'A Brush Up' Internal Management System

1. TEAM MEMBERS

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2. CUSTOMER STATEMENT OF REQUIREMENTS

2.1. PROBLEM STATEMENT

Carmine D'Alessandro operates "A Brush Up," a small family-run painting business, along with his eight staff members. It was established in 1999, and since then, it has gradually expanded through conventional business strategies. Some of these techniques involve doing computations by hand, maintaining personnel information on paper, and keeping records as hard copies.

Although these methods still are effective, since the company's founding, current technology has developed and introduced new methods that are simply unmatched in terms of effectiveness, dependability, and confidentiality. With the use of contemporary technologies, this initiative seeks to do away with these antiquated corporate practices while boosting productivity and protection generally. In return, the staff will receive additional time to devote to more crucial activities and accelerate the expansion of the company with enhanced information integrity.

2.2. PROPOSED SOLUTIONS

In the effort to ensure the efficient operation of the client's business, our system's key objective is to replace the current operational processes that include maintaining and categorizing data with a cutting-edge database management system. This system will safeguard confidential information, enable quick and simple accessibility or adjustments, and introduce additional capabilities to interpret data to illustrate business analytics. Since this system is intended to be an internal management system that maintains critical data which is not intended to be made available to the public, it will not be associated with the internet.

The administrator tier will be granted the maximum capabilities, allowing access to information like authenticated users and any data pertaining to the company. Supervisors will be able to create reports, input company data including proposals, invoices, and staff data, in addition to being able to analyze user logins with viewing capabilities. The minimal degree of accessibility will be granted to staff, who will only be given permission to enter company data. The ability to access all of the data will be provided by a consumer-friendly desktop/browser application, which could do away entirely with the requirement for vast physical file storage areas and lessen human error.

MAJOR FUNCTIONALITIES

Priority Scale: 1 - 5 (1 being the highest)

- (1) User Register
    - Users of the system will be able to register accounts depending on their job title (*Admin*, *Manager*, *Employee*)
- (1) User Login
    - Users of the system will be able to log in to the system as long as they have a registered account
- (1) Store Job Reports
    - Employees and managers will be able to enter job reports that include job related data such as customer name, address, proposed costs, etc.
- (1) Retrieve Job Reports
    - Employees and managers will be able to view past job reports
- (1) Store Job Invoices
    - Employees and managers will be able to enter job invoices

- ● (1) Retrieve Job Invoices
  - ○ Employees and managers will be able to view past invoices
- ● (2) Performance Reports
  - ○ Managers will be able to generate performance reports for a given time period (e.g. weekly, monthly, etc.)
- ● (2) Update Sensitive Employee Information
  - ○ Managers will be able to update sensitive employee data such as banking information and pay rates
- ● (3) Update Account Information

  - ○ Employees and managers will be able to update account details such as passwords or personal information (e.g. address, phone number, etc.)

2.3. NOVELTY

In our study into existing software systems that are comparable to the system we intend to create, we came across *QuickBooks* and *Xero*. With *QuickBooks*, you can easily and conveniently complete your tax responsibilities while keeping track of financial activities including income and expenses, staff costs, and merchandise in real-time.

There are many features on both of the applications (QuickBooks and Xero) that will not be included in our system. Both applications have bank reconciliation, our system will not be able to provide this due to the fact that you have to link bank accounts onto the system. Another feature we will not include in our system is goods and service tax returns, many countries use this tax. However, we are working with a small business in this case that is located in the United States of America. The Sales Tax Rate in the United States stands at zero percent. There is no federal sales tax system within the United States. Since this is a locally owned business, there will also be no multi-currency feature present in this system. The last feature that will not be evident in this system is a mobile app, due to the time that will be taken for development on this system. We will not be able to create both an application and a mobile app, due to the time constraint. However, because there will already be an application, creating a mobile app in the future is possible.

On its website, *QuickBooks* lists the following as its key features:

1. Invoicing - Create professional custom invoices, send payment reminders, and match payments to invoices, automatically

2. Expenses - Get set for tax time with all your expenses organized in one place.

3. Bank Feeds - Save time and reduce errors when you connect your bank to get a full view of your finances.

4. Capture & organize receipts - Use your phone to take photos of receipts. Match them to bills to stay organized and ready for tax season with everything in one place.

5. Insights and reports - See how your business is doing, and how it could look in the next 90 days, with a range of popular reports and the cash flow planner.

6. Security - See how we keep your information safe and compliant at all times.

Another comparable data management program aimed at small to medium sized enterprises is *Xero*. *Xero* promotes the following as its primary features on its website:

1. Pay bills - Track and pay bills on time. And get a clear overview of accounts payable and cash flow.

2. Claim expenses - Manage spending and submit or reimburse expense claims with Xero's expense management tools.

3. Bank connections - Connect your bank to Xero and set up bank feeds. Transactions flow securely straight into Xero each business day.

4. Track projects - Quote, invoice and get paid for jobs. Plus keep track of costs and profitability with project and job tracker software.

5. Manage Xero contacts - Use Xero for contact management. See details of a customer's or supplier's sales, invoices and payments in one place.

6. Capture data - Get copies of documents and key data into Xero automatically. Data capture without manual entry using Hubdoc.

7. Files - Use Xero for online file storage. Manage and share documents, contracts, bills and receipts safely from anywhere.

8. Reporting - Track your finances with accurate accounting reports. And collaborate with your advisor online in real time.

9. Analytics - See future cash flow, check financial health and track metrics. Upgrade your plan to get Analytics Plus.

While these applications offer various features that are useful for many businesses, our client simply does not need all of these attributes to run the business efficiently. The main differences that our proposed system will provide are:

1. No upfront cost - The other software options listed above have basic plans for businesses that start between $20 and $30 per month while our system will be free of charge for the client.
2. No maintenance costs - Not only will our software solution have no initial cost, it will also be free of any hidden maintenance or security fees that other mainstream services often have.
3. Customization - Our system will be custom-designed for the client to fit their specific needs to ensure optimal business performance. Considering the fact that the goal is not to make any type of profits from a general-purpose business software package like the main competitors, our team has the luxury of focusing only on what the client needs, not what the market needs.
4. Customer service - Since our client is related to one of the team members and has direct communication with the team, any questions or issues that they might have can be quickly addressed at almost any time. Other software services often have customer service available 24 hours per day but are not always as responsive or helpful.

3. GLOSSARY OF TERMS

- Conventional Business - Traditional and generally mature industries where ground-breaking breakthroughs and the scalability of new initiatives are hardly ever observed.

- Dependability - A system's capacity to provide a particular service.

- Confidentiality - The capacity to safeguard information so that unauthorized persons cannot access it.

- Productivity - The ratio of output volume to input volume.

- Data integrity - The accuracy, consistency, and comprehensiveness of data in its entirety.

- Database Management System - Software that manages the archiving, retrieval, and updating of data in a computer system.

- Accessibility - Making your system useful for people

- Business Analytics - often known as data insight, is the process of turning data into insights to enhance business choices.

- Invoice - A detailed business record listing the goods or services provided to the client, the total amount owed, and the desired mode of payment.

- Desktop Applications - Locally executed software programs on computers.

4. SYSTEM REQUIREMENTS

4.1. ENUMERATED FUNCTIONAL REQUIREMENTS

Requirement Identifier	Priority	Requirement
REQ-1	1	The system shall allow the user to register a new account.
REQ-2	1	The system shall allow the user to create a username.
REQ-3	1	The system shall allow the user to create a password.
REQ-4	1	The system shall allow the user to enter their full name.
REQ-5	1	The system shall allow the user to select their job title.
REQ-6	2	The system shall allow the user to enter their email.
REQ-7	2	The system shall allow the user to enter their phone number.
REQ-8	2	The system shall allow the user to enter their address.
REQ-9	1	The system shall save all new account information.
REQ-10	1	The system shall allow the user to login.
REQ-11	1	The system shall prompt the user with a login error if the incorrect credentials are entered.
REQ-12	3	The system shall allow the user to change their password.
REQ-13	3	The system shall prompt the user to enter their old password when changing their current password.

REQ-14	3	The system shall allow the user to enter a new password after entering their old password.
REQ-15	3	The system shall save the new password.
REQ-16	3	The system shall allow users to change account username.
REQ-17	3	The system shall allow the user to change their email.
REQ-18	3	The system shall allow the user to change their name.
REQ-19	3	The system shall allow users to change their phone number.
REQ-20	1	The system shall allow the user to create a new job report.
REQ-21	1	The system shall allow the user to enter the customer name to the job report.
REQ-22	1	The system shall allow the user to enter the customer address to the job report.
REQ-23	1	The system shall allow the user to enter a brief description of the work being done in the job report.
REQ-24	1	The system shall allow the user to enter the estimated date of completion to the job report.
REQ-25	1	The system shall generate a unique job ID for the job report.
REQ-26	1	The system shall allow the user to retrieve past job reports.
REQ-27	1	The system shall display the job report upon the user's request.
REQ-28	1	The system shall allow the user to create a new job invoice.
REQ-29	1	The system shall allow the user to enter the job ID for the invoice that corresponds with the job report.
REQ-30	1	The system shall allow the user to enter the services completed on the job.
REQ-31	1	The system shall allow the user to enter the cost of the services completed on the job.
REQ-32	1	The system shall allow the user to retrieve past job invoices.
REQ-33	2	The system shall allow company managers to generate performance reports.
REQ-34	2	The system shall allow the user to select a time period for the performance report.

REQ-35	2	The system shall allow company managers to change hourly rates for employees.
REQ-36	3	The system shall allow company managers to change employees' job titles.
REQ-37	3	The system shall allow company managers to change employee bank account information.
REQ-38	3	The system shall allow company managers to change employee social security numbers.
REQ-39	3	The system shall allow company managers to delete employee accounts from the system.

4.1.1. Analysis: Enumerated Functional Requirements

The precondition for using the system is the ability to set up a user account (REQ-1/REQ-2/REQ-3) and enter any necessary account details such as the user's full name, job title, email, phone number, and home address (REQ-4/REQ-5/REQ-6/REQ-7/REQ-8). After the user enters all of the required account information, they will be able to select a "create account" option in which the system saves all of their information as a new account (REQ-9).

Once the user has created an account, they will be able to login with their unique credentials (REQ-10). In the case that they enter the wrong login information, the system should prompt them with a login-error alert (REQ-11).

In the case that a user wants to change their password, there will be a "change password" option in which the system should ask the user to enter their old password and given that they enter it correctly, it should allow the user to enter a new password (REQ-12/REQ-13/REQ-14). They will then be able to save their changes in which the system should update the saved password for that user (REQ-15).

The user may also want to change other information regarding their account where there will be an "edit account details" option that should allow the user to change their username, email, name (such as their surname following a marriage or legal name-change), or phone number (REQ-16/REQ-17/REQ-18/REQ-19).

One of the main functions of this system is creating new job reports (REQ-20). The system should allow the user to enter the customer's name and address

(REQ-21/REQ-22) as well as some information regarding the job such as a description of the work being performed and the estimated date of completion (REQ-23/REQ-24). Upon creation of a job report, the system should also generate a unique corresponding identification number (REQ-25) that can be used to retrieve information about that job later on. This leads into the next function of the system which is to provide the user with the ability to view past job reports (REQ-26). Upon the user's request, the system should display their job report of choice (REQ-27).

Another major functionality of the system is that of creating job invoices (REQ-28). Similar to the job report functionality, the user should be able to enter relevant information about the job invoice when they create one. For example, the system should allow the user to enter the job ID (REQ-29) generated in the corresponding job report (REQ-25). In addition, the user should have the ability to list the services completed on the job and enter the total cost to be charged to the customer (REQ-30/REQ-31). If the user needs to view any past invoices, the system should also allow the user to retrieve them (REQ-32).

To help contextualize business data such as job reports and invoices, company managers should have the option of generating performance reports for any particular time period (REQ-33/REQ-34). Such performance reports should display cumulative data such as all jobs completed in the provided time period, the start and completion dates for those jobs, as well as the total amount of money spent and earned on those jobs. In addition, performance reports should include supplementary data such as the average amount of money spent and earned on the jobs in the time frame.

When configuring accounts for new and existing employees, managers should be able to change sensitive information such as job titles, hourly rates, banking information, and social security numbers (REQ-35/REQ-36/REQ-37/REQ-38). Finally, in the case that an employee is fired or leaves the company, managers will need to delete that employee's account (REQ-39).

4.2. ENUMERATED NON-FUNCTIONAL REQUIREMENTS

Identifier	Type	Priority	Requirement
REQ-40	Performance	4	The system should display Job reports

			within 3 seconds
REQ-41	Performance	5	The system should query changes to the database within two seconds.
REQ-42	Portability	5	The system should be compatible with the Windows 10 OS.
REQ-43	Capacity	4	The system shall take up less than 1GB of space excluding the database.
REQ-44	Performance	2	The system should be up at least 6 days a week

4.2.1. Analysis: Enumerated Non-Functional Requirements

One of the key non-functional requirements of the system is that our system should be up at least six days a week (REQ-44). The system should also take up no more than one gigabyte excluding the database while running(REQ 43).

Another important requirement is that the system should be able to run on Windows 10 Operating System(REQ-42). The system should be able to display Job reports within three seconds of the button being pressed(REQ-40). The changes to the system should take no more than two seconds after being submitted(REQ-41).

4.3. ON-SCREEN APPEARANCE REQUIREMENTS

Requirement Identifier	Priority	Requirement
REQ-45	5	Job reports should be created through a form that lets the user enter details about the planned services.
REQ-46	5	Existing job reports should be displayed in the form of a table with clear headers above each column.
REQ-47	5	Job invoices should be created through a form that lets the user enter details about the services performed.
REQ-48	5	Existing invoices should be displayed in the form of a

		table with clear headers above each column.
REQ-49	5	The username of the user that is logged into the system should be displayed at the top right of the screen.
REQ-50	5	Company managers should be given an option to view a list of all users ordered by name in alphabetic order.

4.3.1. Analysis: On-Screen Appearance Requirements

One of the main requirements, creating job reports, should be done through the use of a form that provides the user with a user-friendly interface (REQ-45). Once there are some existing reports, the user may want to view a report in which they should be displayed in an organized table (REQ-46).

Similar to job reports, job invoices should be created through the use of a form that lets the user easily enter relevant information (REQ-47). Users should also be able to view job invoices in an organized table (REQ-48).

When a user is logged into the system, their username should be displayed at the top right of the page to act as an indicator for who is using the system (REQ-49). In the case that a company manager is logged in, they may need to make changes to user accounts in which they should be able to view all of the system's users at once with just a few clicks (REQ-50).

5. FUNCTIONAL REQUIREMENTS SPECIFICATION

5.1. STAKEHOLDERS

The stakeholders for our system are:

Our Customer

Our customer(s) who intend to use the BrushUp Internal Management System have the highest priority for this system. This system would allow the user to be able to more

efficiently be able to do his job. The ability to store and retrieve data regarding the business will be essential. An example of this would be the ability to retrieve past job reports for tax purposes.

The Customer's Employees

Our Customer Employees will rely on this system to do their job. They rely on this system to retrieve information regarding future jobs, job location, and client information. They are also really on the system for inputting and calculating proposed job costs. If the system fails to work it may result in employees being unaware of the next client, and the location of the next client.

The Client's Customers

The customers of our client (e.g. those who are getting work done) are also stakeholders of this system as they indirectly rely on the system to maintain accurate records of the jobs that are being completed and the expenses associated with them.

5.2. ACTORS AND GOALS

User

The user will take the form of a Painter. The goal of the user is to keep track of jobs, customers, deadlines, and invoices. This is done by adding current jobs to the database, reports of the jobs and invoices for the cost of jobs.

Database

The database will hold all information on jobs, customers, deadlines, invoices, and will keep all relevant information connected.

5.3. USE CASE CASUAL DESCRIPTION

UC-1 AddUser (REQ-1 ,REQ-2, REQ-3 , REQ-4, REQ-5, REQ-6, REQ-7, REQ-8,REQ-9, REQ-41)	**Allows a person to create a new user for the system.**

|	
UC-2 SignIn (REQ- 10, REQ-11)	**Allow a person to sign into the account.**
UC-3 ChangePassword (REQ-12, REQ-13, REQ-14, REQ-15, REQ-41)	**Allows a user to change password.**
UC-4 EditUser(REQ-16, REQ-17, REQ-18, REQ-19, REQ-41)	**Allows users to edit their account.**
UC-5 CreateJobReport (REQ-20 ,REQ-21, REQ-22, REQ-23, REQ-24, REQ-25,REQ-45)	**Allows the user to create a new job report.**
UC-6 RetrieveJobReport(REQ-26, REQ-27, REQ-40,REQ-46)	**Allows the user to retrieve job report.**
UC-7 CreateInvoice(REQ-28, REQ-29,REQ-47)	**Allows the user to create an invoice.**
UC-8 EditJobReport(REQ-30, REQ-31, REQ-41)	**Allows the user to edit the Job Report.**
UC-9 RetrieveInvoices(REQ-32, REQ-48)	**Allows the user to retrieve invoices**
UC-10 GeneratePerformanceRep (REQ-33, REQ-34)	**The user can automatically generate a performance report.**
UC-11 EditEmployeeInfo(REQ-35, REQ-36, REQ-37, REQ-38, REQ-39,REQ-41)	**Allows the user to edit employee information.**

5.4. USE CASE ANALYSIS

UC-1 will allow a person to sign up as a new user on the database by inputting several different inputs like username, password, fullname, etc. UC-2 will allow the user that has just made an account to sign it. The Username and password of the signin will be verified to ensure that the account has been created and the login credentials are correct. If the user decides their password needs to be changed , the system will allow the user to do this by inputting the old password and creating a new one (UC-3). UC-4 will allow the user to edit their user information. Creating a Job report will allow the user to add a new Job report to the system, with several different input fields(UC-5).

Retrieving the job report will allow the user to view a list of all job reports that are currently in the system.This will be displayed by going to the view Job Report page on our system.(UC-6). UC-7 will allow the user to create a new invoice with several different inputs. The new invoices will be stored in the database.

UC-8 will allow the user to edit the previously created job report. This is done by retrieving the information from the database and saving the edited information as an override.The user will be able to view the invoice that has been previously created and stored in the database. This will be displayed in a table with each report as its own row (UC-9)A performance report will be able to be generated based off of all stored information in the database(UC-10).UC-11 allows for employee information to be changed by the user , there should be an edit button for this.

5.5. USE CASE DIAGRAM
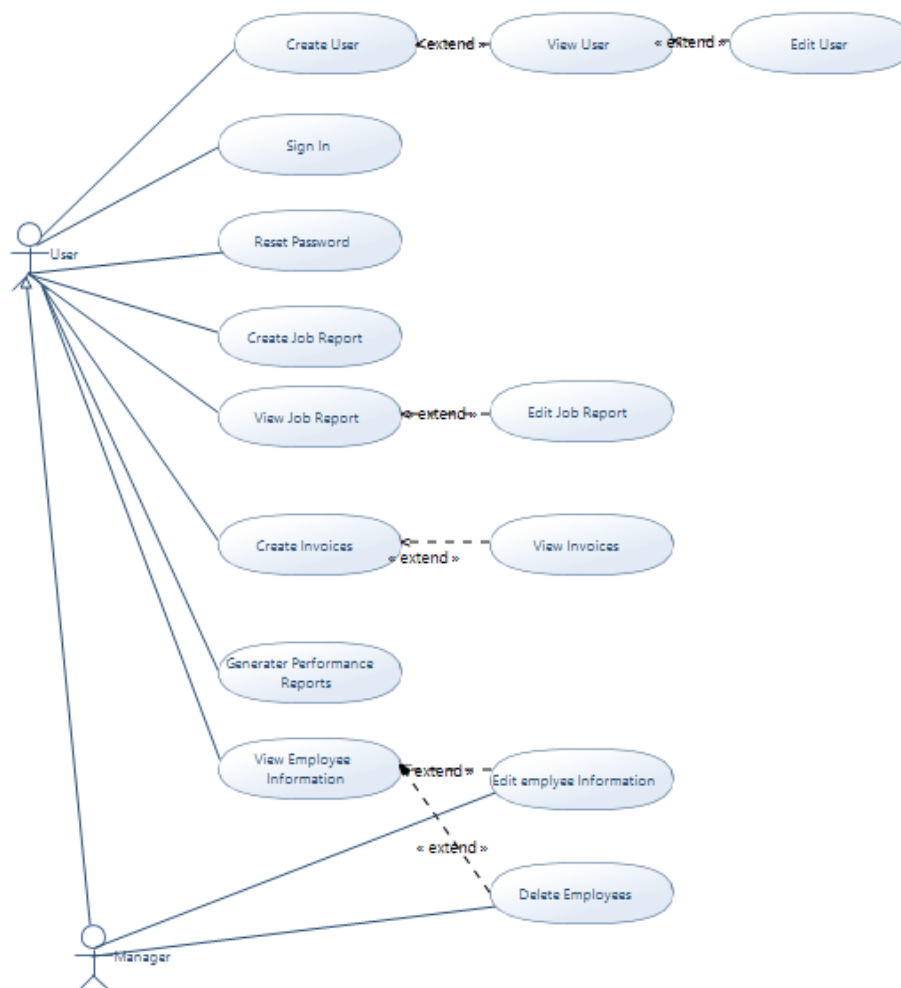
5.6. TRACEABILITY MATRIX

	PW	UC 1	UC 2	UC 3	UC 4	UC 5	UC 6	UC 7	UC 8	UC 9	UC 10	UC 11
REQ-1	1	X										
REQ-2	1	X										
REQ-3	1	X										
REQ-4	1	X										
REQ-5	1	X										
REQ-6	2	X										
REQ-7	2	X										
REQ-8	2	X										
REQ-9	1	X										
REQ-10	1		X									
REQ-11	1		X									
REQ-12	3			X								
REQ-13	3			X								
REQ-14	3			X								
REQ-15	3			X								
REQ-16	3				X							
REQ-17	3				X							
REQ-18	3				X							
REQ-19	3				X							
REQ-20	1					X						
REQ-21	1					X						
REQ-22	1					X						
REQ-23	1					X						
REQ-24	1					X						
REQ-25	1					X						
REQ-26	1						X					
REQ-27	1						X					
REQ-28	1							X				
REQ-29	1							X				
REQ-30	1								X			
REQ-31	1								X			
REQ-32	1									X		
REQ-33	2										X	
REQ-34	2										X	
REQ-35	2											X
REQ-36	3											X
REQ-37	3											X
REQ-38	3											X
REQ-39	3											X
MAX PW		2	1	3	3	1	1	1	1	1	2	3
Total PW		12	2	12	12	6	2	2	2	1	4	14

5.7. USE CASE-FULLY DRESSED DESCRIPTION

5.7.1. ChangePassword

This table shows a detailed description of the ChangePassword use case. The interactions are defined as follows:

UC-3 ChangePassword	
Related Requirements	REQ-12, REQ-13, REQ-14, REQ-15,REQ-41
Primary Actors	User
Actor's Goals	Change the current password to a new one.
Secondary Actors	Database
Preconditions	The user has a registered account.
Success End Condition	The user successfully changes their password.
Failed End Condition	The user is not able to change their password.
Flow of Events for Main Success Scenario:	
1. → **User** clicks on a "Change Password" button 2. ← **System** prompts the **User** for their old password 3. → **User** enters their old password 4. ← **System** prompts the **User** for a new password 5. → **User** enters a new password 6. → **System** checks if the old password matches the password stored in the **Database** 7. ← **Database** confirms the old password matches 8. → **User** submits password change 9. → **System** sends password changes to the **Database** 10. ← **Database** updates the **User's** password	
Flow of Events for Extensions:	

1. Old password is does not match the password stored in the **Database**
    a. ← **System** will display "Password Does not Match Error"
    b. → **User** will be prompted to try again	

5.7.2. CreateJobReport

This table shows a detailed summary of the AddJobReport use case. The interactions are defined as follows:

UC-5 CreateJobReport	
Related Requirements	REQ-20 ,REQ-21, REQ-22, REQ-23, REQ-24,REQ-25,REQ-45
Primary Actors	User
Actor's Goals	Add and title a new Job Report to the database.
Secondary Actors	Database
Preconditions	The user has a new report to add.
Success End Condition	A new Job Report is added to the database.
Failed End Condition	A new Job Report is not added to the database.
Flow of Events for Main Success Scenario:	
1. → User clicks on the "Create new Report" Button **2. ← System prompts User for input** **3. → User provides the name of the Job report** **4. → System sends new Job Report to the Database** **5. ← Database stores the Job Report**	
Flow of Events for Extensions:	
1. Name of the Job Report is unable to be registered **a. ← System will display "Naming Error"** **b. → User will be prompted to give a different input**	

5.7.2 EditJobReport

This table shows a detailed summary of the EditJobReport use case. The interactions is defined as follows:

UC-8 EditJobReport	
Related Requirements	REQ-30, REQ-31, REQ-41
Primary Actors	User
Actor's Goals	Modify the details of a job report
Secondary Actors	Database
Preconditions	A job report has been registered to the database.
Success End Condition	The changes to the job report are reflected in the database.
Failed End Condition	The changes in the job report are not reflected in the database.
Flow of Events for Main Success Scenario:	
1. → **User** selects the job report to edit 2. ← **System** requests job report details from **Database** 3. → **Database** sends details of the job report to **System** 4. → **System** displays editable form of job report details 5. ← **User** submits changes to the form 6. → **System** sends changes to **Database** 7. ← **Database** updates related job reports	

6. USER INTERFACE PRELIMINARY DESIGN

BrushUp Internal Management System

Login

Username

Password

Login

Forgot Password ?

Need an account? SIGN UP

This is the Login in page of our system. When a user goes onto the Login page they are required to log in with a username and a password. The option underneath login allows the user to create a new password if the user forgets his or her password. Also there is a sign up option at the bottom for new users. It will take them to the register page and allow them to create a new account. When the user clicks on the login page it will take them to the Homepage where they can do many things such as create job reports, view job reports, create invoices, view invoices, etc.

BrushUp Internal Management System

Account Register

Username

Password

First Name

Middle Name Initial

Last Name

Email

Phone Number

Job Title

Security Questions

Security Question 1

Security Question 2

Create Account

This is the Account registration page for our system. When a user clicks the signup button on our login page, they will be directed here. The user needs to input all of the information to create an account that can be signed in to access our system. When the user clicks the create account button one of two things will happen. If all the fields are entered properly the user will be directed to the sign in page and can now successfully sign in. If the register page is missing information the user will receive an error message.

BrushUp Internal Management System

View Profile | View Job Reports | Create Job Reports | View Invoices | Create Invoice | Log Out

WELCOME TO BRUSHUP INTERNAL MANAGEMENT SYSTEM

This is the Brush up Management Homepage. After a user logins in, they are directed here. They can do many things such as create job reports, view job reports, create invoices, view invoices, and even logout. All the user does is need to click on the buttons and it will take them to the corresponding pages.

When the user clicks on create new job report, it will take them to the job report page. It allows the user to create a job report by providing information about the customer, job description and estimated date of completion.

When the user clicks on create new invoice, it will take them to the invoice page. It allows the user to create an invoice by providing job ID, types of service provided and cost for the service.

7. SYSTEM ARCHITECTURE AND SYSTEM DESIGN

7.1. ARCHITECTURAL STYLES

The architectural style follows a three-tiered model with a display component, logic component, and database component. More specifically, HyperText Markup Language (HTML) is being used in conjunction with Cascading Style Sheets (CSS) to create the display component. To store data and provide a connection to such data, mySQL is being used as a Relational Database Management System (RDBMS) to create the database component. Finally, Python is being used to act as the logic component where it processes the linking of content between the layers and assists in data manipulation.

7.2. DATABASE DESIGN

7.2.1 E-R Diagram
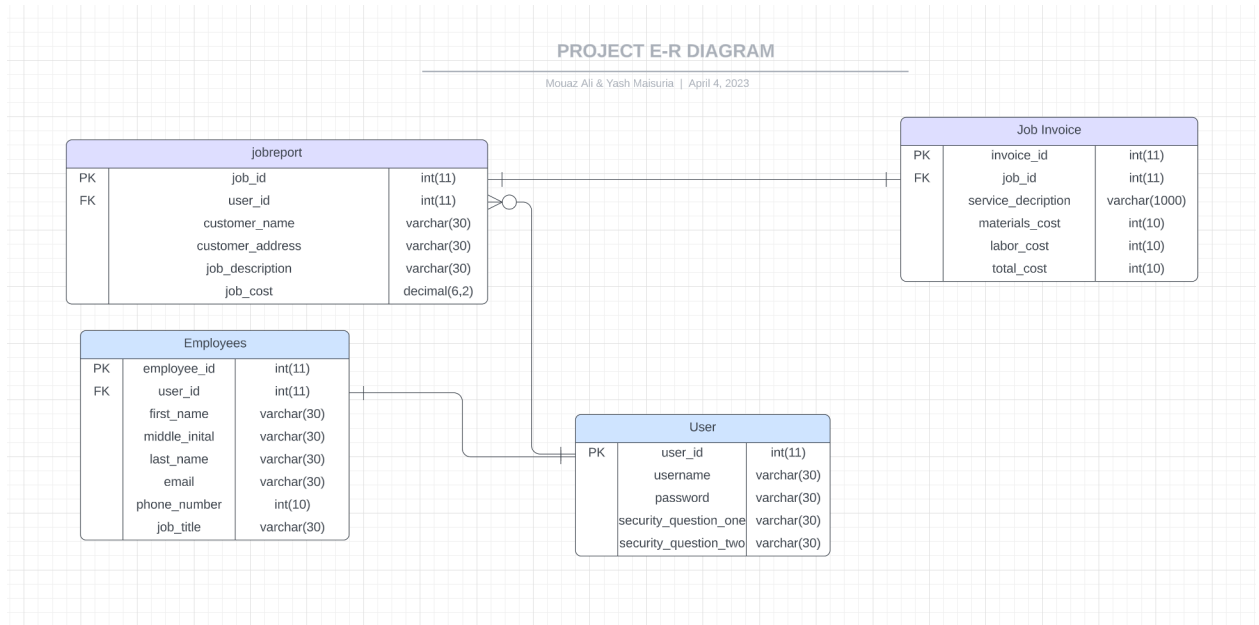
7.2.2 Tables

User

Field	Type	Null	Key	Default	Extra
ID	int(11)	NO	PRI	NULL	auto_increment
username	varchar(20)	NO			
password	varchar(20)	NO		NULL	
Security_question_one	varchar(20)	NO		NULL	
Security_question_two	varchar(20)	NO		NULL	

Employees

Field	Type	Null	Key	Default	Extra
employee_id	int(11)	NO	PRI	NULL	auto_increment
ID	int(11)	YES	MUL	NULL	
first_name	varchar(20)	NO		NULL	
middle_initial	varchar(1)	NO		NULL	
last_name	varchar(20)	NO		NULL	
email	varchar(30)	NO		NULL	
phone_number	int(10)	NO		NULL	
job_title	varchar(20)	NO		NULL	

JobReport

Field	Type	Null	Key	Default	Extra
▶ jobid	int(11)	NO	PRI	NULL	auto_increment
ID	int(11)	YES	MUL	NULL	
customer_name	varchar(20)	NO		NULL	
Customer_address	varchar(100)	NO		NULL	
Job_description	varchar(1000)	NO		NULL	
jobCost	int(10)	NO		NULL	

JobInvoice

Field	Type	Null	Key	Default	Extra
▶ invoiceid	int(11)	NO	PRI	NULL	auto_increment
jobid	int(11)	YES	MUL	NULL	
services_description	varchar(1000)	NO		NULL	
materials_cost	int(10)	NO		NULL	
labor_cost	int(10)	NO		NULL	
total_cost	int(10)	NO		NULL	

8. IMPLEMENTATION

8.1. REQUIREMENTS IMPLEMENTED IN MILESTONE #3

Note: *'M2' means the associated requirement was implemented for Milestone #2 (i.e. before Milestone #3)*

Requirement Identifier	Requirement	Implemented in Milestone #3 (Yes/No)
REQ-1	The system shall allow the user to register a new account.	M2
REQ-2	The system shall allow the user to create a username.	M2
REQ-3	The system shall allow the user to create a password.	M2
REQ-4	The system shall allow the user to enter their full name.	M2
REQ-5	The system shall allow the user to select their job title.	M2
REQ-6	The system shall allow the user to enter their email.	M2
REQ-7	The system shall allow the user to enter their phone number.	M2

REQ-8	The system shall allow the user to enter their address.	M2
REQ-9	The system shall save all new account information.	M2
REQ-10	The system shall allow the user to login.	M2
REQ-11	The system shall prompt the user with a login error if the incorrect credentials are entered.	M2
REQ-12	The system shall allow the user to change their password.	No
REQ-13	The system shall prompt the user to enter their old password when changing their current password.	No
REQ-14	The system shall allow the user to enter a new password after entering their old password.	No
REQ-15	The system shall save the new password.	No
REQ-16	The system shall allow users to change account username.	No
REQ-17	The system shall allow the user to change their email.	No
REQ-18	The system shall allow the user to change their name.	No
REQ-19	The system shall allow users to change their phone number.	No
REQ-20	The system shall allow the user to create a new job report.	M2
REQ-21	The system shall allow the user to enter the customer name to the job report.	M2
REQ-22	The system shall allow the user to enter the customer address to the job report.	M2
REQ-23	The system shall allow the user to enter a brief description of the work being done in the job report.	M2
REQ-24	The system shall allow the user to enter the estimated date of completion to the job report.	M2
REQ-25	The system shall generate a unique job ID for the job report.	M2
REQ-26	The system shall allow the user to retrieve past job reports.	Yes
REQ-27	The system shall display the job report upon the user's request.	Yes
REQ-28	The system shall allow the user to create a new job invoice.	Yes
REQ-29	The system shall allow the user to enter the job ID for the invoice that corresponds with the job report.	Yes

REQ-30	The system shall allow the user to enter the services completed on the job.	Yes
REQ-31	The system shall allow the user to enter the cost of the services completed on the job.	Yes
REQ-32	The system shall allow the user to retrieve past job invoices.	Yes
REQ-33	The system shall allow company managers to generate performance reports.	No
REQ-34	The system shall allow the user to select a time period for the performance report.	No
REQ-35	The system shall allow company managers to change hourly rates for employees.	No
REQ-36	The system shall allow company managers to change employees' job titles.	No
REQ-37	The system shall allow company managers to change employee bank account information.	No
REQ-38	The system shall allow company managers to change employee social security numbers.	No
REQ-39	The system shall allow company managers to delete employee accounts from the system.	No

8.2. GITHUB LINK

https://github.com/anthonyexe/Software-Engineering-Project.git