### 1. ABSTRACT

Digitalisation of student information is a vital part of any university's running because students are what keep a University alive. The Student admission is one of the most important activities within a university as one cannot survive without students. A poor admissions system can mean fever students being admitted into a university because of mistakes or an overly slow response time.

Digitalisation of student information is the software which is helpful for students as well as the department In this project, the student is facilitated by the online system for registering students, add subjects and course structure Our Student Management System deals with the various activities related to the students.

In the Software we can register as a user and user is of as a administrator. Administrator has the power to add new user and update credentials.

# 2. INTRODUCTION

The purpose of this SRS document is to allow the registration of students in particular course. It is intended to be complete specifications of what functionality the admission provides. It will also facilitate keeping all the records of students, such as their id, name, address DOB, etc. So all the information about a student will be available in a few seconds.

Overall, it will make Student Online Registration System an easier job for the administrator and the student of any organization. The main purpose of this SRS document is to illustrate the requirements of the project Online Student Registration System and is intended to help any organization to maintain and manage its student's personal data.

Without an Online Student Registration System, managing and maintaining the details of the student is a tedious job for any organization. Student online registration system will store all the details of the students including their background information, educational qualifications, personal details and all the information related to their resume.

# 3. LITERATURE REVIEW

S.No	Title	Year	Methodology	Challenges
1	Student	1999	Bsed on paper	Time
	Registration		work	consuming
				and complex
				to maintain
2	Student	2003	Using excel	Time
	registration			consuming
	and store data			
	online			
3	Online	2015	By using web	Updating
	student		portal	database
	registration			

Fig: 3.1 Literature survey

# 4. PROPOSED SYSTEM

In our proposed system we have the provision for adding the details students by admins. So the overhead of the college authorities is less. Another advantage of the system is that it is very easy to edit the Details of the student and delete a student when it found unnecessary.

# 5. UML DIAGRAMS

### Usecase diagram

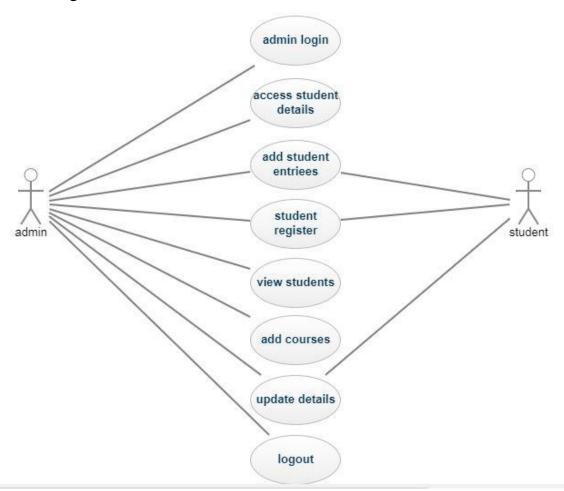


Fig: 5.1 Usecase Diagram

### Class diagram

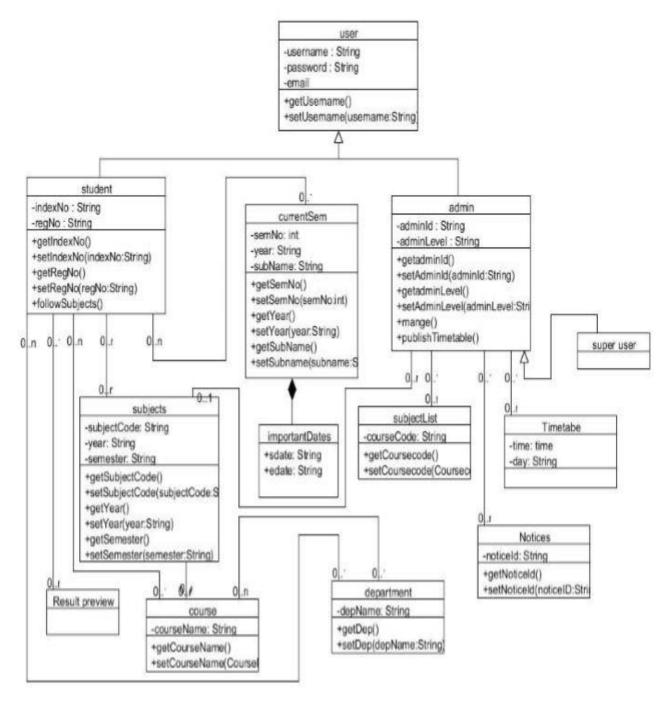


Fig: 5.2 Class Diagram

# Activity Diagram:

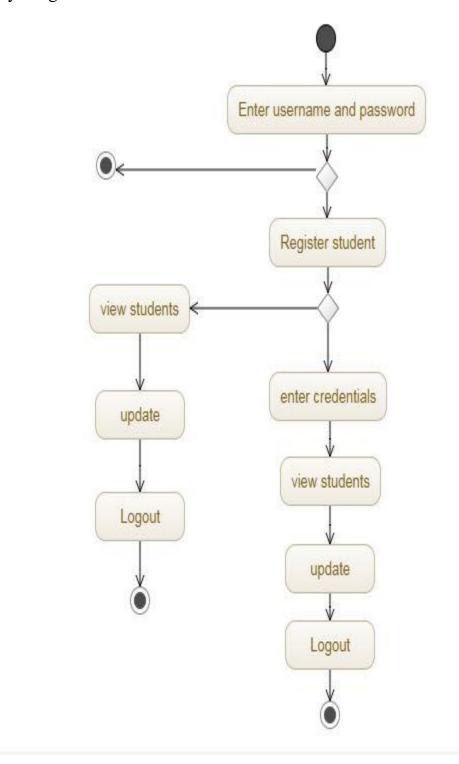


Fig: 5.3 Activity Diagram

# State Chart Diagram:

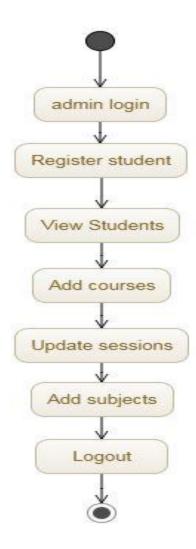


Fig:5.4 State chart diagram

### 6. COMPONENTS

### **Student component**

This is one of the key components of the Student Registration System. This is where the student subject selection option is implemented. This also includes the result preview, semester preview and profile functions.

#### Authentication and user management component

This is the major sub system that is responsible for the security of the Student Registration system. It authenticate users and also handles the user management activities such as creating new user accounts, removing accounts from the system etc. Furthermore this component Implements the "control access privilege matrix".

#### **Subject component**

This is the key component that implements the functions related to the subject operations of administrator such as adding a new subject, editing credits of an existing subject and removing subjects etc. Subject component is also responsible for displaying the available subject list for every semester.

#### **Publish component**

Publish component is the component responsible for publishing notices created by the administrator and also the time tables. This component has the ability to publish multiple notices and time tables at the same time.

#### **Public component**

This is a relatively small subsystem compared to the other components of the Student Registration System. This is the component which is responsible for the guest viewer (public) to view student results.

#### **Student component**

Select Subjects: This interface will provide the available subject list for the semester. This allows the student to choose the subjects, hence a busy interface. This interface is the bridge between the student component and the subject component.

#### **Subject component**

New Subject: This interface is where administrator adds new subjects to the courses offered. The Subject and student components are connected. Edit Subject: In this interface the administrator edit existing subjects. The Subject and student components are connected.

### 7. ADVANTAGES

**Applicants'** Convenience – One of the greatest advantages of the online application system is that applicants can choose to submit their applications at their convenience. All that is required is access to a computer and internet connectivity. Messy handwriting, lack of postal connectivity, delay in courier delivery etc. are unlikely to disrupt the application process. This is a great advantage to candidates in rural areas and candidates with disabilities.

**Logistics** – No more running out of paper application forms, picking the right colour ink pens, illegible prints and wondering if the application has been received at all. The online application process offers university applicants a uniform platform for filling in their applications and also provides prompts on which fields are mandatory. The acknowledgement is almost immediate and the system user-friendly.

Advantage to Universities – Universities and educational institutions are also at a major advantage when it comes to an online admission process. Quick access to student records and databases, efficient systems for filtering out candidates and processing of applications is possible through the online application process. The costs of processing applications and employing additional manpower during admissions are slashed with the implementation of an online application system.

**Increases Accuracy and Efficiency** – Those who have seen university officials accepting thousands of paper applications each day at office counters understand that high fatigue and monotony involved in the paperwork is a catalyst for errors. Each error could cost students their academic career and educational prospects. The online admission system is highly reliable and efficient and eliminates chances of such errors.

**Demolishing Geography** – Another great advantage of the online admission system is that it makes it possible for candidates from across the country and even abroad to apply to Indian universities without any hassles. It eliminates the inconveniences caused by ailments and exigencies, providing deserving candidates a convenience that has never before been available.

# 8. SOFTWARE REQUIREMENTS

### **Hypertext Markup Language (HTML)**

It is the standard markup language for creating web pages and web applications. With Cascading Style sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by *tags*, written using angle brackets. Tags such as <img/> and <imput/> directly introduce content into the page. Other tags such as surround and provide information

about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript, which affects the behavior and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium(W3C), maintainer of both the HTML and the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.

### MySQL is a database management system.

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. You set up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional, and "pointers" between different tables. The database enforces these rules, so that with a well-designed database, your application never sees inconsistent, duplicate, orphan, out-of-date, or missing data.

The SQL part of "MySQL" stands for "Structured Query Language". SQL is the most common standardized language used to access databases. Depending on your programming

environment, you might enter SQL directly (for example, to generate reports), embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax

.

SQL is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, "SQL-92" refers to the standard released in 1992, "SQL:1999" refers to the standard released in 1999, and "SQL:2003" refers to the current version of the standard. We use the phrase "the SQL standard" to mean the current version of the SQL Standard at any time.

### PHP: Hypertext Preprocessor (or simply PHP)

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page, but it now stands for the recursive acronym PHP: Hypertext Preprocessor.

PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management system and web frameworks. PHP code is usually processed by a PHP interpreter implemented as amodule in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications. The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge.

The PHP language evolved without a written formal specification or standard until 2014, leaving the canonical PHP interpreter as a de facto standard. Since 2014 work has gone on to create a formal PHP specification. PHP is a general-purpose scripting language that is

especially suited to server-side web development where PHP generally runs on a web server.PHP code is embedded into the HTML source document. Any PHP code in a requested file is executed by the PHP runtime, usually to create dynamic web page content. It can also be used for command-line scripting and client-side GUI applications. PHP can be deployed on many web servers and operating systems, and can be used with many relational database management systems (RDBMS). It is available free of charge, and the PHP Group PLE CODE

## 9. SAMPLE CODE

# Register.php:

```
<?php
session_start ();

if (! (isset ( $_SESSION ['login'] ))) {
        header ( 'location:../index.php' );
}
include('../config/DbFunction.php');
        $obj=new DbFunction();
        $rs=$obj->showCourse();
        $rs1=$obj->showCountry();
        $ses=$obj->showSession();
        $res1=$ses->fetch_object();
        //$res1->session;
        if(isset($_POST['submit'])){

        $obj->register($_POST['course-short'],$_POST['c-full'],$_POST['fname'],$_POST['lname'],
```

```
$_POST['gname'],$_POST['ocp'],$_POST['gender'],$_POST['income'],$_POST['category'],$
_POST['ph'],$_POST['nation']
$_POST['mobno'],$_POST['email'],$_POST['country'],$_POST['state'],$_POST['city'],$_PO
ST['padd'],
$_POST['cadd'],$_POST['board1'],$_POST['board2'],$_POST['roll1'],$_POST['roll2'],$_PO
ST['pyear1'],
$_POST['pyear2'],$_POST['sub1'],$_POST['sub2'],$_POST['marks1'],$_POST['marks2'],$_
POST['fmarks1'],
               $_POST['fmarks2'],$_POST['session']);
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<meta name="description" content="">
<meta name="author" content="">
<title>register</title>
k href="../bower_components/bootstrap/dist/css/bootstrap.min.css"
      rel="stylesheet">
k href="../bower_components/metisMenu/dist/metisMenu.min.css"
      rel="stylesheet">
k href="../dist/css/sb-admin-2.css" rel="stylesheet">
```

```
k href="../bower_components/font-awesome/css/font-awesome.min.css"
      rel="stylesheet" type="text/css">
</head>
<body>
<form method="post" >
      <div id="wrapper">
       <?php include('leftbar.php');?>
              <div id="page-wrapper">
                     <div class="row">
                            <div class="col-lg-12">
                                   <h4 class="page-header"> <?php echo
strtoupper("welcome"." ".htmlentities($_SESSION['login']));?></h4>
                            </div>
                            <!-- /.col-lg-12 -->
                     </div>
                     <!-- /.row -->
                     <div class="row">
                     <div class="col-lg-12">
                     <div class="panel panel-default">
                     <div class="panel-heading">Register</div>
                     <div class="panel-body">
                     <div class="row">
                     <div class="col-lg-10">
                     <div class="form-group">
                <div class="col-lg-4">
                     <label>Select Course<span id="" style="font-
size:11px;color:red">*</span>
                                   </label>
                     </div>
```

```
<div class="col-lg-6">
<select class="form-control" name="course-short" id="cshort"</pre>
onchange="showSub(this.value)" required="required" >
<option VALUE="">SELECT</option>
                             <?php while($res=$rs->fetch_object()){?>
              <option VALUE="<?php echo htmlentities($res->cid);?>"><?php echo</pre>
htmlentities($res->cshort)?></option>
            <?php }?> </select>
                                                                        </div>
                                                                        </div>
                                                          <br>><br>>
              <div class="form-group">
              <div class="col-lg-4">
              <label>Select Subject<span id="" style="font-
size:11px;color:red">*</span></label>
              </div>
              <div class="col-lg-6">
<input class="form-control" name="c-full" id="c-full" >
    </select>
       </div>
       </div>
       <br>><br>>
```

```
<div class="form-group">
       <div class="col-lg-4">
                     <label>Current Session<span id="" style="font-
size:11px;color:red">*</span></label>
              </div>
              <div class="col-lg-6">
         <input class="form-control" name="session" value="<?php echo</pre>
htmlentities($res1->session);?>" readonly>
        </div>
        <br>><br>>
       </div>
       <br>><br>>
                             </div>
                                    </div>
                                                   </div>
                                           </div>
                                    </div>
                      <div class="row">
                     <div class="col-lg-12">
                      <div class="panel panel-default">
```

```
<div class="panel-heading">Personal Informations</div>
                     <div class="panel-body">
                     <div class="row">
                     <div class="col-lg-12">
                     <div class="form-group">
                <div class="col-lg-2">
                     <label>First Name<span id="" style="font-
size:11px;color:red">*</span>
                                   </label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" name="fname" required="required"</pre>
pattern="[A-Za-z]+$">
                     </div>
                      <div class="col-lg-2">
                     <label>Middle Name</label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" name="mname">
                     </div>
                     </div>
                     <br>><br>>
              <div class="form-group">
                <div class="col-lg-2">
                     <label>Last Name</label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" name="lname" pattern="[A-Za-z]+$">
                     </div>
```

```
<div class="col-lg-2">
                     <label>Gender</label>
                     </div>
                     <div class="col-lg-4">
              <input type="radio" name="gender" id="male" value="Male"> &nbsp; Male
 
              <input type="radio" name="gender" id="female" value="feale"> &nbsp;
Female  
              <input type="radio" name="gender" id="other" value="other"> &nbsp; Other
 
                     </div>
                     </div>
      <br>><br>>
                 <div class="form-group">
                     <div class="col-lg-2">
                    <label>Guardian Name<span id="" style="font-
size:11px;color:red">*</span>
                                  </label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" name="gname" required="required"</pre>
pattern="[A-Za-z]+$">
                     </div>
                     <div class="col-lg-2">
                     <label>Occupation</label>
                     </div>
                     <div class="col-lg-4">
                    <input class="form-control" name="ocp" id="ocp">
                     </div>
```

```
</div>
                     <br>><br>>
                 <div class="form-group">
                     <div class="col-lg-2">
                     <label>Family Income<span id="" style="font-</pre>
size:11px;color:red">*</span></label>
                     </div>
                     <div class="col-lg-4">
                     <select class="form-control" name="income"</pre>
id="income"required="required" >
    <option VALUE="">SELECT</option>
    <option VALUE="200000">200000</option>
    <option value="500000">500000</option>
    <option value="700000">700000</option>
    </select>
                     </div>
                     <div class="col-lg-2">
                     <label>Category<span id="" style="font-
size:11px;color:red">*</span></label>
                     </div>
                     <div class="col-lg-4">
                     <select class="form-control" name="category" id="category"</pre>
required="required" >
    <option VALUE="">SELECT</option>
    <option VALUE="general">General</option>
    <option value="obc">OBC</option>
    <option value="sc">SC</option>
```

```
<option value="st">ST</option>
              <option value="other">Other</option>
    </select>
                     </div>
                     </div>
                     <br>><br>>
                 <div class="form-group">
                      <div class="col-lg-2">
                     <label>Physically Challenged<span id="" style="font-</pre>
size:11px;color:red">*</span></label>
                     </div>
                     <div class="col-lg-4">
                     <select class="form-control" name="ph" id="ph"required="required"</pre>
>
    <option VALUE="">SELECT</option>
     <option VALUE="yes">Yes</option>
    <option value="no">No</option>
    </select>
                     </div>
                      <div class="col-lg-2">
                     <label>Nationality<span id="" style="font-
size:11px;color:red">*</span></label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" name="nation" id="nation">
```

```
</div>
                     </div>
                     <br>><br>>
                     </div>
                     <br>><br>>
              </div>
       </div>
              </div>
              <div class="row">
                     <div class="col-lg-12">
                     <div class="panel panel-default">
                     <div class="panel-heading">Contact Informations</div>
                     <div class="panel-body">
                     <div class="row">
                     <div class="col-lg-12">
                     <div class="form-group">
                 <div class="col-lg-2">
                     <label>Mobile Number<span id="" style="font-
size:11px;color:red">*</span>
                                    </label>
                     </div>
                     <div class="col-lg-4">
                     <input class="form-control" type="number" name="mobno"
required="required" maxlength="10">
                     </div>
                      <div class="col-lg-2">
                     <label>Email Id</label>
                     </div>
                     <div class="col-lg-4">
```

```
<input class="form-control" type="email" name="email">
                     </div>
                     </div>
                     <br>><br>>
              <div class="form-group">
                <div class="col-lg-2">
                     <label>Country</label>
                     </div>
                     <div class="col-lg-4">
                     <select class="form-control" name="country" id="country"</pre>
onchange="showState(this.value)" required="required" >
<option VALUE="">Select Country</option>
                            <?php while($res=$rs1->fetch_object()){?>
 <option VALUE="<?php echo htmlentities($res->id);?>"><?php echo htmlentities($res-</pre>
>name)?></option>
           <?php }?> </select>
                     </div>
                      <div class="col-lg-2">
                     <label>State</label>
                     </div>
                     <div class="col-lg-4">
<select name="state" id="state" class="form-control" onchange="showDist(this.value)"</pre>
required="required">
    <option value="">Select State</option>
    </select>
```

```
</div>
                      </div>
       <br><br><br><br><br>
                 <div class="form-group">
                      <div class="col-lg-2">
                      <label>City<span id="" style="font-size:11px;color:red">*</span>
       </label>
                      </div>
                      <div class="col-lg-4">
      <select name="city" id="dist" class="form-control" onchange=""</pre>
required="required">
     <option value="">Select City</option>
              </select>
                      </div>
                      <div class="col-lg-2">
                      <label>Permanent Address<span id="" style="font-</pre>
size:11px;color:red">*</span></label>
                      </div>
                      <div class="col-lg-4">
                      <textarea class="form-control" rows="3" name="padd"
id="padd"></textarea>
                      </div>
                      </div>
                      <br><br><br><br><br><
                      <br>><br>>
```

```
<div class="form-group">
                      <div class="col-lg-2">
                     <label>Correspondence Address<span id="" style="font-
size:11px;color:red">*</span>
                     </div>
                     <div class="col-lg-4">
   <textarea class="form-control" rows="3" name="cadd" id="cadd"></textarea>
                     </div>
                      <div class="col-lg-2">
                     </div>
                     <div class="col-lg-4">
                     </div>
                     </div>
                     <br>><br>>
                     </div>
                     <br>><br>>
              </div>
       </div>
              </div>
    <div class="row">
                     <div class="col-lg-12">
```

```
<div class="panel panel-default">
                 <div class="panel-heading">Academic Informations</div>
                 <div class="panel-body">
                 <div class="row">
                 <div class="col-lg-12">
                 <div class="form-group">
             <div class="panel panel-default">
     <!--/.panel-heading -->
           <div class="panel-body">
             <div class="table-responsive">
               <thead>
                   <div class="col-lg-6">
                     Board<span id="" style="font-
size:11px;color:red">*</span>
                             </label>
                 </div>
     <div class="col-lg-6">
                    Roll No
                 </div>
      <div class="col-lg-6">
                    Year Of Passing<span id=""
style="font-size:11px;color:red">*</span>
                 </div>
      </thead>
                 <div class="col-lg-6">
                        <input class="form-control" type="text" name="board1">
```

```
</div>
   <div class="col-lg-6">
            <input class="form-control" type="text" name="roll1" >
<div class="col-lg-6">
            <input class="form-control" type="text" name="pyear1" >
            </div>
   <div class="col-lg-6">
                   <input class="form-control" type="text" name="board2" >
                   </div>
   <div class="col-lg-6">
            <input class="form-control" type="text" name="roll2" >
            </div>
<div class="col-lg-6">
            <input class="form-control" type="text" name="pyear2" >
            </div>
   </div>
        <!-- /.table-responsive -->
      <!-- /.panel-body -->
    </div>
    <!-- /.panel -->
  </div>
            </div>
```

```
<br>><br>>
      </div>
          <br>><br>>
          <br>><br>>
          <div class="col-lg-12">
          <div class="form-group">
       <div class="panel panel-default">
<!-- /.panel-heading -->
     <div class="panel-body">
       <div class="table-responsive">
        <thead>
            <div class="col-lg-6">
          <th>>S.No</th>
          </div>
<div class="col-lg-6">
              Subject
          </div>
<div class="col-lg-6">
              Marks Obtained
          </div>
<div class="col-lg-6">
               Full Marks
          </div>
            </thead>
          1
  <div class="col-lg-6">
```

```
<input class="form-control" type="text" name="sub1">
         </div>
<div class="col-lg-6">
         <input class="form-control" type="text" name="marks1">
         </div>
                  <div class="col-lg-6">
         <input class="form-control" type="text" name="fmarks1">
         </div>
2
<div class="col-lg-6">
         <input class="form-control" type="text" name="sub2">
         </div>
<div class="col-lg-6">
         <input class="form-control" type="text" name="marks2">
         </div>
                  <div class="col-lg-6">
         <input class="form-control" type="text" name="fmarks2">
         </div>
</div>
     <!-- /.table-responsive -->
   <!-- /.panel-body -->
</div>
 <!-- /.panel -->
```

```
</div>
                      </div>
                </div>
                      <br>
       <div class="form-group">
       <div class="col-lg-4">
       </div>
       <div class="col-lg-6"><br><br>
       <input type="submit" class="btn btn-primary" name="submit"</pre>
value="Register"></button>
       </div>
       </div>
       </div>
       </div><!--row!-->
       </div>
                      </div>
               </div>
       </div>
       </form>
       <!-- jQuery -->
       <script src="../bower_components/jquery/dist/jquery.min.js"</pre>
               type="text/javascript"></script>
       <!-- Bootstrap Core JavaScript -->
       <script src="../bower_components/bootstrap/dist/js/bootstrap.min.js"</pre>
               type="text/javascript"></script>
       <!-- Metis Menu Plugin JavaScript -->
```

```
<script src="../bower_components/metisMenu/dist/metisMenu.min.js"</pre>
               type="text/javascript"></script>
       <!-- Custom Theme JavaScript -->
       <script src="../dist/js/sb-admin-2.js" type="text/javascript"></script>
       <script>
function showState(val) {
       $.ajax({
       type: "POST",
       url: "subject.php",
       data:'id='+val,
       success: function(data){
        // alert(data);
               $("#state").html(data);
       }
       });
}
function showDist(val) {
       $.ajax({
       type: "POST",
       url: "subject.php",
       data:'did='+val,
       success: function(data){
        // alert(data);
               $("#dist").html(data);
       }
       });
```

```
}
function showSub(val) {
  //alert(val);
       $.ajax({
       type: "POST",
       url: "subject.php",
       data:'cid='+val,
       success: function(data){
         // alert(data);
               $("#c-full").val(data);
        }
        });
}
</script>
</body>
</html>
Session.php
<?php
session_start();
if (! (isset ( $_SESSION ['login'] ))) {
       header ( 'location:../index.php' );
}
```

```
include('../config/DbFunction.php');
  $obj=new DbFunction();
       $rs=$obj->showSession();
?>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <meta name="description" content="">
  <meta name="author" content="">
  <title>view course</title>
  <link href="../bower_components/bootstrap/dist/css/bootstrap.min.css" rel="stylesheet">
  <link href="../bower_components/metisMenu/dist/metisMenu.min.css" rel="stylesheet">
  link
                                                   href="../bower_components/datatables-
plugins/integration/bootstrap/3/dataTables.bootstrap.css" rel="stylesheet">
  link
           href="../bower_components/datatables-responsive/css/dataTables.responsive.css"
rel="stylesheet">
  <link href="../dist/css/sb-admin-2.css" rel="stylesheet">
  link
                     href="../bower_components/font-awesome/css/font-awesome.min.css"
rel="stylesheet" type="text/css">
</head>
<body>
```

```
<div id="wrapper">
    <!-- Navigation -->
  <?php include('leftbar.php')?>;
     <nav>
    <div id="page-wrapper">
       <div class="row">
         <div class="col-lg-12">
           < h4
                   class="page-header">
                                              <?php
                                                         echo
                                                                   strtoupper("welcome"."
".htmlentities($_SESSION['login']));?></h4>
         </div>
         <!-- /.col-lg-12 -->
       </div>
       <!-- /.row -->
       <div class="row">
         <div class="col-lg-12">
           <div class="panel panel-default">
              <div class="panel-heading">
                View Session
              </div>
              <!--/.panel-heading -->
              <div class="panel-body">
                <div class="form-group">
                      <div class="col-lg-2">
```

# DIGITALISATION OF STUDENT INFORMATION

```
id=""
                    <label>Session<span
                                                                          style="font-
size:11px;color:red">*</span></label>
                    </div>
          <div class="col-lg-4">
                            <?php while($res=$rs->fetch_object()){
                            if(ses->status==1)
                            ?>
              <input type="radio" name="gender" id="male" value="<?php echo $res-</pre>
>session;?>" checked required="required">
                <?php echo $res->session;?> <br>
             <?php } ?>
              <input type="radio" name="gender" id="male" value="<?php echo $res-</pre>
>session;?>" checked required="required">
                <?php echo $res->session;?> <br>
              <?php }?>
                    </div>
<input type="submit" class="btn btn-primary" name="submit" value="Update Session">
                           </div>
           </div>
         </div>
      </div>
```

```
</div>
    <!-- /#page-wrapper -->
  </div>
  <!-- /#wrapper -->
  <!-- jQuery -->
  <script src="../bower_components/jquery/dist/jquery.min.js"></script>
  <!-- Bootstrap Core JavaScript -->
  <script src="../bower_components/bootstrap/dist/js/bootstrap.min.js"></script>
  <!-- Metis Menu Plugin JavaScript -->
  <script src="../bower_components/metisMenu/dist/metisMenu.min.js"></script>
  <!-- DataTables JavaScript -->
  <script src="../bower_components/datatables/media/js/jquery.dataTables.min.js"></script>
  <script
                                                      src="../bower_components/datatables-
plugins/integration/bootstrap/3/dataTables.bootstrap.min.js"></script>
  <!-- Custom Theme JavaScript -->
  <script src="../dist/js/sb-admin-2.js"></script>
  <!-- Page-Level Demo Scripts - Tables - Use for reference -->
  <script>
  $(document).ready(function() {
    $('#dataTables-example').DataTable({
         responsive: true
    });
  });
```

```
</script>
</body>
</html>
Login.php
<?php
session_start();
if(isset($_POST['submit'])){
       include('../config/DbFunction.php');
       $obj=new DbFunction();
       $_SESSION['login']=$_POST['id'];
       $obj->login($_POST['id'],$_POST['password']);
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <meta name="description" content="">
  <meta name="author" content="">
  <title>School Management Login </title>
```

```
<!-- Bootstrap Core CSS -->
  <link href="../bower_components/bootstrap/dist/css/bootstrap.min.css" rel="stylesheet">
  <!-- MetisMenu CSS -->
  <link href="../bower_components/metisMenu/dist/metisMenu.min.css" rel="stylesheet">
  <!-- Custom CSS -->
  <link href="../dist/css/sb-admin-2.css" rel="stylesheet">
  <!-- Custom Fonts -->
  link
                      href="../bower_components/font-awesome/css/font-awesome.min.css"
rel="stylesheet" type="text/css">
k rel="stylesheet" type="text/css" href="../dist/css/jquery.validate.css" />
  <!-- HTML5 Shim and Respond.js IE8 support of HTML5 elements and media queries -->
  <!-- WARNING: Respond.js doesn't work if you view the page via file:// -->
  <!--[if lt IE 9]>
    <script src="https://oss.maxcdn.com/libs/html5shiv/3.7.0/html5shiv.js"></script>
    <script src="https://oss.maxcdn.com/libs/respond.js/1.4.2/respond.min.js"></script>
  <![endif]-->
</head>
<body>
  <div class="container">
    <br><br><br><br><br><
       <div class="col-md-4 col-md-offset-4">
         <div class="panel panel-primary">
           <div class="panel-heading">
              <h3 class="panel-title">Sign In</h3>
           </div>
```

```
<div class="panel-body">
              <form method="post">
                <fieldset>
                  <div class="form-group">
       <input class="form-control" placeholder="Login Id" id="id"name="id" type="text"</pre>
autofocus autocomplete="off">
                  </div>
                  <div class="form-group">
                                   class="form-control"
                     <input
                                                                placeholder="Password"
id="password" name="password" type="password" value="">
                  </div>
                  <div class="checkbox">
                     <label>
                       <input name="remember" type="checkbox" value="Remember</pre>
Me">Remember Me
                     </label>
                     <label>
                       <input name="remember" type="checkbox" value="Remember</pre>
Me">Forgot Password
                     </label>
                  </div>
                  <!-- Change this to a button or input when using this as a form -->
                  <input type="submit" value="login" name="submit" class="btn btn-lg</pre>
btn-success btn-block">
                </fieldset>
              </form>
           </div>
         </div>
      </div>
    </div>
```

```
</div>
  <!-- jQuery -->
  <script src="../bower_components/jquery/dist/jquery.min.js"></script>
  <!-- Bootstrap Core JavaScript -->
  <script src="../bower_components/bootstrap/dist/js/bootstrap.min.js"></script>
  <!-- Metis Menu Plugin JavaScript -->
  <script src="../bower_components/metisMenu/dist/metisMenu.min.js"></script>
  <!-- Custom Theme JavaScript -->
  <script src="../dist/js/sb-admin-2.js"></script>
<script src="../dist/jquery-1.3.2.js" type="text/javascript"></script>
<script src="../dist/jquery.validate.js" type="text/javascript"></script>
<script type="text/javascript">
       jQuery(function(){
         ¡Query("#id").validate({
            expression: "if (VAL.match(/^[a-z]$/)) return true; else return false;",
            message: "Should be a valid id"
          });
         ¡Query("#password").validate({
            expression: "if (VAL.match(/^[a-z]$/)) return true; else return false;",
            message: "Should be a valid password"
          });
       });
    </script>
</body>
```

```
</html>
Dashboard.php
<?php session_start();</pre>
if (!(isset($_SESSION['login']))) {
       header('location:../index.php');
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <meta name="description" content="">
  <meta name="author" content="">
  <title></title>
  <!-- Bootstrap Core CSS -->
  <link href="../bower_components/bootstrap/dist/css/bootstrap.min.css" rel="stylesheet">
  <!-- MetisMenu CSS -->
  <link href="../bower_components/metisMenu/dist/metisMenu.min.css" rel="stylesheet">
  <!-- Custom CSS -->
```

```
k href="../dist/css/sb-admin-2.css" rel="stylesheet">
  <!-- Custom Fonts -->
  link
                     href="../bower_components/font-awesome/css/font-awesome.min.css"
rel="stylesheet" type="text/css">
  <!-- HTML5 Shim and Respond.js IE8 support of HTML5 elements and media queries -->
  <!-- WARNING: Respond.js doesn't work if you view the page via file:// -->
  <!--[if lt IE 9]>
    <script src="https://oss.maxcdn.com/libs/html5shiv/3.7.0/html5shiv.js"></script>
    <script src="https://oss.maxcdn.com/libs/respond.js/1.4.2/respond.min.js"></script>
  <![endif]-->
</head>
<body>
  <div id="wrapper">
    <!-- Navigation -->
    <nav class="navbar navbar-default navbar-static-top" role="navigation" style="margin-
bottom: 0">
       <div class="navbar-header">
                   type="button"
                                   class="navbar-toggle"
                                                           data-toggle="collapse"
         <but
                                                                                    data-
target=".navbar-collapse">
           <span class="sr-only">Toggle navigation</span>
           <span class="icon-bar"></span>
           <span class="icon-bar"></span>
           <span class="icon-bar"></span>
         </button>
         <a class="navbar-brand" href="index.html">Student Management System</a>
```

```
</div>
      <!-- /.navbar-header -->
      cli class="dropdown">
          <a class="dropdown-toggle" data-toggle="dropdown" href="#">
           <i class="fa fa-envelope fa-fw"></i> <i class="fa fa-caret-down"></i>
          </a>
          <
              <a href="#">
                <div>
                  <strong>John Smith</strong>
                  <span class="pull-right text-muted">
                    <em>Yesterday</em>
                  </span>
                </div>
                <div>Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Pellentesque eleifend...</div>
              </a>
            cli class="divider">
            \langle li \rangle
              <a href="#">
                <div>
                  <strong>John Smith</strong>
                  <span class="pull-right text-muted">
                    <em>Yesterday</em>
                  </span>
                </div>
```

```
<div>Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Pellentesque eleifend...</div>
               </a>
             cli class="divider">
             <
               <a href="#">
                 <div>
                   <strong>John Smith</strong>
                   <span class="pull-right text-muted">
                     <em>Yesterday</em>
                   </span>
                 </div>
                 <div>Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Pellentesque eleifend...</div>
               </a>
             cli class="divider">
             <
               <a class="text-center" href="#">
                 <strong>Read All Messages
                 <i class="fa fa-angle-right"></i>
               </a>
             <!--/.dropdown-messages -->
        <!-- /.dropdown -->
        cli class="dropdown">
          <a class="dropdown-toggle" data-toggle="dropdown" href="#">
             <i class="fa fa-tasks fa-fw"></i> <i class="fa fa-caret-down"></i>
```

```
</a>
          <
               <a href="#">
                 <div>
                   >
                     <strong>Task 1</strong>
                     <span class="pull-right text-muted">40% Complete/span>
                   <div class="progress progress-striped active">
                     <div class="progress-bar progress-bar-success" role="progressbar"</pre>
aria-valuenow="40" aria-valuemin="0" aria-valuemax="100" style="width: 40%">
                       <span class="sr-only">40% Complete (success)</span>
                     </div>
                   </div>
                 </div>
               </a>
            cli class="divider">
            <
               <a href="#">
                 <div>
                   >
                     <strong>Task 2</strong>
                     <span class="pull-right text-muted">20% Complete</span>
                   <div class="progress progress-striped active">
                     <div class="progress-bar progress-bar-info" role="progressbar"</pre>
aria-valuenow="20" aria-valuemin="0" aria-valuemax="100" style="width: 20%">
                       <span class="sr-only">20% Complete</span>
                     </div>
```

```
</div>
                  </div>
               </a>
             cli class="divider">
             <
               <a href="#">
                  <div>
                    >
                      <strong>Task 3</strong>
                      <span class="pull-right text-muted">60% Complete</span>
                    <div class="progress progress-striped active">
                      <div class="progress-bar progress-bar-warning" role="progressbar"</pre>
aria-valuenow="60" aria-valuemin="0" aria-valuemax="100" style="width: 60%">
                        <span class="sr-only">60% Complete (warning)</span>
                      </div>
                    </div>
                  </div>
               </a>
             cli class="divider">
             <
               <a href="#">
                  <div>
                    >
                      <strong>Task 4</strong>
                      <span class="pull-right text-muted">80% Complete</span>
                    <div class="progress progress-striped active">
```

```
<div class="progress-bar progress-bar-danger" role="progressbar"</pre>
aria-valuenow="80" aria-valuemin="0" aria-valuemax="100" style="width: 80%">
                       <span class="sr-only">80% Complete (danger)</span>
                     </div>
                   </div>
                 </div>
               </a>
            cli class="divider">
            >
               <a class="text-center" href="#">
                 <strong>See All Tasks</strong>
                 <i class="fa fa-angle-right"></i>
               </a>
            <!--/.dropdown-tasks -->
        <!-- /.dropdown -->
        cli class="dropdown">
          <a class="dropdown-toggle" data-toggle="dropdown" href="#">
            <i class="fa fa-bell fa-fw"></i> <i class="fa fa-caret-down"></i>
          </a>
          <
               <a href="#">
                 <div>
                   <i class="fa fa-comment fa-fw"></i> New Comment
                   <span class="pull-right text-muted small">4 minutes ago/span>
                 </div>
               </a>
```

```
cli class="divider">
<
  <a href="#">
    <div>
      <i class="fa fa-twitter fa-fw"></i> 3 New Followers
      <span class="pull-right text-muted small">12 minutes ago</span>
    </div>
  </a>
cli class="divider">
<
  <a href="#">
    <div>
      <i class="fa fa-envelope fa-fw"></i> Message Sent
      <span class="pull-right text-muted small">4 minutes ago/span>
    </div>
  </a>
cli class="divider">
<
  <a href="#">
    <div>
      <i class="fa fa-tasks fa-fw"></i> New Task
      <span class="pull-right text-muted small">4 minutes ago/span>
    </div>
  </a>
cli class="divider">
<
  <a href="#">
```

```
<div>
          <i class="fa fa-upload fa-fw"></i> Server Rebooted
          <span class="pull-right text-muted small">4 minutes ago/span>
        </div>
      </a>
    cli class="divider">
    <
      <a class="text-center" href="#">
        <strong>See All Alerts
        <i class="fa fa-angle-right"></i>
      </a>
    <!--/.dropdown-alerts -->
<!-- /.dropdown -->
cli class="dropdown">
 <a class="dropdown-toggle" data-toggle="dropdown" href="#">
    <i class="fa fa-user fa-fw"></i> <i class="fa fa-caret-down"></i>
  </a>
 <a href="#"><i class="fa fa-user fa-fw"></i> User Profile</a>
    <a href="#"><i class="fa fa-gear fa-fw"></i> Settings</a>
    cli class="divider">
    <a href="login.html"><i class="fa fa-sign-out fa-fw"></i> Logout</a>
    <!--/.dropdown-user -->
```

```
<!-- /.dropdown -->
     <!--/.navbar-top-links -->
     <div class="navbar-default sidebar" role="navigation">
       <div class="sidebar-nav navbar-collapse">
         <
         <a href="dashboard.php"><i class="fa fa-dashboard fa-fw"></i> Dashboard</a>
           <
             <a href="#"><i class="fa fa-bar-chart-o fa-fw"></i> Course<span class="fa
arrow"></span></a>
             <
                 <a href="add-course.php">Add Course</a>
               <
                 <a href="?">View</a>
               <!-- /.nav-second-level -->
           <
             <a href="tables.html"><i class="fa fa-table fa-fw"></i> Tables</a>
           <
             <a href="forms.html"><i class="fa fa-edit fa-fw"></i> Forms</a>
```

```
<
             <a href="#"><i class="fa fa-wrench fa-fw"></i> UI Elements<span
class="fa arrow"></span></a>
             <
                 <a href="panels-wells.html">Panels and Wells</a>
               <
                 <a href="buttons.html">Buttons</a>
               >
                 <a href="notifications.html">Notifications</a>
               <
                 <a href="typography.html">Typography</a>
               <
                 <a href="icons.html"> Icons</a>
               <
                 <a href="grid.html">Grid</a>
               <!-- /.nav-second-level -->
           <
                 href="#"><i
                             class="fa
                                       fa-sitemap
                                                 fa-fw"></i> Multi-Level
             <a
Dropdown<span class="fa arrow"></span></a>
             \langle li \rangle
                 <a href="#">Second Level Item</a>
```

```
<
                <a href="#">Second Level Item</a>
              <
                <a href="#">Third Level <span class="fa arrow"></span></a>
                <
                    <a href="#">Third Level Item</a>
                  <!-- /.nav-third-level -->
              <!--/.nav-second-level -->
           <
            <a href="#"><i class="fa fa-files-o fa-fw"></i> Sample Pages<span
class="fa arrow"></span></a>
            \langle li \rangle
                <a href="blank.html">Blank Page</a>
```

```
<
                    <a href="login.html">Login Page</a>
                  <!-- /.nav-second-level -->
             </div>
         <!--/.sidebar-collapse -->
      </div>
      <!--/.navbar-static-side -->
    </nav>
    <div id="page-wrapper">
      <div class="row">
         <div class="col-lg-12">
                   class="page-header">
                                                               strtoupper("welcome"."
           < h4
                                            <?php
                                                      echo
".htmlentities($_SESSION['login']));?></h4>
        </div>
        <!-- /.col-lg-12 -->
      </div>
      <!-- /.row -->
      <div class="row">
         <div class="col-lg-12">
           <div class="panel panel-default">
             <div class="panel-heading">
               Basic Form Elements
             </div>
             <div class="panel-body">
               <div class="row">
```

```
<div class="col-lg-6">
  <form role="form">
    <div class="form-group">
      <label>Text Input</label>
      <input class="form-control">
      Example block-level help text here.
    </div>
    <div class="form-group">
      <label>Text Input with Placeholder</label>
      <input class="form-control" placeholder="Enter text">
    </div>
    <div class="form-group">
      <label>Static Control</label>
      email@example.com
    </div>
    <div class="form-group">
      <label>File input</label>
      <input type="file">
    </div>
    <div class="form-group">
      <label>Text area</label>
      <textarea class="form-control" rows="3"></textarea>
    </div>
    <div class="form-group">
      <label>Checkboxes</label>
      <div class="checkbox">
        <label>
           <input type="checkbox" value="">Checkbox 1
        </label>
      </div>
      <div class="checkbox">
```

```
<label>
                              <input type="checkbox" value="">Checkbox 2
                            </label>
                          </div>
                          <div class="checkbox">
                            <label>
                              <input type="checkbox" value="">Checkbox 3
                            </label>
                          </div>
                        </div>
                        <div class="form-group">
                          <label>Inline Checkboxes</label>
                          <label class="checkbox-inline">
                            <input type="checkbox">1
                          </label>
                          <label class="checkbox-inline">
                            <input type="checkbox">2
                          </label>
                          <label class="checkbox-inline">
                            <input type="checkbox">3
                          </label>
                       </div>
                        <div class="form-group">
                          <label>Radio Buttons</label>
                          <div class="radio">
                            <label>
                              <input
                                             type="radio"
                                                                  name="optionsRadios"
id="optionsRadios1" value="option1" checked>Radio 1
                            </label>
                          </div>
                          <div class="radio">
```

# DIGITALISATION OF STUDENT INFORMATION

```
<label>
                               <input
                                              type="radio"
                                                                   name="optionsRadios"
id="optionsRadios2" value="option2">Radio 2
                            </label>
                          </div>
                          <div class="radio">
                            <label>
                               <input
                                              type="radio"
                                                                   name="optionsRadios"
id="optionsRadios3" value="option3">Radio 3
                            </label>
                          </div>
                        </div>
                        <div class="form-group">
                          <label>Inline Radio Buttons</label>
                          <label class="radio-inline">
                            <input
                                          type="radio"
                                                             name="optionsRadiosInline"
id="optionsRadiosInline1" value="option1" checked>1
                          </label>
                          <label class="radio-inline">
                                          type="radio"
                                                             name="optionsRadiosInline"
                            <input
id="optionsRadiosInline2" value="option2">2
                          </label>
                          <label class="radio-inline">
                                          type="radio"
                                                             name="optionsRadiosInline"
                            <input
id="optionsRadiosInline3" value="option3">3
                          </label>
                        </div>
                        <div class="form-group">
                          <label>Selects</label>
                          <select class="form-control">
                            <option>1</option>
```

```
<option>2</option>
                            <option>3</option>
                            <option>4</option>
                            <option>5</option>
                          </select>
                       </div>
                       <div class="form-group">
                          <label>Multiple Selects</label>
                          <select multiple class="form-control">
                            <option>1</option>
                            <option>2</option>
                            <option>3</option>
                            <option>4</option>
                            <option>5</option>
                          </select>
                        </div>
                        <button
                                    type="submit"
                                                       class="btn
                                                                     btn-default">Submit
Button</button>
                                     type="reset"
                                                       class="btn
                                                                       btn-default">Reset
                       <button
Button</button>
                     </form>
                   </div>
                   <!-- /.col-lg-6 (nested) -->
                   <div class="col-lg-6">
                     <h1>Disabled Form States</h1>
                     <form role="form">
                        <fieldset disabled>
                          <div class="form-group">
                            <label for="disabledSelect">Disabled input</label>
                            <input class="form-control" id="disabledInput" type="text"</pre>
placeholder="Disabled input" disabled>
```

```
</div>
                         <div class="form-group">
                            <label for="disabledSelect">Disabled select menu</label>
                            <select id="disabledSelect" class="form-control">
                              <option>Disabled select
                            </select>
                         </div>
                         <div class="checkbox">
                            <label>
                              <input type="checkbox">Disabled Checkbox
                            </label>
                         </div>
                         <button
                                   type="submit"
                                                    class="btn
                                                                 btn-primary">Disabled
Button</button>
                       </fieldset>
                     </form>
                     <h1>Form Validation States</h1>
                     <form role="form">
                       <div class="form-group has-success">
                         <label class="control-label"
                                                        for="inputSuccess">Input with
success</label>
                         <input type="text" class="form-control" id="inputSuccess">
                       </div>
                       <div class="form-group has-warning">
                         <label class="control-label" for="inputWarning">Input with
warning</label>
                         <input type="text" class="form-control" id="inputWarning">
                       </div>
                       <div class="form-group has-error">
                         <label
                                  class="control-label"
                                                          for="inputError">Input
                                                                                   with
error</label>
```

```
<input type="text" class="form-control" id="inputError">
                       </div>
                     </form>
                     <h1>Input Groups</h1>
                     <form role="form">
                       <div class="form-group input-group">
                          <span class="input-group-addon">@</span>
                          <input
                                            type="text"
                                                                    class="form-control"
placeholder="Username">
                       </div>
                       <div class="form-group input-group">
                          <input type="text" class="form-control">
                          <span class="input-group-addon">.00</span>
                       </div>
                       <div class="form-group input-group">
                          <span class="input-group-addon"><i class="fa fa-eur"></i>
                          </span>
                          <input type="text"
                                               class="form-control"
                                                                      placeholder="Font
Awesome Icon">
                       </div>
                       <div class="form-group input-group">
                          <span class="input-group-addon">$</span>
                          <input type="text" class="form-control">
                         <span class="input-group-addon">.00</span>
                       </div>
                       <div class="form-group input-group">
                          <input type="text" class="form-control">
                          <span class="input-group-btn">
                            <button class="btn btn-default" type="button"><i class="fa fa-
search"></i>
                            </button>
```

```
</span>
                      </div>
                   </form>
                 </div>
                 <!-- /.col-lg-6 (nested) -->
              </div>
              <!-- /.row (nested) -->
            </div>
            <!-- /.panel-body -->
         </div>
         <!-- /.panel -->
       </div>
       <!--/.col-lg-12 -->
    </div>
    <!-- /.row -->
  </div>
  <!--/#page-wrapper -->
</div>
<!-- /#wrapper -->
<!-- jQuery -->
<script src="../bower_components/jquery/dist/jquery.min.js"></script>
<!-- Bootstrap Core JavaScript -->
<script src="../bower_components/bootstrap/dist/js/bootstrap.min.js"></script>
<!-- Metis Menu Plugin JavaScript -->
<script src="../bower_components/metisMenu/dist/metisMenu.min.js"></script>
<!-- Custom Theme JavaScript -->
```

<script src="../dist/js/sb-admin-2.js"></script>
</body>
</html>

# 10. SAMPLE SCREENSHOTS

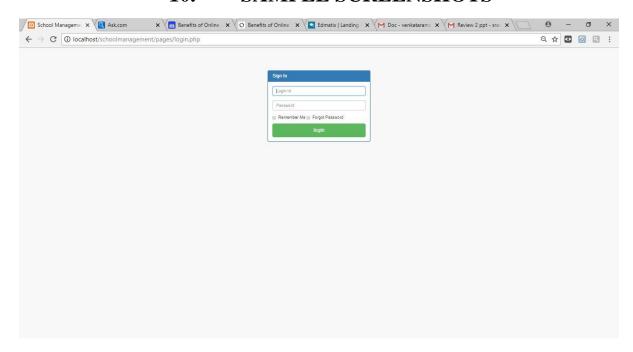


Fig: 10.1 Login page

## DIGITALISATION OF STUDENT INFORMATION

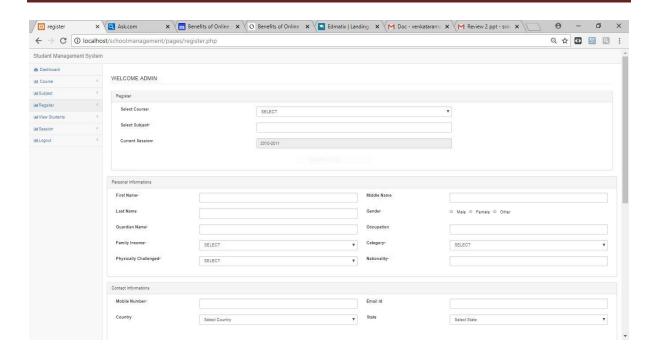


Fig: 10.2 Student Registration

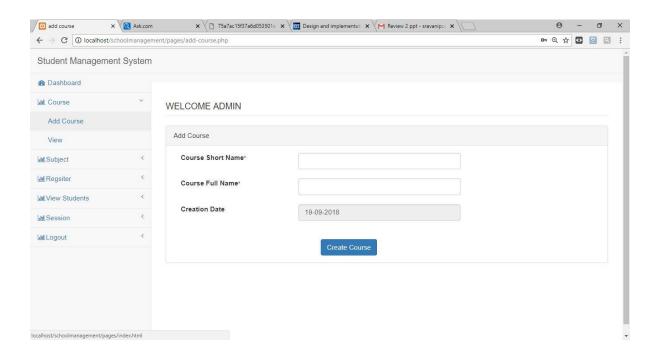


Fig: 10.3Course registration page

### 11.CONCLUSION

The system described here has been used every year since 1994. The University has committed to continuing to use the registration system, and some considerable effort has gone into making the system manageable by non-Arjuna experts. The Arjuna system was used in this application to provide high reliability and availability in case of possible failure of certain components. When failures did occur, the use of atomic transactions and replication guaranteed consistency and forward progress. The system has performed well even at maximum load, and the occurrence of failures has caused minor glitches, to the extent that most users did not realise anything had happened. In the context of the ultimate purpose of the exercise, namely the completion of the registration process, the outcome was exactly what we could have wished for. This positive field experience does indicate that it is possible to build high availability distributed applications by making use of commodity components, such as networked Unix workstations and relying entirely on software implemented fault-tolerance techniques for meeting application specific availability and consistency requirements.

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