SWE30010 Managing IT Projects Project Proposal Stage

Project Proposal Stage

People Health Pharmacy

Tutorial: Wed 8:30 EN303 Odd Week Tutor Group

Tutor: Harsharan Kaur

BACKGROUND / PROBLEM DESCRIPTION

People Health Pharmacy is finding it difficult to perform their sales and inventory management operations with the current paper-based system which have its many pros but on the other sides with ever increasing number of cons which tend to be increasing in the times where many operations can be automated with the help of IT resources. The current system holds many gaps like inefficient sharing and storage of sales report and tracking. Also, trend recognition has its limitations in the current system where it will be difficult for records in hundreds or thousands which can be beyond the scope in this case. Further access tracking can be an issue where they might be difficult to track the access with feasible and safe manner without spending considerable resources in security.

This is where our team would like the present this proposal which intends to provide the client with the services including efficient sales record system with no further cost paperwork and calculations which will be automated in this case, storing in the common storage where the team can access the records even edit it with no overload on current resources. Also, to mention this system tends to work better for sales and inventory prediction and management helping in realising the trend with graphs and charts where data density and length is not much of a problem.

SCOPE

The project consists of developing software which features the feasible adding, editing, and even deletion of sales and inventory records. The sales data will then be able to be used for profiling the trends helping in escalating profitability, time management and proper management of sales and stocks which is the dream of every business for day-to-day chores. As per the requirements, the sales data can also be transcended to CSV reports.

The scope of the project is to design an application which comprises of following features:

ROLE BASED SECURITY

Role-based access control (RBAC), also called role-based security, is a component that limits framework access. It includes setting authorizations and advantages to enable access to authorized clients. Most of the organizations use role-based access control to give their workers differing levels of access dependent on their jobs and obligations. The application will have RBAC which

would help in getting fragile data and ensures workers can simply access deals reports and perform activities according to their assigned roles.

DATA VISUALIZATION

Sales reports give an understanding of a business' client base and market position. Sales managers use it to investigate performance and develop procedures. They likewise measure the sales group's advancement towards their objectives and survey individual rep performance. It would get easier for the manager to make decision with the help of data visualization feature in the application. With the help of graphs such as Line graph which would reveal trends and progress over time. Stacked bar chart, which will show the comparison of many different items.

GENERATE REPORTS

The application will be able to generate reports on a Daily, Weekly, and Monthly basis. Everyday sales report would comprise of the number of the sales calls, the quantity of inquiries received. The Daily reports will assist the staff to stay up to date. Weekly sales reports will monitor sales performance and fundamental KPIs, like lead-to-opportunity proportion, lead conversion ratio. Month to Month sales reports produced will be utilized to monitor, evaluate, analyse and decide sales patterns.

CLOUD STORAGE AND MULTI-VERSIONING

The application will make use of cloud storage for which we will be using Amazon Web Service (AWS) which will be useful as it will help to implement star topology where the storage will be accessed from the server. This storage has its sown benefits where it will help to provide low latency making the uploading and accessing the data within seconds and real-time database making it easy for tracking and making use of data in real time hence helping the teamwork and productivity. Further comes multi-versioning where same data can be accessed and modified without the loss and data where options to revert back to changes are available depending on the usage.

PREDICT SALES

According to client’s prerequisites, the application ought to transcode the sales information and foresee the sales with the goal that the supervisory group can settle on better choices. For this reason, we will execute the analytics feature, which will be a JavaScript or python code that can gather user information like cookies, the sales information and create various reports and statistical information.

STOCK MANAGEMENT

The sales and inventory data help the application to present data in more visualized to see the trends as discussed above which in turn makes it possible to perceive it with the stocks available helping in the better manage and scope for future sales aiding the pre ordering stocks before predicted sales. This makes it possible to save from cost from predicted expiring products and on the verge of getting out of stock.

OUT OF SCOPE

Everything not specifically documented as in scope is explicitly out of scope some of which are as follows:

1. Integration: Easily connect to CRM, ERP, HCM, and other data sources for fast, reliable, and accurate business planning.
2. Further processing of CSV reports such as conversion to other file types (like pdf).
3. Could storage charges.
4. Workflow Automation: Automate repetitive tasks to create a streamlined sales process.

STAKEHOLDERS

Stakeholders are defined as the people who have interest or invest in our project. The below listed are the stakeholders for our project:

PROJECT SPONSOR

A person who manages the expenses of the project is called the project sponsor; our project sponsor is the tutor of our tutorial named Harsharan Kaur. She is responsible for the project finances.

CLIENT

A client is the targeted user who will use the proposed system in day-to-day operations The developed software is to help the managing team of the PHP company to manage their sales record, therefore the managing team and employees of that company are our clients.

CLIENT'S BOSS

The high-level managers of PHP company like the CEO are our client boss and act as a communication link between the project developers and the client to help communicate the requirements accurately.

PROJECT MANAGER

A person who is responsible for leading the project planning session and co-ordinating the development team. He is also responsible for ensuring that the project meets the deadlines. Our project leader is Dhrupad Thorat who helps in improving the overall approach wherever necessary.

DEVELOPMENT TEAM

These are the people who are executing the project under the project manager's leadership. This team does the programming and testing of deliverable software. Below listed members are included in our project development team.

- Parul Mehta
- Harkirat Singh
- Diljot Singh
- Jai Raghuvanshi

DELIVERABLES AND SCHEDULE

The proposed software will deliver all the functionalities that can be extracted from the analysed requirements. Most importantly, it will consist of creating a database

system to allow for storage and reviewing of the sales record of the company. Other product backlog items are discussed below in detail:

Sr No	Item	Importance	Dependencies	Business Value (1-10)	Risk (1-10)	Release Schedule
1.	Add sales record.	Without adding a record, the user won't be able to analyse any records and won't be able to begin.		*6*	*4*	Sprint#1
2.	Edit a sales record	This is a function to allow flexibility to user in adding records.	1	*7*	*4*	Sprint#1
3.	Display a sales record	The user needs to be able to properly view the sales data on the user side of the application.	1	*7*	*4*	Sprint#1
4.	Display monthly sales report as CSV file	As the core requirement is to have a report generated, it is easy analyse when the records are grouped by month.	1	*8*	*6*	Sprint#1
5.	Add GUI features (menus and icons)	We need to deliver a user-friendly interface that allows easy navigation and provides error protection.	1	*8*	*7*	Sprint#1
6.	Predict the sales of an item on a monthly basis	It is essential for the growth of the business to predict sales based on items.	1	*9*	*6*	Sprint#1
7.	Predict the sales of a group of similar items on a monthly basis	It is essential for the growth of the business to predict sales based on groups of items.	1	*9*	*7*	Sprint#1

8.	Display visualisation based on the reports.	Visualisations can help in a better analysis of reports and also makes it easy to understand the various trends in sales.	1	*7*	*6*	Sprint#1
9.	Send alert when an item is out of stock.	This function is important for stock management.	1	*8*	*8*	Sprint#2
10.	Create a weekly report of stock updates.	For stock management, it is useful to have a stock update report generated weekly for better and efficient management.	1	*8*	*9*	Sprint#2
11.	Backup Data on weekly basis	It is very essential to keep the data safe therefore, this function will back up the sales data to a preferred location.	1	*6*	*9*	Sprint#2
12.	Predict future sales demand based on items	It is essential for the growth of the business to predict sales of items for future so they can bring in new items or replace the existing brands for maximum profits.		*8*	*8*	Sprint#2
13.	Cloud storage of the sales data	Data is stored on cloud to provide real time access.	1	*7*	*8*	Sprint#2
14.	Multi-versioning and real-time data accesses	These are the advanced features provided to enhance the	2	*9*	*8*	Sprint#2

	and manipulation	quality of the software.				
15.	Role based access	It is essential to ensure the security of the system. Therefor role-based access would allow only the authorise people to access the data.	2	*7*	*8*	Sprint#2

SOLUTION DIRECTION

This section of the Project Proposal gives a detailed yet comprehensive explanation of the chosen solution directive for project assigned by People Health Pharmacy (PHP) Inc. for their sales department solution. After profound discussion between the suggested solutions by the team which were creating desktop application with WinForms and dotnet framework with C# language due to the team familiarity with it while the other is a web application which will be completed with the active use of web languages with front end emphasis from HTML5, CSS, JavaScript along with PHP as both front-end and back-end language along with Java and python.

The solution and their alternatives have been discussed based on the gap analysis with the help KoST(Knowledge, Skills and Technology) analysis technique which can be seen below:

KNOWLEDGE

This section of the analysis suggests the discussion of the major domains of the project which are as follows.

PROBLEM DOMAIN

This includes the knowledge about the sectors which causally related to the problems of the client which we are trying to solve. For this project which deals with the dealing with major sales operations like sales record keeping, funnelling, inventory management and much more which can be said that relates to their sales department, stock department, their accessories which includes the hardware and software used and technical aspects of their system which may involve limited number of computers, PoS(Point of Sales) and/or tablets and their respective OS (Operating System).

SOLUTION DOMAIN

This domain emphasis on more to requirements which includes the recommendation consisting of record keeping of sales in the discussion with the procedure suggested by the client sales team. Further comes inventory control, it needs to be made sure that products are being tracked so that low quantity can be notified. Other important

requirements are analysis of the sales data helping the client to see trends and help in improved and profitable business decisions. Lastly discussed above, since different hardware can be used requiring the use of multi-OS support with different aspect ratio also to mention the access the same sales data possibly with multi-versioning making it possible to access the data in real time.

SKILLS

The thorough discussion and experience assure the team possess the necessary skills for the project. Starting with fact that, proper documentation consisting of proposals, sprints, review reports which will done by the experienced team members and verified by other members. Further, more than half of team are confident in front-end as well as back-end programming. Also, to mention dedicated members have been devoted to cloud setup and support and designs and prototyping respectively who have previous experience in these respective roles.

TECHNOLOGY

In reference to the existing solutions, some of the team members have already designed an Inventory Management System which is a desktop version created with WinForms for front-end, C# with dotnet Framework along with RDBMS accessed with SQL and minor use of PHP for connectivity. Also, our team includes members with knowledge of website designing and web application designing.

COMPARISON MATRIX

The comparison has been done between the solutions i.e., Web App and Desktop App based on the requirements and assumptions as discussed above as follows: -

No.	Matrix\Solutions	Desktop App	Web App
1	Internet Required	√	√
2	Cost efficient	**X**	√
3	Deployment	**X**	√
5	Multi-OS support	**X**	√
6	Multiple aspect ratio support	√	√

- ### INTERNET REQUIRED
  Both the solution makes use of internet connection where comparatively resources for internet surfing and services are very available and feasible for web application than the desktop one where former serves more assurance in security, feasibility, and substantiality in solution.

- ### COST EFFICIENT
  The comparatively easy development of web apps makes it more cost efficient than the desktops apps as they do not require much hardware and system requirements to be considered.

- ### DEPLOYMENT

To deploy a web app, one only needs a browser and a user account however a desktop app may require a licensed copy for each system which is difficult to manage for a business store that may require the use of app in various departments of the company.

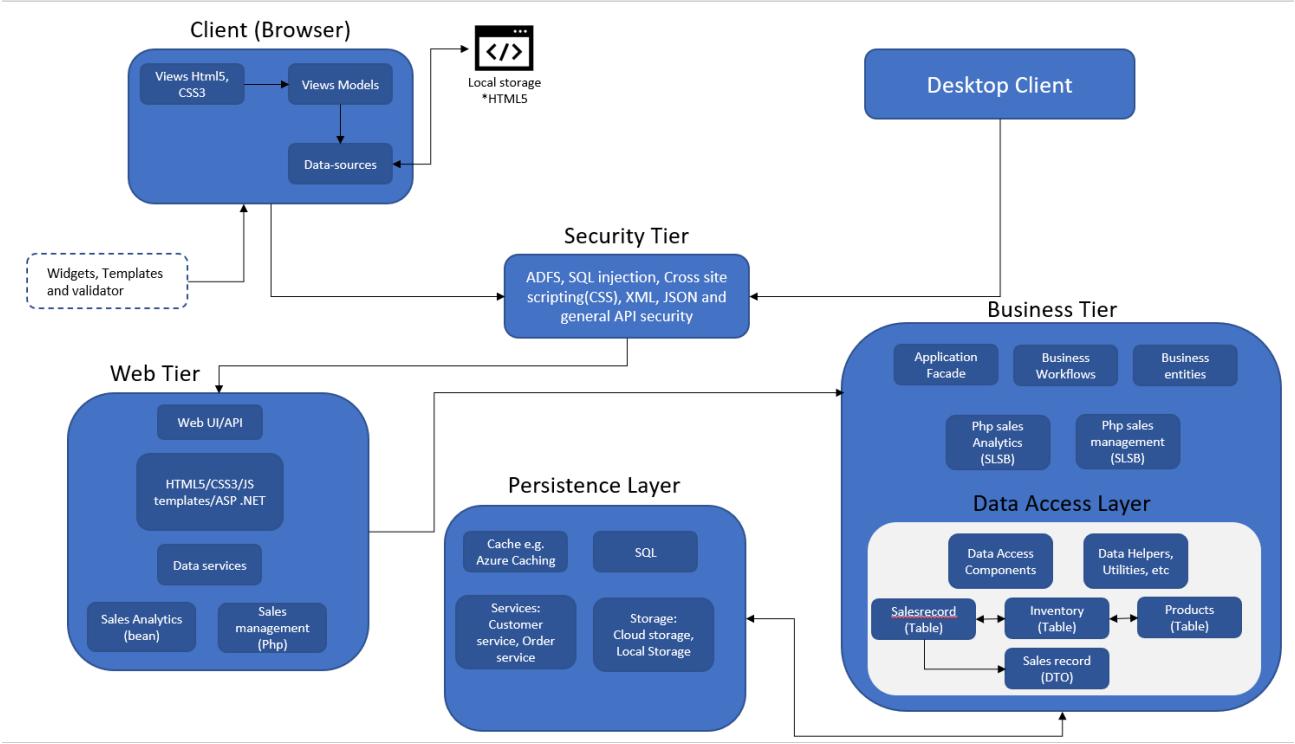
- **MULTI-OS SUPPORT**
  This suggests that the accessibility of the app in multiple operating systems like Windows, MacOS, Android and Linux (GUI). It is possible for the web app solution as the language's resources used are perceivable by all these OS(s) rather than the desktop version which due to certain limitations like different languages and frameworks does not support other operating systems than windows.

- **MULTIPLE ASPECT RATIO SUPPORT**
  The discussion assures that both support different aspect ratio where difference in screen size will not affect much of a UI and use of the app as implementation are possible and will be done to make sure the app supports variation in device's screen size.

PROPOSED SOLUTION

After detailed discussion is as clear from the above documentation that web app will provide more value to the client and successfully match the criteria than desktop app. The main reasons that are of the high concern was multi-OS support which is very much required in here hardware limitations are of concerns. Another aspect of this solution which is of elative significance for customers is its cost efficiency which made it our first choice as the solution.

ARCHITECTURE DIAGRAM



The above architecture design which will be used for this project is explained below:

CLIENT LAYER (BROWSER/DESKTOP)

This layer is following the MVC pattern which can be seen from the use of Views which takes care of the presentation of the data or more like the software with the use of HTML5 and CSS. Further these views were managed by the view models which will interact with the data source on both ends as the data will be sent over and/or received from the servers on the client device which will be conducted through view models and data sources combined.

SECURITY TIER

In order to use the application, the user needs to pass through the security tier and then the application will check whether the User credentials match with the existing log-in details in the database and if the details matches then the user can gain access. For this purpose, we can use Active Directory Federation Service (ADFS) which is a security software developed by Microsoft for the users that are connected the windows server that allows single sign-on authorization. First, the web application will request an authentication token, then the user will request tokens from the ADFS server. ADFS server issues tokens containing a set of claims. If the claim matches the token provided by the user, then the website can allow access. This layer uses HTML, CSS, XML, JSON and general API security.

WEB TIER

Starting with this layer which is also known as web server layer which means all the block consisting of web pages, beans, APIs and/or SDKs will be stored in web server. More discreetly, it will store all the presentation web pages consisting of different web pages which will be accessed based on their security clearance of the user, but data access will be provided via these pages only after the clearance. Further, beans designed for accessing different data from the data source like in here for accessing the sales data we have Php Sales management bean. Similarly, we have managed login and Sales analytics bean for accessing data related to security credentials and their rights and analysis data along with trend realisation. Also, to mention these beans consists of simple logic mainly consists of service callings which will be managed with SDKs and APIs from the business server where consists of all the complex code and sensitive source code.

BUSINESS TIER

This tier is provided most of security where it is not publicly accessible like web tier where it can be said that all the back end crucial code will be stored with access rights to all the data sources. As the name suggests these four of beans will consists of respective complex code, where starting with Php Sales Management bean will consists of all the code in relation to adding, editing, recording keeping, tracking, history management, CSV generation and more which will be accessed based on the security clearance level which will be management by Php Security beans where all security sensitive data will be stored and will be made more discreet.

Next comes with Php Sales Analytics where the sales data will be presented in more graphical presentation with the help of R language which is popular for data presentation enhancing the possibility of up to the standards where there are

hundreds or even thousands of visual charts/graphs are present to search trend and thus will be helpful to select some of those which are relevant for this scope.

Then comes the cloud bean which will mainly consists of calling to most of the cloud services like SNS, RDBMS and files stored in cloud via SDKs where we will be using AWS cloud services for this project.

DATA ACCESS LAYER

This layer consists of RDBMS based database which consists of sales record, product record, inventory table and security record hence consisting of all the core data which is of company's significance value. These will be stored in AWS cloud which will be accessed via SDKs to carry out the data transactions as needed.

PERSISTENCE LAYER

The last layer will be the Persistence layer which will store the cache, User plug-ins and Services. Also, to mention, another component is the file storage for which we will be using AWS S3 storage where the client can store the data as much they can and will be charged accordingly based on storage consumption which is still 10-15 times cheaper and better than local storage which has its own issues of accessibility and security.

QUALITY MANAGEMENT

Software quality is defined as the degree by which the software serves its goal. It also means to deliver a project that is error free, easy to understand and accessible by the targeted users. As we are building a web application that will allow the users to manage their sales and inventory with the propose UI interface, we are aiming at developing a software whose quality considers the functionalities of the system, client satisfaction and delivery of the functional requirements.

We have narrowed down the quality characteristics into three main parts using the ISO 25010 model:

- **FUNCTIONAL SUITABILITY**
  This standard defines the degree with which a system adheres to its implied needs and specified functional requirements by the user. Two of its sub characteristics used by us are functional correctness and functional completeness which provide a structure for checking the functionality of the code.

- **USABILITY**
  It is about developing system that is effective, efficient, and satisfying. Usability defines the user experience and includes the basic aspects of the system that impact everyone and not disproportionally impact people with disabilities. We have explored more three of its sub characteristics that are learnability, user interface aesthetics, and operability.

- **SECURITY**
  It means that securing data and system features from any unauthorised access or any accidental situations. For our project we are going to focus on the confidentiality of the system.

FUNCTIONAL STABILITY

Quality Measure	Acceptance Criteria	Description/Requirements
1.Functional Correctness	<2 defects	The application should have as less defects as it can to provide better efficiency. For e.g.: The user must be able to add sales records with less than 2 error withing 2 secs.
2.Functional Completeness	>90% of functions are complete and work appropriately.	Most of the functionalities must be complete and work appropriately to achieve the desired aim of the software. For e.g.: The application must allow users to create, read, update, and delete sales records, generate CSV reports and provide stock updates.

USABILITY

Quality Measure	Acceptance Criteria	Description/Requirements
1.Learnability	Users can perform tasks using the system with < 2 assists.	This aspect defines how easy the users find the system to use. For e.g.: users must be able to generate CSV reports for sales record with less than 2 assists in less than 5 secs
2.Operability	< 2 fixes	It means that how well a software can work over its lifetime. For e.g.: user must be able to use the software in the desired environment with less than 2 fixes reported in a year.
3.User-Interface Aesthetics	All the aesthetics used are proper and attract user attention.	As the user are strongly influenced by the aesthetics they must be

		attract as much users as it can For e.g.: the application must use light colours background on dark coloured text to enhance readability.

SECURITY

Quality Measure	Acceptance Criteria	Description/Requirements
1.Confidentiality	Data accessible only by the intended user.	This states that the data should only be used by people that are expected to use it. For e.g., the system must allow only the authorised users to access the data.

REASONS FOR CHOOSING THESE STANDARDS

It is essential for the code to work properly for the software to deliver the expected feature. The company must be able to accurately enter records into the system before moving onto any other aspect therefore the “functional Suitability” characteristic holds a considerable amount of importance to the project and forms the basis of the functional requirements. The “usability” characteristic is an important aspect to define the success of the system. It can help users to complete task accurately and with any stress therefore it is essential to ensure good usability in system for user satisfaction and acceptance. Since “Security” has become a foremost thought for most of web application these days as hackers can always find a way to bypass and un-patch the vulnerabilities hence developing an application that protects user data is of more value and expected to be less at risk.

RESOURCES

The development team for this project includes 5 students from the SWE30010 Managing IT Projects unit. Each of the team member is committed to contribute at least 7 hours of each week in the whole semester period to work on this project. The following provides a brief description about each team member and their responsibilities in the project.

PARUL MEHTA

She is experienced in both front end and back-end development and has some experience of prototype and website designing. She has taken up the task to design the layout of the application and user interface. She will also be helping in programming the GUI features of the application. Moreover, based on her skills and knowledge she is helping the team to document the development of this project.

DHRUPAD THORAT

Experienced in Web Dev and in back-end programming frameworks. Responsible for project planning and co-ordinating the development team. He has taken up the task to assist in the technical development of the UI and the Web application. In addition to this, he would also be responsible for the documentation of the project.

HARKIRAT SINGH

Experienced in working with front-end development languages. Responsible for documentation of the project and programming of the application. Also, based on his experience of product testing, he will be responsible for conducting unit tests and user testing.

JAI RAGHUVANSHI

Experienced in Web application Development. Based on his knowledge of Data visualisation, Big Data and Prototyping, he will be responsible for handling the Datasets, generating visuals from data provided and creating prototypes for user testing.

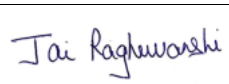
DILJOT SINGH

The discussed team member has experience in front as well as back-end dev where he will provide support via react frameworks to implement the entity framework for the project along with the other team developers. In addition to that, he will be responsible for cloud implementation, database setup and SDK support for cloud services to the application.

Approval Signatures:

Project Team

S.No.	Name of student	Student Id	Signature
1	Parul Mehta	102601007	Parul Mehta
2	Harkirat Singh (Harry)	102639066	Harkirat
3	Dhrupad Thorat	102634728	Dhrupad Thorat

4	Diljot Singh	102408774	
5	Jai Raghuvanshi	102645814	

Project Sponsor

Tutor’s name (on behalf of the client)	Signature:
Harsharan Kaur	