WEB PORTAL FOR CLINICAL PSYCHOLOGY

A Thesis
Presented to the
Faculty of
San Diego State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
in
Computer Science

by
Aditya Nishigandh Nalawade
Fall 2015
SAN DIEGO STATE UNIVERSITY

The Undersigned Faculty Committee Approves the

Thesis of Aditya Nishigandh Nalawade:

Web Portal for Clinical Psychology

Carl Eckberg, Chair
Department of Computer Science

Tao Xie
Department of Computer Science

Michael Taylor
Department of Psychology

Sept 24, 2015
Approval Date
Copyright © 2015
by
Aditya Nishigandh Nalawade
All Rights Reserved
DEDICATION

I would like to dedicate this thesis project to my father, mother, sister, my friends and the faculty. I want to thank my family for having trust in me and supporting me at every single step. Also, I would like to thank all faculty members for giving me this great opportunity.
The SDSU/UCSD Joint Doctoral Program in Clinical Psychology (JDP-CP) is storing all their student, faculty and staff data into different excel sheets. This data is very difficult to manage as it grows day by day. So, there is a need to manage everything in the department using an automated tool.

The aim of this project is to provide a web portal to be used by every member in the JDP-CP where they will have proper authentication and according to that they will have authorizations. A student can view data only related to him/her and not others. A faculty member can have access to his/her personnel information as well as all the students working under him/her. They will always be updated with what the student is currently doing. The staff can also have different authorizations depending on their position in the department.

Another important aspect is access rights. Each person will have different access rights depending on their role. These rights can be View only, View and Edit, Manager Access, Admin access. The admin will create all accounts for everyone and provide access rights. When a person logs in to the portal for the first time he or she will see a web form with all the related information. They can do all possible functions depending on their access.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 INTRODUCTION</td>
</tr>
<tr>
<td>1.1 Motivation</td>
</tr>
<tr>
<td>1.2 Application Overview</td>
</tr>
<tr>
<td>2 TECHNOLOGIES</td>
</tr>
<tr>
<td>2.1 Microsoft Sharepoint</td>
</tr>
<tr>
<td>2.2 Sharepoint Designer</td>
</tr>
<tr>
<td>2.3 Microsoft SQL Server</td>
</tr>
<tr>
<td>2.4 Microsoft InfoPath</td>
</tr>
<tr>
<td>2.4.1 Features</td>
</tr>
<tr>
<td>2.4.2 Usage</td>
</tr>
<tr>
<td>2.4.3 Integration with Sharepoint</td>
</tr>
<tr>
<td>3 COMPONENTS IN SHAREPOINT</td>
</tr>
<tr>
<td>3.1 Lists</td>
</tr>
<tr>
<td>3.2 Document Library</td>
</tr>
<tr>
<td>3.3 Web Parts</td>
</tr>
<tr>
<td>4 DESIGN AND IMPLEMENTATION</td>
</tr>
<tr>
<td>4.1 Login Page</td>
</tr>
<tr>
<td>4.2 Home Page</td>
</tr>
<tr>
<td>4.3 Personal Information</td>
</tr>
<tr>
<td>4.4 Prior Academic Information</td>
</tr>
<tr>
<td>4.5 Internships</td>
</tr>
<tr>
<td>Section</td>
</tr>
<tr>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>4.6 Practicum</td>
</tr>
<tr>
<td>4.7 Annual Evaluation</td>
</tr>
<tr>
<td>4.8 Students Grants</td>
</tr>
<tr>
<td>4.9 Residency</td>
</tr>
<tr>
<td>4.10 Tuition</td>
</tr>
<tr>
<td>4.11 Residency Application</td>
</tr>
<tr>
<td>4.12 Other Lists</td>
</tr>
<tr>
<td>5 ADMINISTRATION</td>
</tr>
<tr>
<td>5.1 List Settings</td>
</tr>
<tr>
<td>5.2 List Permissions</td>
</tr>
<tr>
<td>5.3 Manage View</td>
</tr>
<tr>
<td>6 USERS &amp; PERMISSIONS</td>
</tr>
<tr>
<td>6.1 User Management</td>
</tr>
<tr>
<td>6.2 Site Permissions</td>
</tr>
<tr>
<td>7 WORKFLOWS</td>
</tr>
<tr>
<td>7.1 Workflow Architecture</td>
</tr>
<tr>
<td>7.2 Workflow Lifecycle</td>
</tr>
<tr>
<td>7.3 Workflow Types</td>
</tr>
<tr>
<td>7.3.1 Sequential Workflows</td>
</tr>
<tr>
<td>7.3.2 State Machine Workflows</td>
</tr>
<tr>
<td>8 OBSTACLES AND LIMITATIONS</td>
</tr>
<tr>
<td>8.1 Obstacles</td>
</tr>
<tr>
<td>8.2 Limitations</td>
</tr>
<tr>
<td>9 SUMMARY</td>
</tr>
<tr>
<td>10 FUTURE WORK</td>
</tr>
<tr>
<td>REFERENCES</td>
</tr>
<tr>
<td>APPENDIX</td>
</tr>
<tr>
<td>A PERSONAL INFORMATION DISPFORM.ASPX</td>
</tr>
<tr>
<td>B PRACTICUM EDITFORM.ASPX</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1.</td>
<td>SharePoint architecture.</td>
<td>4</td>
</tr>
<tr>
<td>Figure 3.1.</td>
<td>SharePoint document library.</td>
<td>8</td>
</tr>
<tr>
<td>Figure 4.1.</td>
<td>Web portal login page.</td>
<td>9</td>
</tr>
<tr>
<td>Figure 4.2.</td>
<td>Home page.</td>
<td>10</td>
</tr>
<tr>
<td>Figure 4.3.</td>
<td>Accounts menu.</td>
<td>11</td>
</tr>
<tr>
<td>Figure 4.4.</td>
<td>Personal information add new item.</td>
<td>12</td>
</tr>
<tr>
<td>Figure 4.5.</td>
<td>Prior academic information add new item.</td>
<td>13</td>
</tr>
<tr>
<td>Figure 4.6.</td>
<td>Internships add new item.</td>
<td>14</td>
</tr>
<tr>
<td>Figure 4.7.</td>
<td>Practicum add new item.</td>
<td>15</td>
</tr>
<tr>
<td>Figure 4.8.</td>
<td>Annual evaluation add new item.</td>
<td>16</td>
</tr>
<tr>
<td>Figure 4.9.</td>
<td>Students grants add new item.</td>
<td>17</td>
</tr>
<tr>
<td>Figure 4.10.</td>
<td>Residency add new item.</td>
<td>18</td>
</tr>
<tr>
<td>Figure 4.11.</td>
<td>Tuition add new item.</td>
<td>19</td>
</tr>
<tr>
<td>Figure 4.12.</td>
<td>Residency application add new item.</td>
<td>20</td>
</tr>
<tr>
<td>Figure 7.1.</td>
<td>Workflow architecture.</td>
<td>28</td>
</tr>
<tr>
<td>Figure 7.2.</td>
<td>Workflow lifecycle.</td>
<td>28</td>
</tr>
<tr>
<td>Figure 7.3.</td>
<td>Sequential workflow.</td>
<td>29</td>
</tr>
<tr>
<td>Figure 7.4.</td>
<td>State machine workflow.</td>
<td>30</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

A teacher is someone who shows the correct path to his students towards success. I am thankful for having such great teachers in my life. I would like to thank Dr. Carl Eckberg for showing me this path. He is the person you can visit any time and he will be always there to help you. I would also like to express my gratitude towards Dr. Tao Xie who is one of the committee members. And finally I want to thank Dr. Michael Taylor, who was also my mentor for this project. Without him this project would be impossible. I want to thank him for helping me out in every single step and having faith in me.
CHAPTER 1

INTRODUCTION

1.1 MOTIVATION

Clinical Psychology has a Joint Doctoral Program (JDP) offered by San Diego State University and University of California San Diego. This graduate program is designed to enable students to be on the forefront of developments and applications in psychology. All the students are actively involved in clinical research activities throughout their stay in the program.

These students are from all over the world and from different backgrounds. Therefore it is very important to maintain all the information related to each and every student while the program is going on and show the progress to faculty and students. It is necessary for faculty to keep track of their students and view their academic records and update them as required. On the other hand students should be able to view their standing and update their information.

The motivation to create a web portal for the department came from the need of handling all this data using the proper channel. It was becoming very difficult to manage all information using MS Excel. The amount of data was increasing day by day and there was no tool to save this data and manage different versions of it. Therefore management of the department decided to create a tool which can fulfill all the necessary requirements and features needed in this portal which will be accessible to both faculty and students.

The number of forms and workflows needed is surprisingly large and fully justifies a web portal with a database backend.

1.2 APPLICATION OVERVIEW

The web portal is built using Microsoft SharePoint and currently running on a college server. The portal can be accessed from anywhere in the world and provides a single
repository for all of its data. The chances of having duplicate data and repeated data are removed by this application. Also, it is very easy to sort and view any kind of data. Faculty and Students can log in with their credentials. Both of them have different access levels. There is also a feature for admin access where an admin can manage or update the tool and other accesses.

We are using Microsoft SQL server to save the data and making a backup of the data after a specific intervals to keep it safe. On the portal, faculty members can see all the students under them and view or update their information. They can access their academic records as well. Students have restricted access over the data on the portal. They can only view the data; they don’t have access to make any changes to it.

The portal has features to maintain workflows which will run automatic requests and improve administrative efficiency. There are many forms which need to be filled by the faculty members. Once a faculty member fills in the information about a student and approves it, then a notification goes to the student. The student can further approve it or send it back for any correction. In this way all the data in managed automatically without sending repeated manual notifications to professors and students to fill the forms.
CHAPTER 2

TECHNOLOGIES

This chapter discusses the different technologies used for this project. The main technology that I used is MS SharePoint. There were many technologies available in the market which can produce similar results. But the biggest reason for selecting this technology was the amount of work that can be done per time interval and SharePoint has lived up to the expectations.

2.1 MICROSOFT SHAREPOINT

SharePoint was launched in 2001 by Microsoft, providing a web application platform. SharePoint includes different functions such as document management, content management, intranet, extranet, cloud, workflows etc [1].

Figure 2.1 [2] shows a high level architecture of the SharePoint workflow framework. The Workflow Service Application Proxy allows SharePoint to communicate and interact with a workflow manager. SharePoint components communicate with each other by passing messages. There are other components such as Events, Content, and Apps which are useful in the application layer of the framework [2].

2.2 SHAREPOINT DESIGNER

Microsoft SharePoint Designer also known as SPD, is a specialized HTML editor which is used to create and make updates to the SharePoint site, web pages and workflows. It shares it’s codebase, UI and HTML rendering engine with Expression Web. Users can make custom changes on the pages as required [3]. SharePoint designer provides one of the fastest ways of configuring a UI for different features.
2.3 MICROSOFT SQL SERVER

SharePoint uses Microsoft SQL server to manage all of its data in relational format. It’s most important task is to store data and perform CRUD (Create, Read, Update and Delete) operations on that data. Data can be managed within different databases and tables. SQL Server provides an enterprise level framework so that the users can utilize all of its features.

All operations that can be invoked on SQL Server are communicated to it via a Microsoft defined format called Tabular Data Format (TDS). It is an application layer protocol which is used to transfer data between a client and a database server. These TDS packets can be enclosed within a physical transport dependent protocol, including TCP/IP, shared memory and named pipes. Users can also access SQL server over these protocols.

SQL server supports different data types which include primary types such as Integer, Float, Binary, Text, Decimal, DateTime, Char, Varchar etc. It also allows users to create their own types of data and use them. All the data present in the database is saved in a file with a
.mdf extension. Other metadata is saved in a separate file with an .ndf extension. SQL server also keeps track of the log files and they are saved with .ldf extension.

SQL server allows multiple clients to access the same database concurrently. Because of the concurrent access it is very important to maintain data integrity when multiple clients try to update the same data. There are two modes of concurrency provided by SQL server, pessimistic concurrency and optimistic concurrency. In pessimistic concurrency the SQL server uses locks to control access. Locks can be shared or exclusive. In optimistic concurrency, whenever a row is updated, the SQL server creates a new version for that row instead of overwriting the row. Both old and new versions of the row are created and maintained, but old versions are moved to another database called Tempdb [4].

### 2.4 Microsoft InfoPath

Microsoft InfoPath is a software application used for designing custom electronic forms. It also helps in distributing, filling and submitting these forms having structured data. In this application the user can bind data with different controls such as textbox, radio buttons and checkboxes [5].

#### 2.4.1 Features

A designer should develop an InfoPath template before adding any form to fill in. InfoPath stores all of its data in XML format, which is also called a “Data Source”. InfoPath provides various controls to present data in the data source to end users. Each such control action can be bounded. Actions or rules can be of three types: formatting rules such as hiding or coloring control, validation rules, and action rules such as setting the value of one field based on value of another field [6].

#### 2.4.2 Usage

InfoPath can be used to access and display data from different sources such as database, web service, xml etc and have various behaviors based on Rules, Conditions and Actions.

#### 2.4.3 Integration with Sharepoint

InfoPath forms can be submitted to SharePoint lists and libraries. SharePoint has a document library called “Forms Library”, having an InfoPath template as a designated
document type. InfoPath fields can be read and displayed as column data in the library view. InfoPath forms can also have workflows associated with them similar to other SharePoint documents.
CHAPTER 3

COMPONENTS IN SHAREPOINT

SharePoint consists of different small components which can perform a wide variety of tasks. We will discuss all the components which are used in this project.

3.1 LISTS

SharePoint lists are used to store data in different columns having separate rows. You can edit the data present in a list using a form or directly from an Excel spreadsheet. Each column in the list can have a different data type such as number, text, date, a link, user, image etc. For each list we can have a default view or different custom view where we can customize how the data is viewed by the user and the order of columns as well.

A list can have its own security permissions if defined. Otherwise, it will inherit the permissions from the sites. We can also add workflow on the list to add, update or delete the item automatically [7]. Following are the steps to create a custom list in SharePoint:

1. Click Site Actions -> View All Site Content, and then click Create on the All Site Content page.
2. Click Custom List under Custom Lists. Provide the name and description.
3. Click Create to create the list with a single column [8].

3.2 DOCUMENT LIBRARY

It is really important to share files with everyone and make them available at an accessible location. SharePoint provides a place on the site where you can create, collect and update files with others. Users can check out the file, edit it and then check it in to avoid multiple edits by different people. If a person checks out the file, a lock is added to the file to make sure no one else updates it. When you close the file, the lock automatically gets removed. In addition to closing the file when the user is done, another way to avoid locking the files is by opening them as read only. A user can select this option when he knows that he
is not going to make any changes in the file. However, others will be able to edit the file at the same time [9].

In Figure 3.1 [9] you can see how different documents are uploaded to the SharePoint Document library.

![SharePoint Document Library](https://contoso.com/Shared%20Documents/Forms/AllItems.aspx)


### 3.3 Web Parts

A web part in SharePoint is similar to a user control packaged and deployed at the site collection level to be reused across all the sites under it. It can perform a specific task assigned to it. To create a part it is required to add a web part item to the SharePoint project [10]. The following files are added when a web part is created.

- **Elements.xml**: This file contains information that the feature definition file in your project uses to deploy the web part.
- **.webpart file**: This file contains information that is required to display the web part in the web part gallery.
- **Code file**: This file contains all the logic and code that add controls to the web part and also generate custom content within the web part.
CHAPTER 4

DESIGN AND IMPLEMENTATION

This chapter will explain about all the design of all web pages in the portal and their function. We will also discuss the requirements and their conversion into the site.

4.1 LOGIN PAGE

The web portal needs to be accessed by multiple people including staff, faculty members and students. Therefore it is important to provide a common platform for everyone. Providing form based authentication meets this need.

The website is all set and live. The user can go to https://clinpsycjdp-sha.sdsu.edu to log in to the portal and provide credentials. There are two text boxes. The first text box is expecting the username of the user and second one is for a password. Users can keep themselves signed in by checking the ‘Sign me in automatically’ checkbox. Once a user clicks on ‘Sign In’ button, the system will match the user name and password from a database and will give the user access if authenticated.

![Sign In](image)

Figure 4.1. Web portal login page.

If the user name and password do not match, the system will display the following error message:
The server could not sign you in. Make sure your user name and password are correct, and then try again.

### 4.2 Home Page

Once the user provides the correct credentials, the portal will take him/her to the home page of the site where the user can read any of the latest updates about the department and will have access to a menu bar where they can navigate to different links.

On the top left corner of the web portal is the ‘Site Actions’ menu. This is the place where the Admin of the portal can perform many activities with respect to managing the portal and make changes to the portal. Below the user can see their current position on the portal. In the Figure 4.2, you can see that the current position of the user is ‘Home’. This page hierarchy is made up of links. So, it becomes very easy for the user to navigate to any other previous pages.

![Figure 4.2. Home page.](image)

Just below the page hierarchy bar, the user can access the top menu bar where different links to different pages are available. The user can directly click on those links and go to the site pages. The main content area of the page is present below the menu bar where all the content related to the page is available. On the left hand side of the content page, the user can access the left hand side menu bar. This menu is similar to the top menu bar. The main reason of having this menu bar is to give ease of access to the user.
On the top right corner of the page, the user can see their names. Once the user clicks on their names they can see an additional menu bars where they can change their current setting, change their password or log out of the portal.

![Accounts menu](image)

**Figure 4.3. Accounts menu.**

### 4.3 Personal Information

This section contains personal information of students, faculty members and staff. Each person has been assigned a University ID. As this program is available in both SDSU and UCSD, the university id can be from any of these institutions. Apart from this, it contains personal information such as email, phone number, gender, address etc. Everyone who can access the portal is added to this list.

Admin can add new items to this list or update the current item if needed. To add a new item you can go to the bottom of the page and Click on the ‘Add new item’ link. Another way to add an item to the list is to select ‘Items’ in the List tools and then click ‘New Item’. It will pop up a form with different fields such as text box, drop down list, people picker, radio button, date time picker etc. After filling up the form the user can save it, so that a new item will be added to the list. On the top of the form the user can click on different buttons to perform specific tasks. In the first commit section, the user can either save or cancel the form. In the clipboard section, the user can cut, copy or paste the text. If there is any attachment it can be attached in the actions section by clicking on the ‘Attach File’ button. Users can attach multiple files.
To view, edit or delete any item from the list, it is required to select an item first. After the user has selected an item, he can select different options from the top ribbon. It is also possible to select multiple items in the list and delete them. This saves time as users do not have to select one item at a time and delete it.

![Personal Information - New Item](image)

**Figure 4.4. Personal information add new item.**

Another feature this page provides is sorting the columns in ascending order as well as descending order. The user can sort all the data in that list with respect to any column.
When you move a mouse over any column name, you can see a small drop down. Once you click on the drop down you can select ‘A on Top’ to sort the entire list in ascending order or ‘Z on Top’ to sort the list in descending order.

4.4 PRIOR ACADEMIC INFORMATION

It is very important to store the prior academic information of the student to refer to it in the future for any situation such as checking the student’s progress before joining the program and after joining the program.

Figure 4.5. Prior academic information add new item.
This data may contain different fields such as student’s GRE score and percentile, their undergraduate GPA, major information as well as graduate information. Admin can add this information for students using their university ID.

### 4.5 Internships

It is essential for all the students in the program to complete an internship approved by the American Psychological Association to enhance their clinical experience and apply their academic knowledge. The portal needs to keep track of all the internships students apply to, the location of the internship and whether the student matched for an internship.

![Internship Form]

**Figure 4.6. Internships add new item.**

This data is very useful for the department as well as future students. By proper analysis the department can find out the areas and internship sites are likely to take their students. Also, they can contact the students to get more information about the internship process if someone gets a similar opportunity.
4.6 PRACTICUM

Practicum is designed to give students a supervised practical application of previously studied theory in clinical psychology. Sometimes the study is ongoing [11]. It helps students learn to apply their clinical skills and acquire hours of experience needed to apply for internship.

Figure 4.7. Practicum add new item.

The portal can keep track of practicum in all semesters. Every practicum is assigned with a supervisor. You can find this information on the portal. The portal also keeps track of the evaluation of the practicum by students as well as supervisors. It is vital to have practicum site information accessible to everyone. Each practicum is added with the respective practicum site. All the fields in this list are mandatory except the evaluating supervisor field.
4.7 **ANNUAL EVALUATION**

The JDP in clinical psychology performs annual evaluations of all students enrolled in the program. It is necessary to evaluate each student’s performance; so that they can concentrate on the areas they are lacking and also appreciate their strong areas.

![Annual Evaluation - New Item](image)

**Figure 4.8. Annual evaluation add new item.**

The evaluation must be approved by the supervisor as well as the student. This list maintains the student’s university id, evaluation year and if evaluation is received or not. It also shows if the evaluation was approved in UCSD’s online system or not. Admin can click on the Save button at the bottom or on the top ribbon to add items to list.

After the end of the year all students in the current program need to be evaluated. This list helps the faculty of the program to track if someone’s evaluation is not received or they are yet to be approved. Faculty can quickly take some actions for that user.
4.8 STUDENTS GRANTS

Many agencies allocate money as grants to accomplish specific goals. In the Clinical Psychology JDP, these are typically research/training grants that the students use to fund their dissertation research [12].

![Student Grants - New Item](image)

**Figure 4.9. Students grants add new item.**

The web portal maintains the data for student’s grants and makes it available to students where they can update their data. This list will contain the funding application date as well as the agency and also state if the application was funded or not. It will also store the grant number which can be used for future purposes. Finally, it stores the funding amount which can help students to manage their expenses.
4.9 RESIDENCY

This list stores the student’s original residency information. This information is very useful with respect to analyzing student data and finds the percentage of students coming from different regions. It is also used to determine if a student needs a non-resident tuition waiver.

![Residency - New Item](image)

Figure 4.10. Residency add new item.

The first column of this list stores the University ID of the student. Each list item is added for each year of residency of the student. The next column shows the citizenship country of the student. Also, we are storing student’s residency status in a drop down list. This status can be: In-State, Out-of-State or International. The final column of the list will store a Boolean value to check if the student is claimed as a dependent in the last three years.
4.10 Tuition

The clinical psychology department has students from both SDSU and UCSD. It is important for the administration to track how the student is funded and where tuition is paid. This list keeps track of the support and funding received by the student.

![Figure 4.11. Tuition add new item.](image)

The first column in the list is a foreign key having a drop down list of students. The second column is an integer to save the tuition year for that list item. In the next column the user can select from the radio buttons to confirm if the location is from SDSU or UCSD. Next there is a drop down list to get the type of support provided to the student. All other columns are strings having the support amount, a description of the support, a grant number and notes if there are any.
4.11 RESIDENCY APPLICATION

Many students coming in this program are out of state or international students. All US residents are required to establish residency during their first year in order to save the program money by paying in-state tuition. International students are granted non-resident tuition waiver.

![Residency Application - New Item](image)

Figure 4.12. Residency application add new item.

This list manages information of students who applied for residency. It stores the date of application of residency as well as a selection date for residency for both campuses. The date is in MM/DD/YYYY format. You can either enter the date manually or click on a small calendar image to show a full calendar to select the date from. The list also states if non-resident tuition waiver is awarded to the student. Apart from this you can enter any special notes in a text box in the final field and save the item or discard it by selecting the cancel key.
4.12 Other Lists

There are many other lists which are discussed briefly below.

**Academic Summary:** It is critical to store the student’s academic progress to help them attain their goals. This list stores information about the student’s mentor and co-mentor who guide them on the academic path. It also shows coursework completed by the student and different comprehensive exams passed by the student. Students can access their dissertation information such as committee approval, proposal, committee information, defense date etc. Student can also update their internship information and leave of absence information in this list.

**Annual Faculty Data:** The portal is not restricted to just students. It can store information about faculty members as well. Each faculty member will be added in this list to share information regarding the number of students under them as primary mentor, guidance committee member and dissertation committee member. This list will also specify if the faculty is a member of the practicum, curriculum and/or clinical comprehensive exam committee. Faculty members can add their scientific publications and presentations information. The portal will store whether the faculty is part of undergraduate teaching, graduate teaching and doctorate teaching.

**Additional Faculty Data:** The previous list is used to store all the important fields required to access the faculty members. There is additional data which needs to be separated from other list. This list will store faculty rank, tenure status, primary, secondary and tertiary emphasis area. It also contains their joining and leaving date at the program. Faculty can add their education qualification in this list.

**Alumni Information:** The web portal stores information of all the alumni. The first column is a Boolean field to tell if the alumni have completed the post doctorate. It captures their post doctorate focus, initial position they got after graduation, amount of time they spent in this opportunity, employer name and location. Overall this information can be used for all the current and future students to guide them and for program accreditation.

**Alumni Annual Update:** All the alumni can update their information annually in the portal. It is really critical to maintain this data to track them easily. For each year a new record is added with current status of employment, job title, position type etc. It also notes if the alumnus is doing any kind of research, teaching or providing psychological services.

**Committee Involvement:** The committee involvement list is to store any involvement of the student in the committees available in the drop down list. Currently there are five committees including Student council, Led interview housing, Led JDP Party, Led Annual BBQ and Grievance committee. Each committee has its own purpose. Each entry is added for a single academic year. So, if a student is part of a committee for two years then this list will have two different entries.

**Required Coursework:** Every student should meet the required criteria to graduate. This list shows different courses offered by the program and status of the student for that course. Each course is attached with a drop down with following options:
• Not yet taken
• Currently Enrolled
• Passed
• In Remediation
• Failed

Currently there are sixteen required courses needed to complete the graduation. Each student is added as a new element in the list. You can also sort the list by each course to find the status of number of completions.
CHAPTER 5

ADMINISTRATION

Administration is an essential part of the portal. The portal needs to be updated frequently and there should be an easy way to do that. All users with admin access can update, delete or make any changes to the site. Other users cannot see the admin options.

5.1 LIST SETTINGS

Each list in the portal has its own setting option. This helps keep everything modular if there are any changes in the future. To access list settings, click on any list which you need to update. Then select the ‘List’ tab on the top ribbon. Now you can see the ‘List Settings’ option on the right side. Once you click on it, you can see the admin page to manage that list.

In the first section, you can see the list information. It shows the list name, list web address to access the list directly, and list description which you set while creating a new list.

Next is the ‘General Setting’ where you can make updates to the list such as changing its name, description or you can delete the list. Other settings available in this section are versioning setting, advanced settings, validation settings, rating setting, and form settings. Each of them has its own purpose.

Finally you can see all the columns present in the list. To update any column you just need to select the column name. You will be then redirected to the column settings where you can update the name or change the column type, add required field constraints, enforce unique values etc. You can also add new column to an existing list. Just go to the bottom of the List setting page and click on ‘Create Column’.

5.2 LIST PERMISSIONS

SharePoint provides a feature to give different permissions to each list. This is really a great feature as it helps to hide lists from different users. By default all lists take the site permissions. Once you add list permission, it will override the site permission.
To add permission to the list, select the list. Click on ‘List’ from List Tools present on the top bar. Then you can select the List Permissions option. You will be navigated to the ‘Permission Tools’ page. Here you can manage the permissions for that list. Select the group to which you want to give permission to this list.

5.3 Manage View

Whenever a new list is created in SharePoint a default view is added to the list. We can either modify that view or add another view to the list. A list can have more than one view, but only one view is activated at a time. You need to select which view you want to set for that list and the list will be set with that view.

On the edit view page, the first setting is to name the view and add the web address for the view. Next, you can play with the column by selecting which column you want to show on the view by clicking the check boxes. Each column has its position from left to be set. This way we can put any column anywhere in the list.

The next section is for sorting the list. Select the column name by which you want to sort the list when it shows up for the first time. Sorting can be done in ascending and descending order. We can add one more column to the sorting criteria. In this way if two rows are the same, it will sort by other column rows. We can also filter the items from the list if required. Add filter criteria and the list will show only those rows which match the criteria.

A view can also group rows together based on the selected criteria. We can allow inline editing in the view itself. Each view can be given its own style by select a style format in the List box. We can also limit the number of items to show per page on the view. By default the current number of items per page is 30.
CHAPTER 6

USERS & PERMISSIONS

In this chapter we will discuss adding new users, adding them in respective groups and giving them permissions.

6.1 USER MANAGEMENT

It is very important to be able to add, update or remove a user from the portal. There are students coming in every year to join the program. Adding new users to the site should be easy for any one working on it to maintain the site periodically. To add a new user, follow the below steps:

1. Click on Site Actions.
2. Select site settings from the sub menu.
3. Under forms authentication management click on ‘Create User’.
4. Fill in the form and click on save button.

SharePoint generates the password for you each time you add a new user. You can make your own password if required. It is critical to provide a unique username and email address for the user. We can also assign a user in different groups. SharePoint gives a feature to send an automated email to the user once the account is created. We can turn off this functionality if we don’t wish to send any email to the user.

You can also view the list of all users present on the site. Click on ‘User Management’ under the ‘Forms Authentication Management’ section. You can see all the users and their account details. After selecting any user you can reset the password or delete the user.

6.2 SITE PERMISSIONS

All users present on the site should be given correct access. If someone gets access to the data which they should not see then it may cause a huge risk of misusing the personal
data of hundreds of students and faculty members. Mostly all the users are added to a group and the entire group is given different access levels. But you can also provide a separate access for an individual.

To create a group, go to Site Actions -> Site Settings and then select Site permissions under users and permissions. You can see all the groups and users with separate permissions. To add a new permission, click on Grant Permission under Permission tools on the top ribbon. A form will pop up where you can select a group or a user you want to give a permission. Then select which permission needs to be added to the user from a drop down list. Finally you can send an automated email with a personalized message to the group or the user.

To add a new group under permissions, select the Create Group option. You will be navigated to a new page where you can provide a name to the group. There is also a people picker option to add group owners for the group. A group can have more than one group owner. Then comes the Group Settings option where you can select who can see the membership information of the group and who can edit this information. A group can also have a feature to allow a member to leave or join the group. Finally we can assign access to the group or user. Following are access levels supported by SharePoint:

- Full Control - Has full control.
- Design - Can view, add, update, delete, approve, and customize.
- Contribute - Can view, add, update, and delete list items and documents.
- Read - Can view pages and list items and download documents.
- View Only - Can view pages, list items, and documents. Document types with server-side file handlers can be viewed in the browser but not downloaded.
- Approve - Can edit and approve pages, list items, and documents.
- Manage Hierarchy - Can create sites and edit pages, list items, and documents.
- Restricted Read - Can view pages and documents, but cannot view historical versions or user permissions.

Currently there are three main groups added to the site. All the students are added to Clin-Psy Student group. They have only read access. All faculty members are given Clin-Psy Members access. They can update a few lists. Admin is given Clin-Psy Owners access. Admins have full control over the site.
CHAPTER 7

WORKFLOWS

Workflows enable enterprises to reduce the amount of unnecessary interactions between people as they perform business processes. For example, in our project we have created a workflow for Annual Student Evaluation. Each year all students must go through their annual evaluation. Once the workflow starts, a form is sent to the faculty. Faculty will receive a notification via email and fill the form and approve it. Then the form will go to students for their approval. And finally the department will receive the form. As you can see, department no longer needs to manually remind faculty members and students to complete the evaluation forms.

7.1 WORKFLOW ARCHITECTURE

Workflows can be added to the list items, documents or content types. An item can have multiple workflows and they can run at the same time on that same item simultaneously. But at a time there will be only one specific workflow instance of a specific item will be running. Figure 7.1 [13] shows the architecture of SharePoint workflows. Each list, document library and content type is linked to the workflows through the workflow association table. Each workflow has a workflow definition.

7.2 WORKFLOW LIFECYCLE

There are four stages of a SharePoint workflow lifecycle. These stages help the assignment of the workflows to content type, handle the different ways of starting a workflow and keep the workflow infrastructure flexible during execution. Forms can be used to get additional user input as parameters during some of the following stages, which are necessary for the execution of stages.

In Figure 7.2 [13] you can see four different stages of the workflow starting from association, initiation, modification and completion.


7.3 WORKFLOW TYPES

There are two basic types of workflows supported by Microsoft. We can create a workflow of any of the below types in SharePoint.

7.3.1 Sequential Workflows

A sequential workflow is represented as different activities which run in order, one after another until it completes final activity. However, sequential workflows do not run completely sequentially during their execution. The reason behind this is many times workflows receive an external event and therefore can include parallel logic flows.
The Figure 7.3 [13] shows the sequential workflow starting from document creation to the completion of the entire process. You can see that a workflow can have branches depending on the action selected by the user. In this case, if the user approves the document, it will be moved to the published library and otherwise it will go to the rejected library.

![Sequential workflow diagram]


### 7.3.2 State Machine Workflows

A state machine workflow consists of a set of states, actions and transitions. The first state is represented as a start state and based on an event; a transition is made on an event. This workflow can have a final state which determines the end of the workflow.
The author models the workflow as a state machine in the state machine style of workflow authoring. The workflow can consist of a set of states. One state is shown as a start state. A certain set of events are sent to each state. Based on an event, a transition can be made to another state. The state machine workflow can have a final state. When a transition is made to the final state, the workflow is completed.

Figure 7.4 [13] is an example of a state machine workflow.

The workflow starts automatically once the order is created. The order is then opened and processed. Once it is done the order goes to the order processed state. Then the order goes into a cycle until it reaches the final stage [13].
CHAPTER 8

OBSTACLES AND LIMITATIONS

8.1 OBSTACLES

While working on this project we faced a number of challenges. One of the major challenges of the project was to back up all the data and the progress we had made. One day when I logged in to the server to work on the site, suddenly everything had vanished and it took us more than a month to recover everything back and get it working. After that time we decided to back up all the data every time we made any progress.

8.2 LIMITATIONS

This project is built on a server which is located at San Diego State University. There is no way we can access everything directly or create something locally and then deploy it on the server as SharePoint is a very heavy application and it requires a server. Each time we have to connect to the remote server through a remote login and the server can be connected from a specific IP address only. Therefore, it is impossible to connect from any computer and start working. One solution we found for this is to use a pre assigned university IP through a secured connection.
CHAPTER 9

SUMMARY

The web portal for JDP in clinical psychology is a useful tool for everyone including faculty members, students and the administrators of the program. It will help much of the labor previously performed using excel sheets and move forward with the new technology. The portal provides an easy to use platform which can be accessed all over the internet anywhere around the world. This is a great opportunity especially for the international students who can access their data from their home country.

The amount of work needed to be done by administration is reduced by a great number because of this site. You don’t have to send many emails to faculty or students to approve a form. The portal will send automated email after every interval.
CHAPTER 10

FUTURE WORK

I have tried to fulfill all the requirements given by the department. The current state of the site is fully functional and can be used by everyone. But there is always scope to add new features and functionalities to a project as required. Below is list of all the future work that may be required:

1. Add new Lists of additional data that is missing.
2. Add new workflows to handle more forms.
3. Update the User Interface.

By looking at the current status of the project it will be really easy to add some new features and make this a really useful product for the stakeholders.
REFERENCES


APPENDIX A

PERSONAL INFORMATION DISPFORM.ASPX

<%@ Page language="C#" MasterPageFile="~masterurl/default.master" %>
<%@ Register Tagprefix="SharePoint" Namespace="Microsoft.SharePoint.WebControls" Assembly="Microsoft.SharePoint, Version=14.0.0.0, Culture=neutral, " %>
<asp:Content ContentPlaceHolderId="PlaceHolderPageTitle" runat="server">
    <SharePoint:ListFormPageTitle runat="server"/>
</asp:Content>
<asp:Content ContentPlaceHolderId="PlaceHolderPageTitleInTitleArea" runat="server">
    <span class="die">
        <SharePoint:ListProperty Property="LinkTitle" runat="server" id="ID_LinkTitle"/>
    </span>
    <SharePoint:ListItemProperty id="ID_ItemProperty" maxlength="40" runat="server"/>
</asp:Content>
<asp:Content ContentPlaceHolderId="PlaceHolderPageImage" runat="server">
    <img src="/_layouts/images/blank.gif" width='1' height='1' alt="" />
</asp:Content>
<asp:Content ContentPlaceHolderId="PlaceHolderLeftNavBar" runat="server">
    <SharePoint:UIVersionedContent UIVersion="4" runat="server">
        <ContentTemplate>
            <div class="ms-quicklaunchouter">
                <div class="ms-quickLaunch">
                    <SharePoint:UIVersionedContent runat="server" UIVersion="4">
                        <ContentTemplate>
                            <h2 style="display:inline;" class="ms-hidden"><SharePoint:EncodedLiteral runat="server" text="%@Resources:wss,quiklnch_pagetitle" EncodeMethod="HtmlEncode"></h2>
                        </ContentTemplate>
                    </SharePoint:UIVersionedContent>
                    <SharePoint:UIVersionedContent UIVersion="3" runat="server">
                        <ContentTemplate>
                            <h3 class="ms-standardheader"><SharePoint:EncodedLiteral header runat="server" text="%@Resources:wss,quiklnch_pagetitle" EncodeMethod="HtmlEncode"></h3>
                        </ContentTemplate>
                    </SharePoint:UIVersionedContent>
                    <SharePoint:SPSecurityTrimmedControl runat="server" PermissionsString="ViewFormPages">
                        <div class="ms-quicklaunchheader"><SharePoint:SPLinkButton id="idNavLinkViewAll" runat="server" NavigateUrl="~site/_layouts/viewlsts.aspx"</div>
                    </SharePoint:SPSecurityTrimmedControl>
                </Sharepoint:UIVersionedContent runat="server">
            </div>
        </ContentTemplate>
    </SharePoint:UIVersionedContent>
</asp:Content>