

# Campus Placement Automation

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**Abstract**— Campus Placement Automation (CPA) aims at providing the Training & Placement Office (TPO) of an Institute to automate the process of the office. This automation out-turns collecting required student data necessary for registration in Campus Placement process and notifying eligible candidates about the important dates and other updates. This Automation is accomplished through the medium of a Website and smart phone application. The front end of this system is built with Bootstrap. Bootstrap is the most popular HTML, CSS and JS framework which scales the website and application with a single code base, from phones to tablets to desktops with CSS media queries. The back end of this system is built with PHP. Fast, flexible and pragmatic, PHP is a server scripting language that empowers some of the most popular websites. MySQL is the most popular database system used with PHP for storing information categorically.

**Index Terms**— Admin, Automation, Campus, Computer application, Database, Forum, Notifications, Job, Online, Placement, Recruiter, TPO, Website.

## I. INTRODUCTION

Campus Placements are organized in nearly all colleges by companies from various sectors for recruiting eligible applicants. Organization of placement drives stand in need of particular information of the applicants. This process is exercised manually which is chaotic for both students and the TPO. This project is to facilitate students in college to register and apply for jobs. The students can access this system easily. In the main page there are options for a new register, a registered student to directly login using username and password, submit resume. In the registration form, the student need to submit required details related educational qualifications, professional skills and upload resume. Communication between the TPO and students is made smooth through dynamic notification by administration (admin) staff and a 'Q&A' forum for students. Statistics of the previously placed students is provided to the students to acknowledge them about the companies approaching for campus placement.

### A. Objectives of the project:

Computers and information technology has a major influence on the society and the last few years have witnessed a tremendous increase in the capabilities and use of technology. Going on is an era of simplifying almost all complicated works using technology. Automation of Training & Placement Office will replace the manual processing of office which makes the mechanism slow and results into problems such as inconsistency and ambiguity on operations. The proposed system intends user-friendly operations which may resolve ambiguity and achieve certainty.

## II. SYSTEM DEVELOPMENT

This paper proposes an automation of campus placement which is achieved through the medium of a website. Web development tends to break down into two main concentrations: front-end and back-end.

### A. Front-End Development

Front-end is website's user-facing code and the architecture of its immersive user experiences. These objectives are executed by three main languages: HTML, CSS, and JavaScript (JS). Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

Bootstrap is a free and open-source collection of tools for web development. It contains HTML and CSS based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. Bootstrap's responsive CSS adjusts to phones, tablets, and desktops. In Bootstrap 3, mobile-first styles are part of the core framework. It is compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera).

There is no need to download and host Bootstrap yourself, one can include it from a CDN (Content Delivery Network).

- Latest compiled and minified CSS  
`<link rel="stylesheet" href="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.6/css/bootstrap.min.css">`

- jQuery library  
`<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.0/jquery.min.js"></script>`
- Latest compiled JavaScript  
`<script src="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.6/js/bootstrap.min.js"></script>`

Bootstrap 3 is designed to be responsive to different devices. The following tags ensure this responsiveness.

```
<metaname="viewport" content="width=device-width, initial-scale=1">
```

The 'width=device-width' part sets the width of the page to follow the screen-width of the device (which will vary depending on the device). The 'initial-scale=1' part sets the initial zoom level when the page is first loaded by the browser.

A navigation bar is a navigation header that is placed at the top of the page.

```
<nav class="navbar navbar-inverse navbar-static-top" role="navigation" id="menu">
```



Fig. 1: Navigation Bar

With Bootstrap, a navigation bar can extend or collapse, depending on the screen size. The 'navbar-inverse' part sets the color of the bar other than default, 'navbar-static-top' class makes the navigation bar fixed at the top.

The Carousel plugin is a component for cycling through elements, like a carousel (slideshow).

```
<div id="myCarousel" class="carousel slide" data-ride="carousel">
```

Carousels require the use of an id (id="myCarousel") for carousel controls to function properly, class="carousel" specifies that this <div> contains a carousel. The .slide class adds a CSS transition and animation effect, which makes the items slide when showing a new item. The data-ride="carousel" attribute tells Bootstrap to begin animating the carousel immediately when the page loads.

Form controls automatically receive some global styling with Bootstrap. All textual <input>, <textarea> and <select> elements with class .form-control have a width of 100%.

Bootstrap provides 260 glyphs from the GlyphiconsHalflings set. Glyphicons can be used in text, buttons, toolbars, navigation, forms, etc.

Here are some examples of glyphs:

Envelope glyphicon: ✉

Print glyphicon: 🖨

Search glyphicon: 🔍

Download glyphicon: ⬇

A glyphicon is inserted with the following syntax:

```
<span class="glyphicon glyphicon-name"></span>
```

Bootstrap provides seven styles of buttons. Bootstrap has the following classes:

.btn-default

.btn-primary

.btn-success

.btn-info

.btn-warning

.btn-danger

.btn-link



Fig. 2: Different bootstrap buttons

## B. Back-End Development

So what makes the front end of a website possible? Where is all that data stored? This is where the back end comes in. The back end of a website consists of a server, an application, and a database. A back-end powers these websites with components which enable the user-facing side of the website to even exist in the first place.

In order to make the server, application, and database communicate with each other, back-end use server-side languages like PHP, Ruby, Python, Java, and .Net to build an application and tools like MySQL, Oracle, and SQL Server to find, save, or change data and serve it back to the user in front-end code.

In the development of this web system we use PHP and MYSQL. With PHP, you can connect to and manipulate databases. MySQL is the most popular database system used with PHP.

**PHP** is an acronym for "PHP: Hypertext Preprocessor". It is powerful enough to be at the core of the biggest blogging system on the web (WordPress). It is deep enough to run the largest social network (Facebook). It is also easy enough to be a beginner's first server side language.

It can generate dynamic page content; can create, open, read, write, delete, and close files on the server; can collect form data; can send and receive cookies; can add, delete, modify data in your database; can be used to control user-access; can encrypt data. With PHP you are not limited to output HTML. You can output images, PDF files, and even Flash movies. You can also output any text, such as XHTML and XML.

SQL is a standard language for accessing and manipulating databases. SQL stands for Structured Query Language. To build a web site that shows data from a database one needs an RDBMS database program, for this website we use **MySQL**. MySQL is one of the best RDBMS being used for developing web-based software applications.

The CREATE DATABASE statement is used to create a database.

*Syntax:*

```
CREATE DATABASE dbname;
```

The CREATE TABLE statement is used to create a table in a database. Tables are organized into rows and columns; and each table must have a name.

*Syntax:*

```
CREATE TABLE table_name
(
column_name1 data_type(size) constraint_name,
column_name2 data_type(size) constraint_name,
column_name3 data_type(size) constraint_name,
....
);
```

SQL constraints are used to specify rules for the data in a table. In SQL, we have the following constraints:

- NOT NULL - Indicates that a column cannot store NULL value
- UNIQUE - Ensures that each row for a column must have a unique value
- PRIMARY KEY - A combination of a NOT NULL and UNIQUE. Ensures that a column (or combination of two or more columns) have a unique identity which helps to find a particular record in a table more easily and quickly
- FOREIGN KEY - Ensure the referential integrity of the data in one table to match values in another table
- CHECK - Ensures that the value in a column meets a specific condition
- DEFAULT - Specifies a default value for a column

The INSERT INTO statement is used to insert new records in a table. It is possible to write the INSERT INTO statement in two forms. The first form does not specify the column names where the data will be inserted, only their values. The second form specifies both the column names and the values to be inserted.

*Syntax:*

```
INSERT INTO table_name
VALUES (value1,value2,value3,...);
OR
INSERT INTO table_name (column1,column2,column3,...)
VALUES (value1,value2,value3,...);
```

The UPDATE statement is used to update existing records in a table.

*Syntax:*

```
UPDATE table_name
SET column1=value1,column2=value2,...
WHERE some_column=some_value;
```

The SELECT statement is used to select data from a database.

The result is stored in a result table, called the result-set. The WHERE clause is used to extract only those records that fulfill a specified criterion. The AND & OR operators are used to filter records based on more than one condition. The ORDER BY keyword sorts the records in ascending order by default. To sort the records in a descending order, you can use the DESC keyword.

*Syntax:*

```
SELECT column_name,column_name
FROM table_name
WHERE column_name operator value
AND/OR first_condition=second_condition
ORDER BY column_name ASC|DESC, column_name ASC|DESC;
```

### Connect MySQL Database using PHP

The first thing to do is connect to the database. The function to connect to MySQL is called `mysql_connect`. This function returns a resource which is a pointer to the database connection.

Once you've connected, you're going to want to select a database to work with. The database here is called 'stud\_info'. To start working in this database, you'll need the `mysql_select_db()` function.

The function used to perform queries is named `mysql_query()`. The function returns a resource that contains the results of the query, called the result set. To examine the result we're going to use the `mysql_fetch_array` function, which returns the results row by row. In the case of a query that doesn't return results, the resource that the function returns is simply a value true or false.

*Syntax:*

```
<?php
$username = "your_name";
$password = "your_password";
$hostname = "localhost";

//connection to the database
$dbhandle = mysql_connect($hostname, $username, $password)
or die("Unable to connect to MySQL");
echo "Connected to MySQL<br>";

//select a database to work with
$selectd = mysql_select_db("examples",$dbhandle)
or die("Could not select examples");

//execute the SQL query and return records
$result = mysql_query("SELECT id, model, year FROM cars");

//fetch the data from the database
while ($row = mysql_fetch_array($result)) {
    echo "ID:". $row{'id'}." Name:". $row{'model'}."Year: ". //display the results
    $row{'year'}."<br>";
}
//close the connection
mysql_close($dbhandle);
?>
```

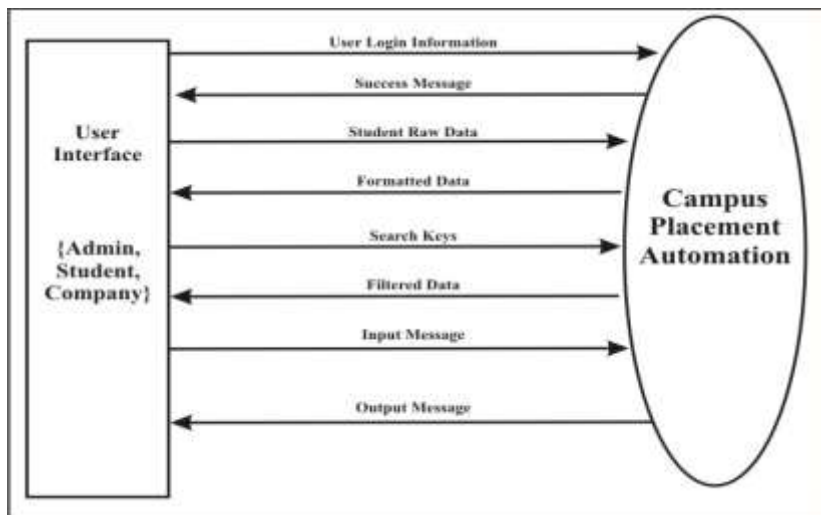


Fig.3: The flow-chart to describe the campus placement automation.

### III. TESTING

We, as Testers have following concerns when concluding web-based testing for this system:

- Browser compatibility - Validate consistent application performance on a variety of browser types and configurations.
- Functional correctness - Validate that the application functions correctly. This includes validating links, calculations, displays of information and navigation.
- Integration - Validate the integration between browsers and servers, applications and data, hardware and software.
- Usability - Validate the overall usability of a webapplication, including appearance, clarity, and navigation.
- Security - Validate the adequacy and correctness of security controls, including access control and authorizations.
- Performance - Validate the performance of the web application under load.
- Verification of code - Validate that the code used in building the web application (HTML, CSS, PHP, JS) has been used in a correct manner.

Above mentioned tests are performed in three stages which are as follows:-

#### 1. Unit Testing:

Unit testing is under taken when a module has been coded and successfully reviewed. This can be done by two methods:

##### a) Black Box Testing

Test cases are designed from an examination of the input/output values only and no knowledge of designing or coding is required the following are the two main approaches of designing black-box test cases.

##### b) Equivalence Class Partitioning

The domain of input values to a program is partitioned into a set of equivalence classes. This partitioning is done on such way that the behavior of the program is similar to every boundary value analysis. Boundary value analysis leads to selection of the test cases at the boundaries of different equivalence classes.

#### 2. Integration Testing:

During integration testing different modules of the system are integrated using integration plan. The integration plan specifies the steps and the order in which modules are combined to realize the full system.

Purpose:

- To test whether the module performs its intended task.
- Once all the modules have been integrated and tested, system testing can start.
- 

#### 3. System Testing:

System tests are designed to validate a fully developed system with a view to assuring that it meets its requirements. There are three types of system testing which are as follows:-

##### a) Alpha Testing:

- The initial testing of a computer program or system under actual usage conditions, it can be done in-house by the vendor, or outside by a customer or third party tester.
- Acceptance Testing performed by the customer in a controlled environment at the developer's site.
- The software used by the customer in a setting approximating the target environment with the developer observing and recording errors and usage problems.

##### b) Beta Testing :

Beta Testing is done after alpha testing. The main purpose of Beta Testing are as follows:-

- Testing done by the potential or existing users, customers and end users at the external site without developers involvement is known as beta testing.
- It is operation testing i.e. it tests if the software satisfies the business or operational needs of the customers and end users.
- Beta Testing is done for external acceptance testing of COTS(Commercial off the Shelf) software.

c) Test Case Design :

Any engineered product (and most other things) can be tested in one of the following two ways.

- Knowing the specified function that a product has been designed to perform, tests can be conducted to demonstrate each function is fully operational.
- Knowing the internal working of a product, tests can be conducted to ensure that —all gears meshll, that is the internal operation of the product performs according to the specification and all internal components have been adequately exercised.

#### IV. IMPLEMENTATION

1) Individual student profile

- Every student registered in CPA will have an individual profile that will contain personal information, academics, interests, achievements, projects undertaken, resume etc.
- A student will have rights to add, update as well as remove information. Academics related data will be verified by TPO and will not be editable once verified.

2) Criteria based search

- Eligibility criteria for campus drives change from company to company. Admin seeking student data on the basis of branch, 10<sup>th</sup> percentage, 12<sup>th</sup> percentage, B.E aggregate is provided which is much flexible in comparison to applying constraints on excel sheets.
- The web portal access can also be provided to companies for referral of student data directly.

3) Recruitment Statistics

- Students will get overview of college's recruitment demography.
- Company names, number of students placed in previous years and job profile offered are some of the data available for students.

4) Online Examination

- Students may take online mock aptitude tests via CPA at any time.
- Online tests will be uploaded to CPA by the TPO.

5) Forum

- Students can discuss their problems and other queries related to Placements.
- Admin as well as other student can reply to queries.

6) Notifications

- Digital notice board will contain latest information, news.
- SMS and Mail from CPA will be sent to those registered student suitable for a particular placement drive keeping them updated all the time.

#### V. CONCLUSION& FUTURE SCOPE

We can draw following conclusions from the system implementation for CPA:

1. Students can fill out registration forms at their ease from their respective desktop computer systems which relieves them from standing in long queues for submitting the forms.
2. TPO's task of entering student data into the system is wiped out due to auto storage of data from registration forms into the database.
3. Retrieving student data from database is easier than passing queries and formatting data in excel sheets.
4. Communication of students with TPO has increased immensely due to digital noticeboard. Exclusive Notifications is possible and easy to function due sms and emails via website.
5. Online mock tests give students better understanding of the actual test to be conducted by the companies

Future Scope for extension in this project include a smart phone application with different OS platforms like android, IOS and Windows. As this system already consist of many features but still there can be some errors which can overcome in future release. The project is easily extensible and can be improved by further incremental releases of the same. New modules can be easily added as it requires only an addition of a new package. Forum can be upgraded with new features. Communication between

company, admin and student can be increased by live chat options.

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