GLAS

Employee Selector & Resume Generator App

Requirements Specification Document

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Table of Contents

1. Introduction

The SQS Employee Selector and Resume Generator Application will be built off the existing SQS training website which was implemented by past CS499 teams. The website has always been an internal application for SQS employees to use to learn how to recognize purposefully injected issues in the code that are apparent in the front end, and train them as users of the site. Now, we are creating a new user type of “sales”, that will have special functionality to be used by SQS’s sales representatives to facilitate matching employees with prospective clients. More details will be found in the next section, Project Overview, and our implementation will be specified throughout the rest of this document.

2. Project Overview

This section covers general information about our project. This includes the stakeholders, intended users, and the motivation for the project. It will also cover the main functionality of the project and any constraints that may influence how we implement our solution.

The website that our team is charged with updating was originally intended as a training system for new employees of SQS, making the employees of SQS the main users of the system. The functionality that our team will be adding broadens the user pool to the sales representatives that are responsible for matching SQS employees with clients. However, the site will remain an internal tool to the company. This makes the employees and sales representatives of SQS the customer, stakeholders, and users of the project.

SQS is a company comprised of contractors who help clients with software quality assurance and testing. These contractors are assigned to clients through the help of sales representative that match a client with an employee they think has the skills and experience to best help that client. Our proposed additions to the SQS training site are intended to improve this matching process. In order for the sales representatives to better match employees and clients, we will be adding functionality that allows employees to be more specific about their skills and experience. It will also allow sales representative the ability to easily compare employees on these skills to be confident that the correct employee is assigned to a client. While a system like this can be bought, the training site that has already been developed has the foundation to support this functionality. This makes it simpler and cheaper to further develop this site to include these capabilities rather than buying a whole new system.

The main features of our proposed additions are the expansion of information that a user can add to their profile and the ability for sales users to compare employees' skills, past clients, education, and previous verticals of work. The expansion of the information the user can add will be implemented in the creation and editing of a profile. This will include the addition of education, previous clients, past industry verticals, and experience in hardware and software skills. For example, say a user has experience in the C++ programming language. With our addition to the site, this user will be able to specify that they have 5 years of C++ experience and consider themselves experts in the language. They can also specify that they worked in the healthcare vertical with Epic Systems as a client and have a B.S. in computer science. The other main functionality that we are implementing is the ability for sales users to compare employees on the previously mentioned information. This will be implemented in two pages. The search page and the compare page. The search page will allow the sales users to search for employees based on the user information that is held on their profiles. The search page will bring up all the employees matching the information the sales representative used in the search. They will then be able to filter the profiles returned from the search and check off the profiles they wish to compare. Once they have added all the employees they wish to compare, they will click the compare button and will be taken to a page which displays 3 full employee profiles at a time. These profiles will hold all the previously mention information added by the user when making their profile. The sales user will also be able to filter the information shown in the profiles while they compare.

Since this is an internal tool meant for employee training, we have not run into many constraints. The only constraints we are dealing with are the fact that the system must run on the Linux environment in the SQS office and that the website needs to be secure enough that employees cannot access the information from other employee profiles.

3. Development and Target Environments

This section will be devoted to describing the resources that will be utilized in the development of our software solution. The resources described will be software and hardware resources.

Previous groups that developed this training site were instructed that the website had to run on the Linux machines that are used on the SQS office, so it was developed in a Linux environment. Since the website was intended for Linux desktop use, the first group decided that a LAMP stack was best for development. A LAMP stack is the Linux version of a stack that includes Apache, MySQL, and PHP. This is the main software that will be used in our development. More precisely, we will be using a stack that includes Apache, MySQL server version 10, and PHP version 7. We will also be making use of JQuery and Bootstrap, but these are already embedded in the system from previous iterations of development. When our development is completed, the site should be accessible through any internet browser after the software is installed on a Linux machine. In terms of hardware, our group does not have any machines that run Linux so we will be utilizing virtual Linux machines on our Windows 10 based laptops for the duration of development. These virtual machines will be a combination of Oracle VM Virtual Ubuntu boxes running Ubuntu 18.04 and UKY CS department virtual machines.

4. System Model

This section is dedicated to presenting high-level models of the system we are implementing. The following figures summarize the full high-level system view and the database integration across the SQS Training Site. Generally speaking, there were very few changes that had to be made while changing the system models from the last iteration of this project to fit the requirements of our current project, as our changes are mostly concerned with adding more pages to the SQS Training Site, and not changing the overall backend functionality of the site.

4.1. Full High-Level System View

The below figure shows the full view of the SQS Training Site System. As we are only adding three webpages to the site, this system is identical to the system created by previous groups who have worked on the SQS Training Site. The site is run from the individual user's personal machine through the Apache web server. This server connects to the SQS Training Site run mostly in PHP, and the database, which is run in MySQL. The database is integrated into the site and provides data for the functionality of the SQS Training Site.

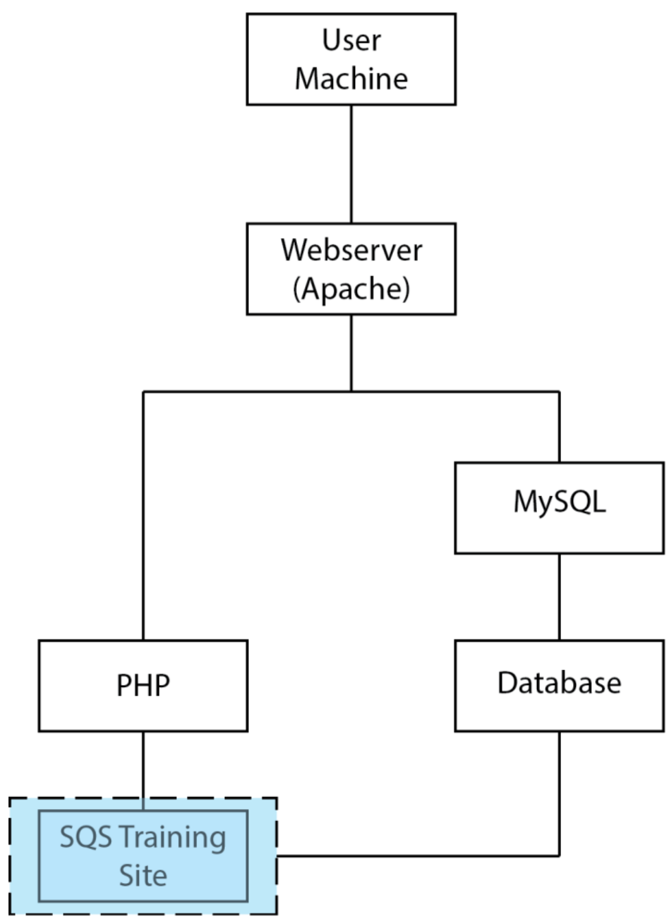

Figure 4.1 - Full System Model

4.2. Database Integration System View

The below figure represents the database integration in the SQS Training Site. The database will directly interact with all pages of the SQS Training Site except for the Home Page, Corporate Site, and SQL Site. The Corporate Site and SQL Site are both links to the actual SQS Site, and the Home Page doesn't have any functionality that requires the database.

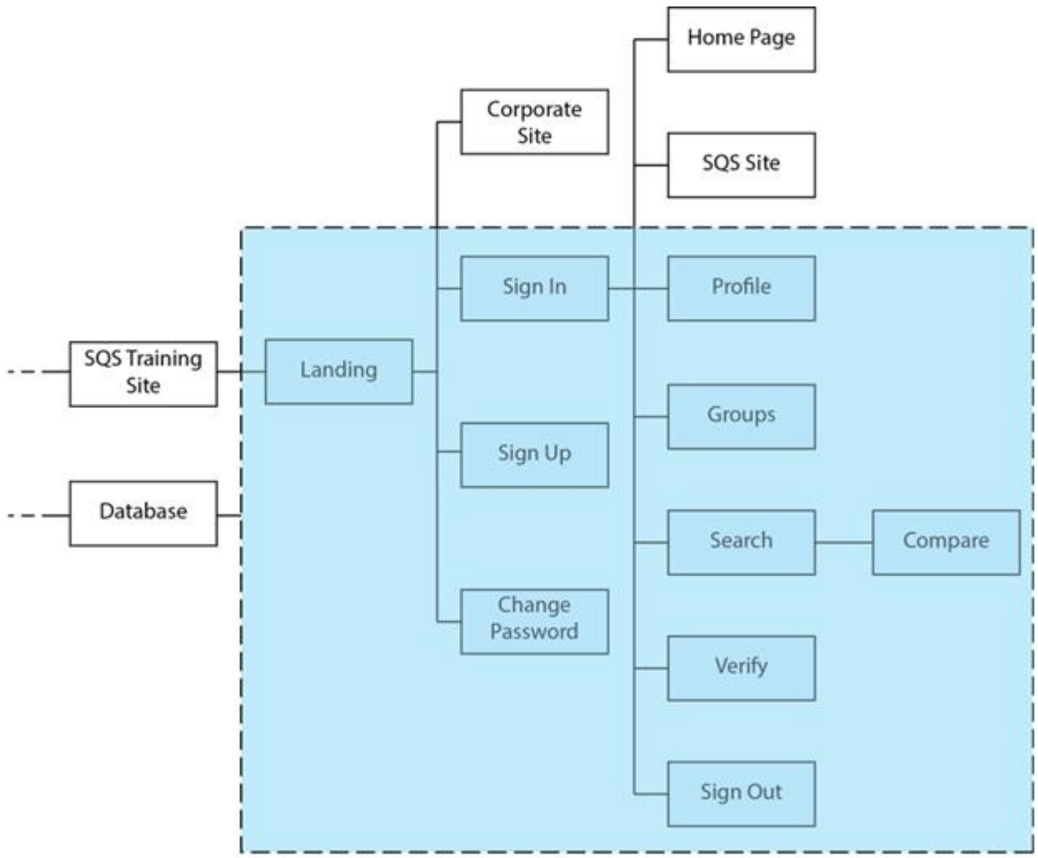

Figure 4.2 - Database Integration Across Site

5. User Interaction

5.1. Sales User

5.1.1. Account Creation

Actors: System and Sales User

When a sales user wants to set up an account on the training system, they will go to the sign-up page. On this page the sales user will see text entry fields where they can enter their name, desired email, and desired password. The sales user will also see a check-box next to the "Next" button with the message "I am a Sales Representative." The user can select this box to specify that they are a "Sales" user. After the sales user completes the required fields and clicks the "Next" button, the system will take the user to a new page displays the message "Your account is being verified by an admin." The system will not let the user see anything besides this screen until an admin verifies that the account being generated is, in fact, a sales user working for SQS.

5.1.2. Logging In

Actors: System and Sales User

When a sales user wants to log into the training system they will go to the log in page and enter their email and password into the corresponding text entry boxes. When they click the "Submit" button the system will check the database for this email and password combination. If the account is found with that email and password, the system will check if that account is a "Sales" type account. If the account is of the type "Sales" the system will also check is the account has been verified by an admin. If the account does not exist, the system will take the sales user to a page that displays the message "An account with that username and password does not exist or has been rejected by an admin," which means the sales user will have to make an account, or re-make their account because it was previously rejected by an admin. If the account the sales user is trying to enter exists and but had not been verified, the system will take them to the same page that displays the message "Your account is being verified by an admin." If the account the sales user is trying to enter exists and has been verified by an admin, the system will take them to the "Home" page of the training website.

5.1.3. Logged In

Actors: System and Sales User

After the Sales user has logged into their account and the system has taken them to the home page of the training website, a sales user will see tabs across the top of the page labeled Home, Profile, Employee Search, and Log Out. The user will be able to click on each of these tabs. When the user clicks on any of these tabs the system will take them to the page that matches the name of the tab. On each of these pages a sales user will be able to perform all actions a regular user can besides adding information to their profile which does not pertain to them. This information includes skills, previous clients, education etc.

5.2. Regular User

5.2.1. Skills Ranking and Skills Experience

Actors: System and Regular User

During account setup, whenever a user selects a hardware or software skill, the opportunity to input further information will presented. For each selected skill, they will be able to rank their ability in it on a scale of 1-5 and this scale will be presented as bubble options. A text box will also be revealed where they can input how many years of experience they have in that skill. Whenever a user later edits their profile to add new skills, these options will again be shown. The database will store user, associated skill, ranking level, and years of experience

5.2.2. User Education History

Actors: System and Regular User

A user will be able to add previous education history as part of their profile. There will be a predictive text box that allows users to type to limit options, but forces user to input options that have already been added to the databox. Education history will be comprised of two parts-level of education and area of education. Each part will have a predictive textbox. Users will then have the option to add another education history pair. The database will store user and education history.

5.2.3. User Previous Verticals

Actors: System and Regular User

As part of their profile, users are able to specify previous work verticals. When the user gets to this part of their profile, they will see a list of previous verticals and will have the option to click a checkbox for all previous laterals worked in. The database will store users and associated verticals. The users will have the ability to edit this part of their profile.

5.2.4. User Previous Clients

Actors: System and Regular User

Users will have the ability to keep track of all previous clients with which they worked as a section of their profile that can be specified during account creation and edited through profile edit. Using a predictive text box, users will only be able to choose clients that have been already added to the database. After inserting one client, users will have the option to insert another. Users will be able to insert as many clients as they want. The database will store all previous clients for each user.

5.3. Administrative User

5.3.1. Verify Sales User

Actors: Administrative User, Sales User, and System

When a sales user creates an account, all administrative users will be sent an email by the system notifying them that a new sales account has been made. This email will also contain a link to the verify page. On the verify page, the system will present a list of unverified accounts along with options to accept or reject each user. If the administrative user chooses to verify the sales user, the sales user will be sent an email notifying them of this and will be able to log into the site. If the administrative user chooses to reject the sales user, the sales user will be sent an email notifying them of this and their account will be deleted from the database. Regardless of choice, the sales user will be removed from the verify page, as they are no longer unverified.

5.3.2. Adding New Information

Actors: Administrative User and System

When an administrative user wants to add new selections to the skills or history banks in the user profile page, the will click a button that says “Add New <item>” where “<item>” is the selected skill or history. When the user clicks that button, a modal will open containing a text box for the administrative user to type in a new selection and a “Submit” button to save their new entry. When the administrative user clicks the submit button, the system will save their new item in the appropriate database table.

5.3.3. Editing Regular Users

Actors: Administrative User, Regular User, and System

When an administrative user navigates to the profile page of a regular user, they will be able to edit the sections of that user profile. When the administrative user is done editing a section, the system will save the changes into the database.

6. Functional Requirements

In this section, the functional requirements for the Employee Selector & Resume Generator App are listed. The requirements listed are those necessary for a user or users to utilize the full functionality of the Employee Selector & Resume Generator App.

The functional requirements have been divided into five subgroups based on the area of the project they dictate. The Sales User subgroup contains requirements pertaining to the creation and privileges of the new user type, Sales. The Regular User Expansion subgroup holds the requirements relating to the new information that will be added to the profiles of regular users, such as skill levels, experience with skill, degrees, etc. The Employee Comparison/Search Page subgroup lists requirements related to the initial search page and search functionality of the Employee Comparison tab created by this project. The Compare Page subgroup lists requirements related to the actual comparison functionality of the project. Finally, the Administrative User Expansion tab contains the requirements related to the additional privileges the administrative user role will be given as a result of this project.

6.1. Sales User

6.1.1. Account Creation

a. On the initial screen to create an account, users will be able to check a box next to the “Next” button that displays the message “I am a Sales Representative” to specify that they are a sales user.
b. Users that have checked the sales user box and have entered all necessary information will be taken to a new page displaying the message “Your account is being verified by an admin” after clicking the “Next” button. The account will remain in this state until an admin verifies or rejects the user’s account.

Priority: High

6.1.2. Database Update

a. The table “user” in the database will be able to include a new user type “Sales”.
b. For “Sales” users, the table field labeled level will be set to 0 and the field labeled progress will be set to 100. Sales users will have the verified flag set to false until an admin verifies the account.

Priority: High

6.1.3. Logging In

a. When users try to log into their account the database will be checked to see if they have been verified by an admin.
b. If users have not been verified by an admin, they will be taken to a screen that displays the message “Your account is being verified by an admin” and will not be able to log in.
c. If users try to log into an account that doesn’t exist, they will be taken to a page that displays the message “An account with that username and password does not exist or has been rejected by an admin.
d. If users enter the correct account information and have been verified by an admin, they will be taken to the home page of the training website.

Priority: High

6.1.4. Logged In

a. After logging into a valid sales user account, users will be able to see and navigate to the tabs of the website labeled Home, Employee Search, Logout, and Profile.
b. In all tabs besides Employee Search that sales user can access, sales users will have the same capabilities within the tabs as regular users.

Priority: High

6.2. Regular User Expansion

6.2.1. Ranking Skills and Years of Experience

a. Users must rank each of their software skills and hardware skills on a scale of 1 to 5 in a modal field.
b. In that same modal, users must enter an integer value for each of their software skills that corresponds to years of work experience in that skill. This will also be implemented for hardware skills.
c. The database will be modified to store user ID, software skill ID, ranking value, and years of experience in one table.
d. The database will be modified to store user ID, hardware skill ID, ranking value, and years of experience in one table.
e. Editing rankings/experience will be allowed when a user edits their profile.

Priority: Low

6.2.2. Previous Education

a. Users will be able to input previous education in the form of paired education level with area of study.
b. An error will be shown if users attempt to input an education level without an area of study, or vice versa.
c. The ability to enter multiple items for previous education will be supported.
d. Users will only be able to select previous education options that have been entered into the database by an administrator.
e. The database will be extended to store all previous education for each user.
f. Editing and deleting previous education pairs will be allowed when a user edits their profile.

Priority: Low

6.2.3. Certifications

a. Users will be able to enter certifications earned.
b. The ability to select multiple certifications or no certifications will be supported.
c. Users will only be able to select certifications that have been entered into the database by an administrator.
d. The database will be extended to store all certifications for each user.
e. Editing and deleting certifications will be allowed.

Priority: Low

6.2.4. Previous Verticals

a. The option to specify previous verticals will be supplied.
b. The ability to select multiple or no verticals will be supported.
c. Users will only be able to select verticals that have been entered into the database by an administrator.
d. The database will be extended to store all verticals for each user.
e. Editing and deleting verticals will be allowed.

Priority: Low

6.2.5. Previous Clients

a. Users will be able to list out any previous clients.
b. The ability to select multiple or no previous will be supported.
c. Users will only be able to select clients that have been entered into the database by an administrator.
d. The database will be extended to store all clients for each user.
e. Editing and deleting clients will be allowed.

Priority: Low

6.2.6. Website View

a. Regular users will not be able to see the "Employee Search Tab".

Priority: High

6.3. Employee Comparison Tab/Search Page

6.3.1. Search by Experience-Related Fields

a. A sales user will be able to search for regular users by inputting criteria related to experience, such as skills, degrees, certifications, etc.
b. The query will return the intersection of users meeting these criteria (e.g., searching for “BS in Computer Science” and “Java” will only return users with both a BS in Computer Science and knowledge of Java).
c. The Search Page will then generate a list of regular users fitting the input criteria, with basic information given for each user.

Priority: High

6.3.2. Adding Additional Filters to Search Criteria

a. The search page with also include a sidebar which the Sales user will use to filter the search results.
b. The sidebar will include checkboxes that, when checked, will pare down the search results to meet the new criteria.
c. This sidebar will include an “Add Filters” button to perform the search. The sidebar will act as a union between search criteria (e.g., checking “Java” and “C++” will display users with knowledge of Java or C++).

Priority: Low

6.3.3. Select Users for Comparison

a. Once the page has generated the resulting list of regular users, the sales user will be able to select regular users to compare.
b. Once they confirm their selection, the sales user will be redirected to the Compare Page.

Priority: High

6.3.4. Clear Search Form

a. When the user clicks the "Clear Search" button, the search criteria the sales user has input will be cleared, and the Search Page will reset to its default state.

Priority: Medium

6.4. Compare Page

6.4.1. Redirection from Search Page

a. Once the Sales user confirms their selection of regular users they wish to compare, they will be redirected to this compare page which will open in a new tab. This way, the fields on the search page will remain filled.

Priority: High

6.4.2. Page Layout

a. On the compare page, user profiles will be displayed in column tiles. Three tiles will be displayed with the ability to scroll horizontally and view all the users, three at a time. The tiles will display all the search criteria in uniform rows.

Priority: High

6.4.3. View Full User Profile

a. The Sales user will have the ability to click a "View full profile" button, which will display a modal containing the selected user's full profile.

Priority: Medium

6.4.4. Remove Users from Compare Page View

a. While a Sales user is comparing multiple users, they can click an "X" button that will remove that user's tile from the view.

Priority: Medium

6.4.5. Toggle Visibility of User Data While Comparing

a. The Sales user can expand or contract the number of rows visible in the users' tiles by using a sidebar to toggle the visibility of selected sections.

Priority: Medium

6.5. Administrative User Expansion

6.5.1. Sales User Verification

a. After a sales employee creates an account, the administrative user will receive an email notifying them of the account creation.
b. The email will include a hyperlink to a page where they can view a list of users pending verification. They can then select which users to either verify or reject.
c. Verification gives the sales user access to the site, while rejecting notifies the account creator and then deletes the account.

Priority: Low

6.5.2. Employee Search Tab

a. Administrative users will be able to view and interact with the Employee Comparison tab.

Priority: High

6.5.3. View Sales Users

a. Like how administrative users are already able to view the profiles of regular users, administrative users will be able to view the profiles of sales users.

Priority: High

6.5.4. Add New Information

a. Administrative users will be able to add new selections for the expanded regular user information documented above.

Priority: Low

6.5.5. Modify User Information

a. The ability of administrative users to edit information on regular user accounts will be expanded to include the ability to edit the expanded regular user information documented above.

Priority: Low

7. Nonfunctional Requirements

In this section, we outline the known non-functional requirements for our project. We provide the non-functional requirements in a list that briefly explains each requirement. The requirements are order according to priority.

7.1 Compatibility

The website can be accessed from any standard web browser.

7.2 Reliability

The website can be reliably accessed. When errors occur, the error pages are clear and explain the error encountered and what step should next be taken.

7.3 Portability

Mobile access is not supported. The website will display but is not optimized for mobile device access.

7.4 Response Time

After specifying search criteria and clicking the search button, results are displayed with the same speed as accessing any other page of the website.

8. Feasibility

This section will describe two different versions of our project. The first version will be described in the first subsection, The Ideal Product. In this subsection, we will describe what the product would look like if we were able to implement everything that we wanted. The second version will be described in the second subsection, The Basic Product. In this subsection, we will describe the minimally viable product. Our group plans to produce the project describe in the Basic Product in order to create something that works for our industry partner. Although we hope to achieve the Ideal Product, we know that for this project to be feasibly completed within the semester, our final product will probably be somewhere in between the Basic Product and the Ideal Product.

8.1 The Ideal Product

Full functionality is implemented. When the sales user tries to create an account, their name and email is added to a table that is visible when an admin accesses the 'Verify Sales User' tab. When the admin accesses the 'Verify Sales User' tab, they see a list of all the sales users that have attempted to create accounts and have not yet been verified. Admins then have the option to verify or reject sales users. Rejected sales users get an email explaining their account creation has been rejected. Verified sales users now can log in.

Regular users have expanded abilities to enter skill levels. When users indicate a hardware or software skill, a user-friendly and visually appealing way for them to enter their skill level and experience level is displayed. They can additionally add their education, previous clients, and verticals.

Sales users and Admins can access a 'Search Users' tab. This tab leads to a page that has textboxes for 'Software Skill', 'Hardware Skill', 'Previous Education', 'Previous Clients', and 'Verticals'. Users can choose to enter desired search information into as many or as few textboxes as desired. Once 'Search' is clicked, a list of employees is displayed such that all employees meet all the specified requirements. This list displays their picture, their name, and their skills. A checkbox is displayed for 'Add to Comparison'. Along the left side of the page are further search filter options. Users can decrease the number of results by clicking on different filters and then clicking an 'Apply Filters' button. A button near the top of the page allows for resetting the search page. A button near the button of the page is labelled as 'Compare Employees'.

The 'Compare Employees' button opens a new tab. In this tab, all the information for each employee that was added to the Comparison list on the previous page is displayed in a tile. The overall display is clean-- only three employee tiles are displayed at once and size constraints are implemented so different sections of employee information (such as hardware skills, previous verticals) take up the same amount of space for each profile. At the top of each tile is a button that says 'Remove from Comparison', and when this button is clicked, that tile is removed from the view and the other tiles adjust to this change accordingly. At the bottom of each tile is a button that says 'View Full Profile' and when this button is clicked, a modal is displayed that shows all employee information. Along the top of the page is the option to hide any section of employee information. There is a scrollbar at the bottom of the page so that if more than 3 tiles are selected for comparison, the other employee tiles can be seen.

8.2 The Basic Product

When sales users create an account, they are sent an email to verify their account. When they click on the link provided in the email, their account status is changed to valid and they can login.

Sales users and Admins can access a 'Search Users' tab. This tab leads to a page that has textboxes for 'Software Skill' and 'Hardware Skill'. Users can choose to enter desired search information into as many or as few textboxes as desired. Once 'Search' is clicked, a list of employees is displayed such that all employees meet all the specified requirements. This list displays the employees' names and next to each employee name is a checkbox option to 'Add to Comparison'. A button near the bottom of the page is labelled as 'Compare Employees'.

The 'Compare Employees' button opens a new tab. In this tab, all the information for each employee that was added to the Comparison list on the previous page is displayed in a tile. At the top of each tile is a button that says 'Remove from Comparison', and when this button is clicked, that tile is removed from the view.

9. Conclusion

Overall, we believe this is an extensive project, but one that will be greatly beneficial to SQS sales representatives and consultants. With our ideal timeline, we should be able to finish a considerable amount, if not all, of our requirements, although this effort will depend on how much of the existing code we may have to restructure.

10. Appendices

10.1 Site Map

To the existing site map, we added three pages: Verify, Search, and Compare. Verify and search are child pages of the Sign In page and should only be accessed after the user has gone through the Sign In page. Compare is a child page of the Search page and should only be accessed after the user has gone through the Search page.

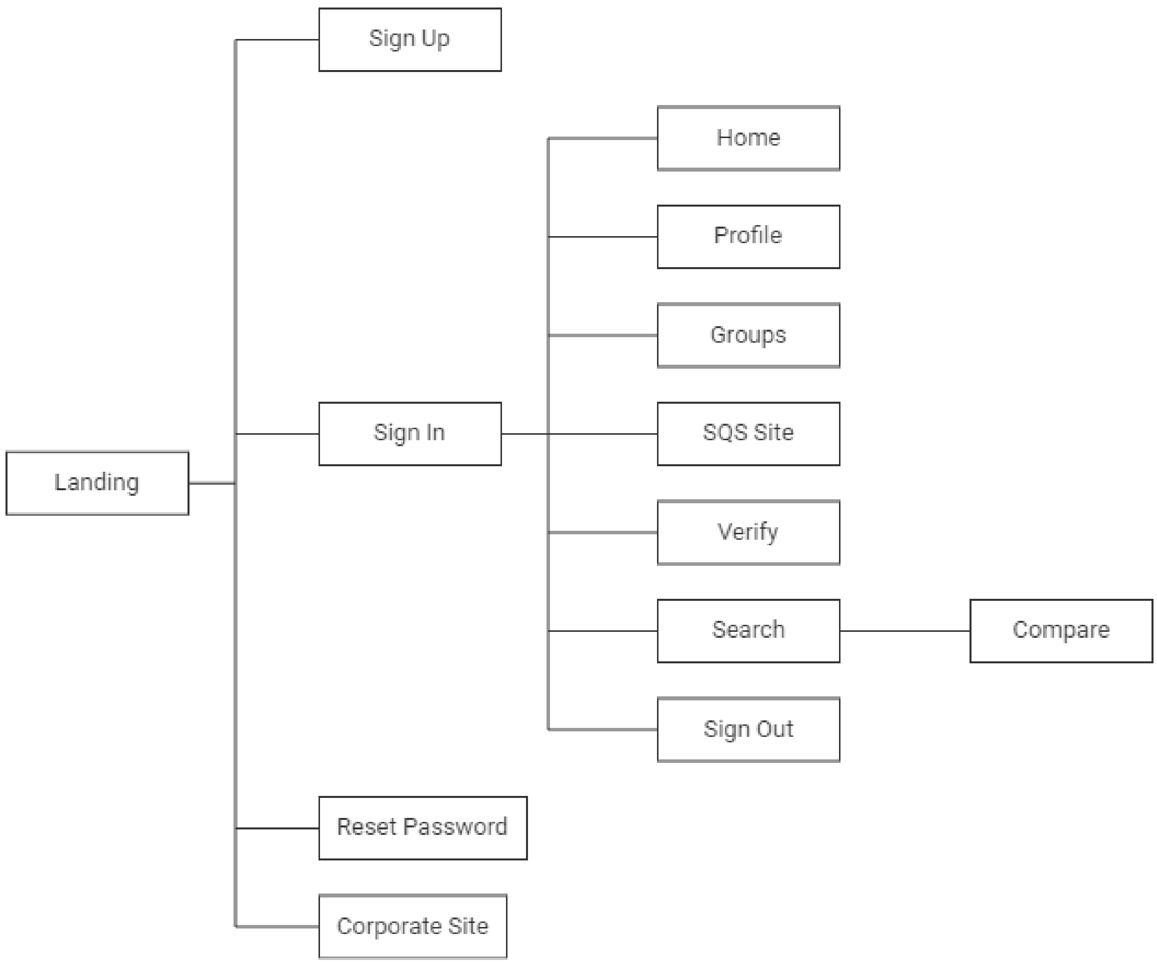

Figure 10.1 - Site Map

10.2 Schema

To the existing schema, we have added the tables user_education, degree, major, user_vertical, vertical, user_client, client, user_certification, and certification. We did not change anything about the existing tables and the way in which they were implemented in the database; however, we did also not follow the "convention" by which the existing tables were written. This discrepancy may result in some confusion while working with the code but moving forward with this project we wanted to clearly structure the database using more accurately descriptive column names and appropriate foreign key references.

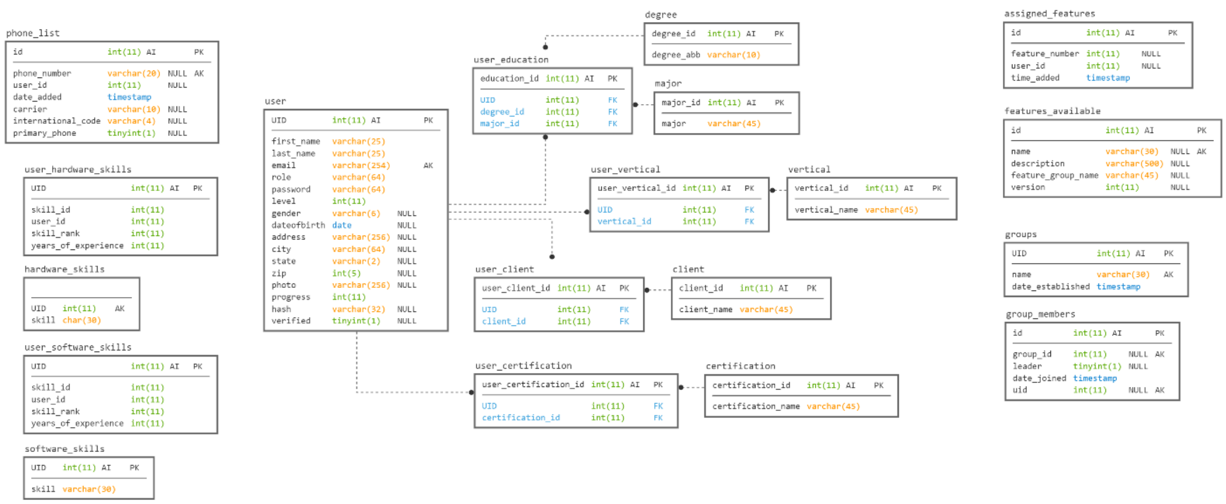

Figure 10.2 - sqs_web_sandbox schema

10.3 Ideal Schema

If, during development, we find that the existing queries are cumbersome, and we decide that we need to overhaul the database schema, we have provided an “idealized” schema that reflects the layout of the existing database but with a more consistent naming and reference convention.

Figure 10.3 - sqs_web_sandbox ideal schema

Word Counts:

Grant – 1162

Sara – 1762

Gina – 1751

Lexi – 828