"+hash);
pstmt.setString(3,hkey);
int l=pstmt.executeUpdate();
System.out.println("Generated hash Value is"+hkey);
response.sendRedirect("advviewdetails.jsp");
} catch (Exception e) {
out.println("some technical problem");
}
%>

```

4.2 Testing

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. The increasing visibility of software as a system element and attendant costs associated with a software failure are motivating factors for we planned, through testing. Testing is the process of executing a program with the intent of finding an error. The design of tests for software and other engineered products can be as challenging as the initial design of the product itself.

There of basically two types of testing approaches.

One is Black-Box testing – the specified function that a product has been designed to perform, tests can be conducted that demonstrate each function is fully operated.

The other is White-Box testing – knowing the internal workings of the product ,tests can be conducted to ensure that the internal operation of the product performs according to specifications and all internal components have been adequately exercised.

White box and Black box testing methods have been used to test this package. The entire loop constructs have been tested for their boundary and intermediate conditions. The test data was designed with a view to check for all the conditions and logical decisions. Error handling has been taken care of by the use of exception handlers.

4.2.1 Testing Strategies

Testing is a set of activities that can be planned in advanced and conducted systematically. A strategy for software testing must accommodate low-level tests that are necessary to verify that a small source code segment has been correctly implemented as well as high-level tests that validate major system functions against customer requirements.

Software testing is one element of verification and validation. Verification refers to the set of activities that ensure that software correctly implements a specific function. Validation refers to a different set of activities that ensure that the software that has been built is traceable to customer requirements.

The main objective of software testing is to uncover errors. To fulfill this objective, a series of test steps unit, integration, validation and system tests are planned and executed. Each test step is accomplished through a series of systematic test techniques that assist in the design of test cases. With each testing step, the level of abstraction with which software is considered is broadened.

Testing is the only way to assure the quality of software and it is an umbrella activity rather than a separate phase. This is an activity to be performed in parallel with the software effort and one that consists of its own phases of analysis, design, implementation, execution and maintenance.

UNIT TESTING:

This testing method considers a module as a single unit and checks the unit at interfaces and communicates with other modules rather than getting into details at the statement level. Here the module will be treated as a black box, which will take some input and generate output. Outputs for a given set of input combinations are pre-calculated and are generated by the module.

SYSTEM TESTING:

Here all the pre tested individual modules will be assembled to create the larger system and tests are carried out at system level to make sure that all modules are working in synchronous with each other. This testing methodology helps in making sure that all modules which are running perfectly when checked individually are also running in cohesion with other modules. For this testing we create test cases to check all modules once and then generated test combinations of test paths through out the system to make sure that no path is making its way into chaos.

INTEGRATED TESTING

Testing is a major quality control measure employed during software development. Its basic function is to detect errors. Sub functions when combined may not produce than it is desired. Global data structures can represent the problems. Integrated testing is a systematic technique for constructing the program structure while conducting the tests. To uncover errors that are associated with interfacing the objective is to make unit test modules and built a program structure that has been detected by design. In a non - incremental integration all the modules are combined in advance and the program is tested as a whole. Here errors will appear in an end less loop function. In incremental testing the program is constructed and tested in small segments where the errors are isolated and corrected.

Different incremental integration strategies are top – down integration, bottom – up integration, regression testing.

REGRESSION TESTING

Each time a new module is added as a part of integration as the software changes. Regression testing is an actually that helps to ensure changes that do not introduce unintended behavior as additional errors.

Regression testing maybe conducted manually by executing a subset of all test cases or using automated capture play back tools enables the software engineer to capture the test case and results for subsequent playback and compression. The regression suit contains different classes of test cases.

A representative sample to tests that will exercise all software functions.

Additional tests that focus on software functions that are likely to be affected by the change.

4.3 TEST CASES

Integrated and regression testing strategies are used in this application for testing.

Test Case Id	Test Scenario	Expected Result	Actual Result	Pass/Fail
TC01	Check whether application is working fine after copying url	Home Page should be displayed	As Expected	Pass
TC02	Check whether navbar options are working fine	Respective login pages open	As Expected	Pass
TC03	Check whether register button is working fine	Navigated to register page	As Expected	Pass
TC04	Check whether registration is done	Data stored in database	As Expected	Pass
TC05	Check whether login is done	Navigated to Home Page	As Expected	Pass
TC06	Check whether profile is visible	Respective profile page visible	As Expected	Pass
TC07	Check whether apply certificate form works in student page	Form submitted and reflected in view certificates page	As Expected	Pass
TC08	Check whether apply recommendation form works	Form submitted and reflected in view recommendation letters page	As Expected	Pass
TC09	Check whether user is able to upload sample file	Reflected in admin view recommendation letters page	As Expected	Pass
TC10	Check whether faculty chosen gets the details	Chosen faculty gets the details	As Expected	Pass
TC11	Check whether sample file can be downloaded	Sample file downloaded	As Expected	Pass
TC12	Check whether certificate and recommendation letter can be uploaded	Certificates and letters uploaded and reflected in student's page	As Expected	Pass
TC13	Check whether uploaded letter is stored in cloud	Letter stored in cloud	As Expected	Pass
TC14	Check whether student is able to download the letter	Letter downloaded	As Expected	Pass
TC15	Check whether logout is working	Logout working	As Expected	Pass

Fig 4.3: Test cases

4.4 APPLICATION RUNNING SCREENSHOTS

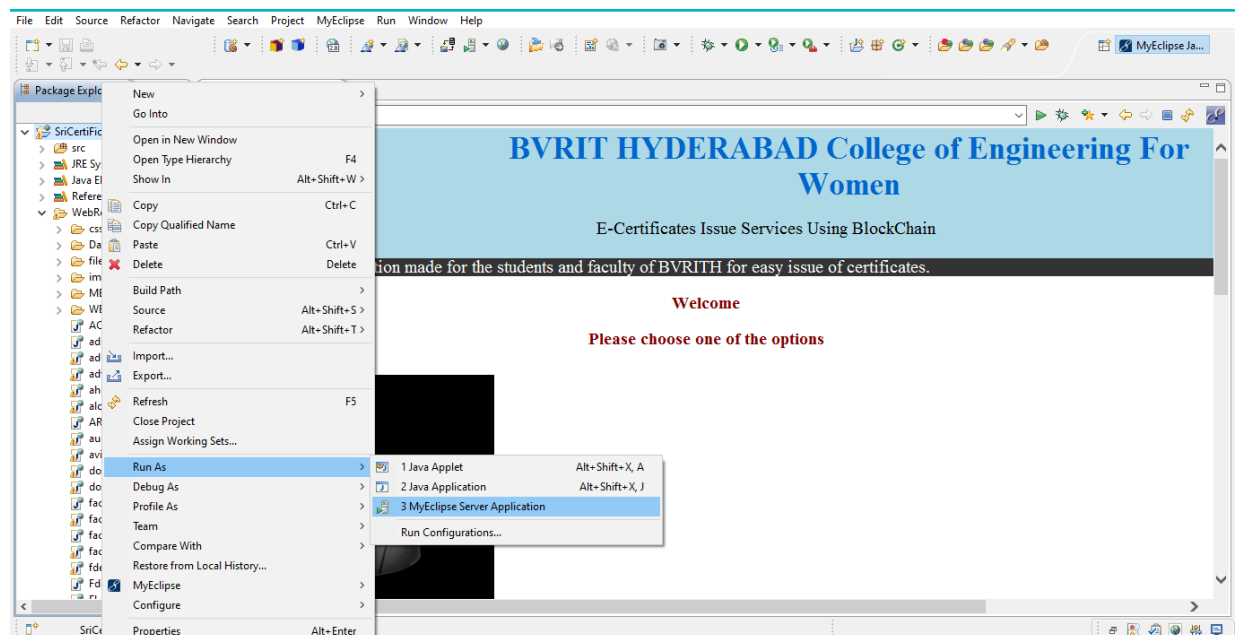


Fig 4.4.1: Running the project

4.5 DATABASE TABLES SCREENSHOTS

```

Enter password: ****
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 253 to server version: 5.0.22-community-nt

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> use srisindhu;
Database changed
mysql> select * from student;
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | rollno | name   | pass   | email                                     | course | location | contactno | cgpa | status | sques1 | sques2 |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1  | 17wh1a05a6 | Arepalli Sindhura | sindhura12 | 17wh1a05a6@bvrithyderabad.edu.in | CSE     | Hyderabad | 09676830780 | 7.49 | completed | Hyderabad | Sindhura |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.04 sec)

mysql> show tables;
+-----+
| Tables_in_srisindhu |
+-----+
| certificate          |
| faculty              |
| recletter            |
| sampleletter         |
| student              |
| studentcertificate   |
| studentrecletter     |
+-----+
7 rows in set (0.02 sec)

mysql>

```

Fig 4.5.1: Tables in the project

4.6 OUTPUT SCREENSHOTS

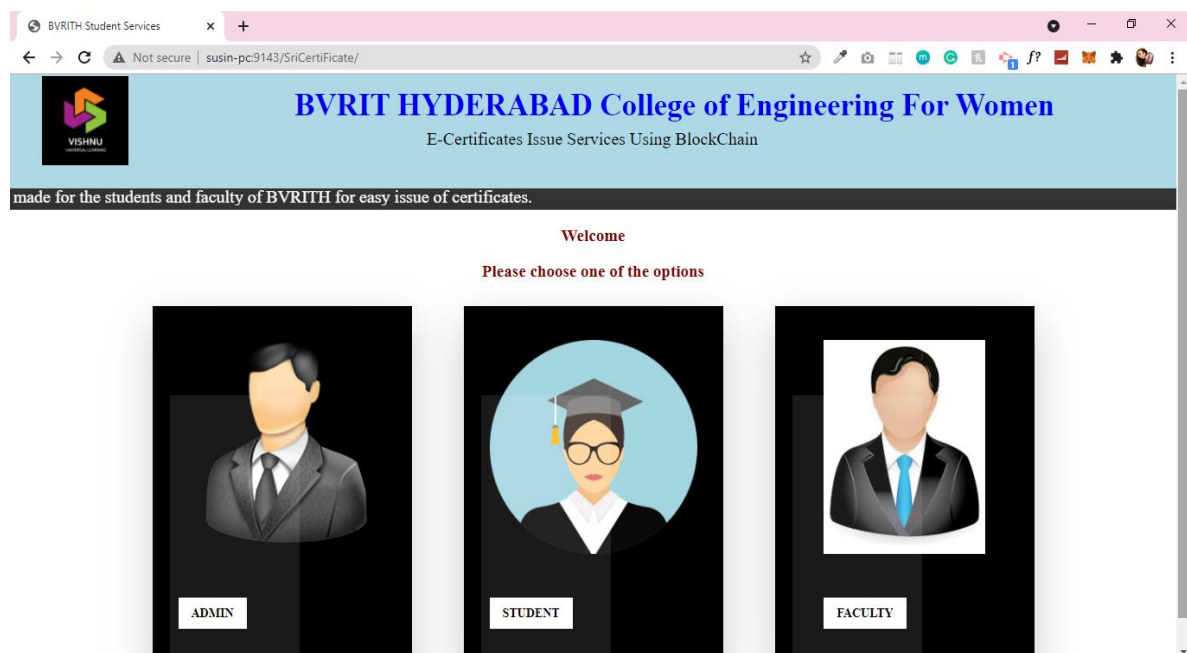
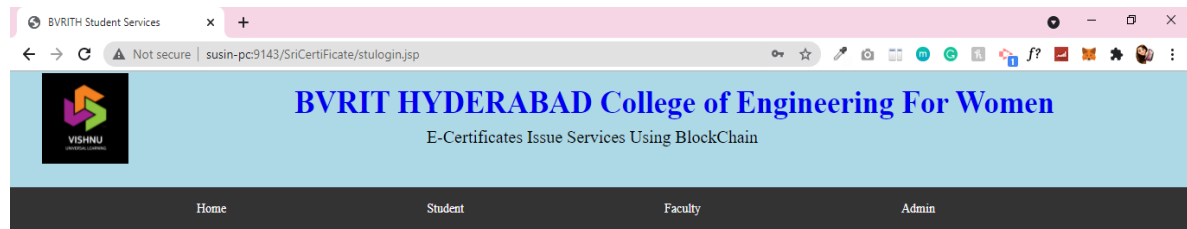


Fig 4.6.1: Test case showing the home page after pasting URL in browser



The screenshot shows a login form titled 'Welcome to Student Login'. It contains two input fields: 'Student Name' with a placeholder 'Enter Email Id' and 'Password' with a placeholder 'Enter Password'. Below these fields are two buttons: 'SignIn' and 'Reset'. At the bottom of the form are two links: 'Register Here' and 'ForgotPassword'.

Fig 4.6.2: Test case showing navbar functionalities working

The screenshot shows a registration form titled 'Please Register Here'. It contains ten input fields arranged in two columns. The left column fields are: 'Roll no' (placeholder 'Enter Roll Number'), 'Password' (placeholder 'Enter your password'), 'course' (placeholder 'ex: cse'), 'contact No' (placeholder 'mobile number'), and 'Home City' (placeholder 'city'). The right column fields are: 'Name' (placeholder 'Enter your name'), 'Email Id' (placeholder 'Enter your email'), 'Location' (placeholder 'location'), 'cgpa' (placeholder 'cgpa'), and 'Nick Name' (placeholder 'nick'). Below the input fields are three buttons: 'SignUp', 'Clear', and 'Exit'.

Fig 4.6.3: Test case showing that register button is working and is navigated to register page

```

C:\Program Files (x86)\MySQL\MySQL Server 5.0\bin\mysql.exe
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 253 to server version: 5.0.22-community-nt

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> use srisindhu;
Database changed
mysql> select * from student;
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | rollno | name      | pass      | email                                     | course | location | contactno | cgpa | status | sques1 | sques2 |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1  | 17wh1a05a6 | Arepalli Sindhura | sindhura12 | 17wh1a05a6@bvnthyderabad.edu.in | CSE     | Hyderabad | 09676830780 | 7.49 | completed | Hyderabad | Sindhura |
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.04 sec)

mysql>

```

Fig 4.6.4: Test case showing that registration is done

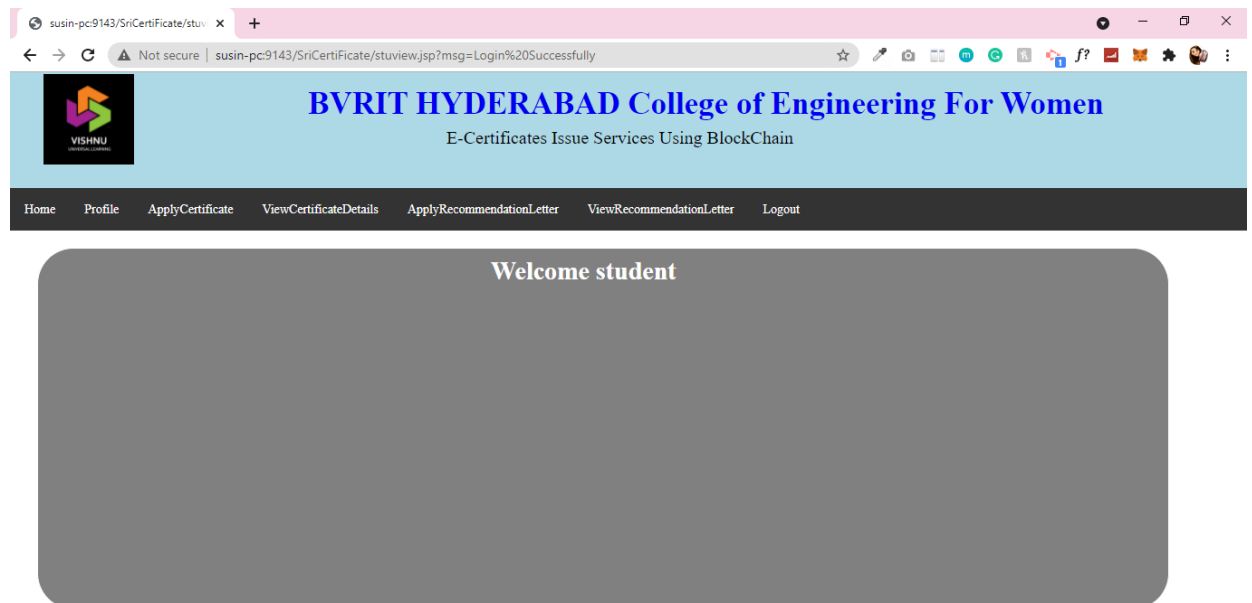
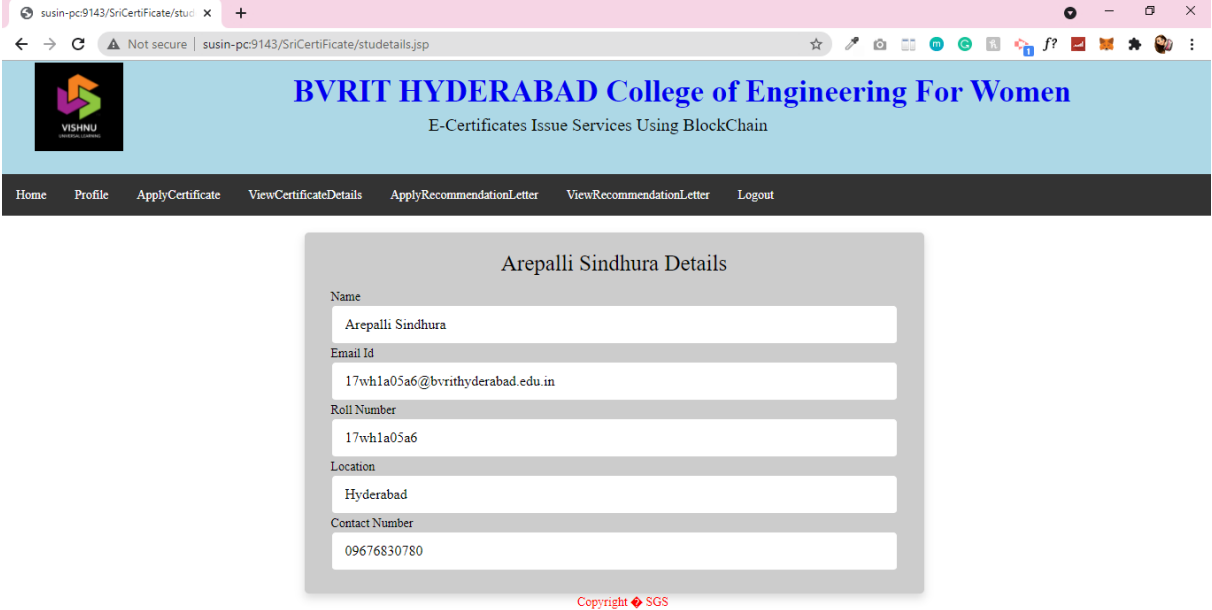


Fig 4.6.5: Test case showing login is done and navigated to home page

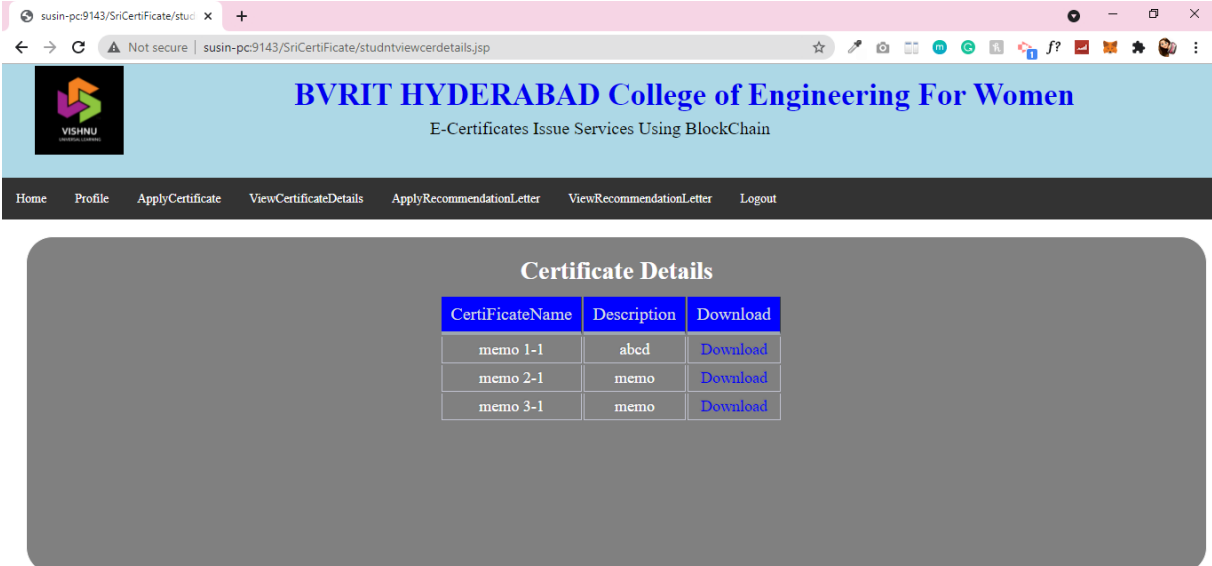


The screenshot shows a web browser window with the URL `susin-pc9143/SriCertificate/stud`. The page header displays the BVRIT Hyderabad College of Engineering For Women logo and the text "E-Certificates Issue Services Using BlockChain". The navigation bar includes links: Home, Profile, ApplyCertificate, ViewCertificateDetails, ApplyRecommendationLetter, ViewRecommendationLetter, and Logout. The main content area shows a form titled "Arepalli Sindhura Details" with the following fields:

Name	Arepalli Sindhura
Email Id	17wh1a05a6@bvrithyderabad.edu.in
Roll Number	17wh1a05a6
Location	Hyderabad
Contact Number	09676830780

Copyright © SGS

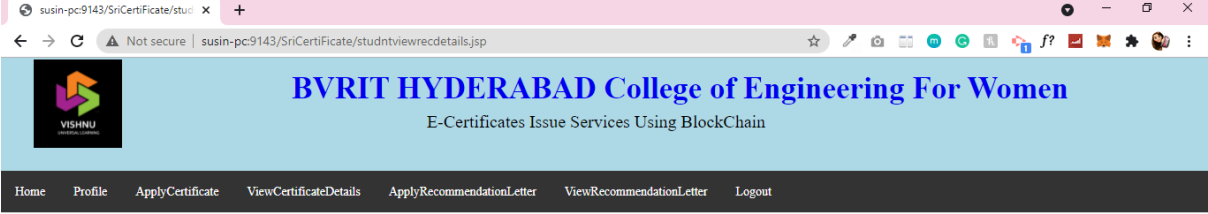
Fig 4.6.6: Test case showing the profile



The screenshot shows a web browser window with the URL `susin-pc9143/SriCertificate/studntviewerdetails.jsp`. The page header displays the BVRIT Hyderabad College of Engineering For Women logo and the text "E-Certificates Issue Services Using BlockChain". The navigation bar includes links: Home, Profile, ApplyCertificate, ViewCertificateDetails, ApplyRecommendationLetter, ViewRecommendationLetter, and Logout. The main content area shows a table titled "Certificate Details" with the following data:

CertificateName	Description	Download
memo 1-1	abcd	Download
memo 2-1	memo	Download
memo 3-1	memo	Download

Fig 4.6.7: Test case showing that apply certificate form works




BVRIT HYDERABAD College of Engineering For Women
E-Certificates Issue Services Using BlockChain

Home Profile ApplyCertificate ViewCertificateDetails ApplyRecommendationLetter ViewRecommendationLetter Logout

Letter Details

Faculty Name	LetterName	Description	Download
Susmitha	Recommendation letter for MS	for harvard	Download
Susmitha	Recommendation letter for MS	NYIT college	Download
Susmitha	Recommendation letter for MS	ms	Download
Susmitha	Recommendation letter	for ms	Download
Susmitha	rec	abc	Download
Susmitha	Recommendation letter	for ms in harvard	Download
Susmitha	Recommendation letter for MS	ahhd	Download
Susmitha	Recommendation letter	rec	Download

Fig 4.6.8: Test case showing that apply recommendation letter form works



BVRIT HYDERABAD College of Engineering For Women
E-Certificates Issue Services Using BlockChain

Home Profile ViewRecommendationLetterDetails Logout

Recommendation Letter Details

Rollno	Name	Emailid	LetterName	Download sample	Description	UploadLetter
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	for harvard	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	NYIT college	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	ms	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	for ms	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	rec	Download sample	abc	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	for ms in harvard	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	ahhd	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	rec	Upload

Fig 4.6.9: Test case showing that user's sample letter is reflected

BVRITH HYDERABAD College of Engineering For Women
E-Certificates Issue Services Using Blockchain

Home Profile ViewRecommendationLetterDetails Logout

Recommendation Letter Details

Rollno	Name	Emailid	LetterName	Download sample	Description	UploadLetter
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	for harvard	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	NYIT college	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	ms	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	for ms	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	rec	Download sample	abc	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	for ms in harvard	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter for MS	Download sample	ahhd	Upload
17wh1a05a6	Arepalli Sindhura	17wh1a05a6@bvrithyderabad.edu.in	Recommendation letter	Download sample	rec	Upload

susin-pc-9143/SriCertificate/fviewRecdetails.jsp?id=rec&sno=8&emailid=17wh1a05a6@bvrithyderabad.edu.in

[sample.docx](#) [Show all](#)

Fig 4.6.10: Test case showing that the sample file is downloaded

DriveHQ Start Menu My Storage Group Account Manage Shares Drive Mapping, Backup & Sync Tools Manage Drop Boxes FTP/SFTP Hosting

DriveHQ
Cloud IT Service Since 2003

Features Software Pricing EcertificatesMajorProject

Up Upload Download Zip Download Share Publish New Folder New File Copy Cut Delete Paste Upgrade

Folder Path: new1

Name	Action	Create Time	Modify Time	Size
sindhur.pdf		05/24/2021 3:03:07 PM	05/24/2021 3:03:06 PM	10 B
demo.pdf		05/24/2021 2:47:31 PM	05/24/2021 2:47:31 PM	8 B
1-2 new.pdf		05/23/2021 5:53:53 PM	05/23/2021 5:53:53 PM	11 B

Upgrade to Business/Enterprise Plan
FTP is for business only.

Fig 4.6.10: Test case showing that the certificates are stored in cloud

The screenshot shows a web browser window with the URL `susin-pc:9143/SriCertificate/studntviewrecdetails.jsp`. The page header includes the BVRIT logo and the text "BVRIT HYDERABAD College of Engineering For Women" and "E-Certificates Issue Services Using BlockChain". The navigation bar contains links: Home, Profile, ApplyCertificate, ViewCertificateDetails, ApplyRecommendationLetter, ViewRecommendationLetter, and Logout.

The main content area displays a table titled "Letter Details" with the following data:

Faculty Name	LetterName	Description	Download
Susmitha	Recommendation letter for MS	for harvard	Download
Susmitha	Recommendation letter for MS	NYIT college	Download
Susmitha	Recommendation letter for MS	ms	Download
Susmitha	Recommendation letter	for ms	Download
Susmitha	rec	abc	Download
Susmitha	Recommendation letter	for ms in harvard	Download
Susmitha	Recommendation letter for MS	ahhd	Download
Susmitha	Recommendation letter	rec	Download

Below the table, a download link is visible: `susin-pc:9143/SriCertificate/downloadCER.jsp?rollno=17wh1a05a6`. The browser's download bar shows a file named "123.pdf" with a "Show all" button.

Fig 4.6.10: Test case showing that the letters are downloaded

5. CONCLUSION AND FUTURE SCOPE

This application helps digitalize the manual process of applying and collecting certificates. Encryption, decryption and blockchain makes the application very secure. The application has a very user-friendly UI and is made keeping UI and UX into consideration.

The future enhancement of this application is

- To use ethereum to make the application up to data with the technologies
- To use certificate verification process to omit fake certificates

6. REFERENCES

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