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# 1. Introduction and Executive Summary

Our team has been assigned a project to design and implement a website and a corresponding android application for mobile. The project provides an easy way for the user to maintain various personal health-related data.

Our team has talented brain that serve the client to fullest. The ultimate skills meet the client expectations to its best.

The goal of the project would include a website and android application for customers that is simple and easy to use and meets client’s requirements in the budget provided.

We're a team of six, me and five developers. The feasibility study is being considered and the project will include features where user can register themselves, keep track of their diet, wellbeing and medications. User are allowed to locate a nearby store by and can navigate themself to the store or, according to the convenience, order product online. User will also be provided with an option to communicate with health counselor in various ways and will also be allowed to keep a note of all prescription and descriptions in the system. User data will be protected and stored in a database, allowing only the application to be used only by an authorized user.

Using Agile Scrum methodologies, all the project requirements will be addressed. Agile is an iterative technique whose main objective is the satisfaction of consumers. In an agile environment, we create a product and validate it periodically so that we do not end up with errors while we are close to deadline.

The application will be hosted on a cloud platform such that it is available for every customer. User data will be stored in a database system. It would be easy to manage and work with user data in this manner. Servers will be used to process incoming traffic, as the load on the servers increases dynamically, Load balancing will be carried out automatically.

The availability of hardware devices is one of the problems we might face. The delivery time for a specific hardware may be higher than the expected time, given the current situation where the

pandemic has come into play. Nevertheless, by using a program that acts as an alternative to the hardware can resolve this problem.

Altogether the project would be complete within a period of three-month time. Our design team will come up with a design that would match with all the criteria specified by the client. All the software and hardware needed for this project will be purchased once the design is

available. Following that development process would begin, Both the teams, Web Developer and Android Developer will work closely with each other. A Month before deadline product will be tested regularly prior to the final launch.

The portal and framework will be ready with a user manual for use after running several tests. Ultimately, in the end the we will deliver all the modules to the client. User’s will be able to monitor their health and contact a doctor without wasting any time as everything website or application will be available to them.

# 2. Objectives

## 2.1 BUSINESS Objectives

The following is the list of business objectives:

**Objective 1**: Login – project will be secure; users must register and login before use.

**Objective 2**: Vital sign – System will maintain all vital signs such as Blood pressure, glucose level, Cholesterol.

**Objective 3**: Client profile – is accessible both from the website and android app.

**Objective 4**: Medication -- System will keep track of medication the patient is taking and time to take it.

**Objective 5:** Diet — System will keep track of client’s food intake, calorie count and their weight.

**Objective 6:** Notes — System will allow individual to save prescriptions, diet descriptions, health articles.

**Objective 7:** Security — System will be secure and prevent unauthorized access.

**Objective 8:** Search — System will provide search capability to find general data.

**Objective 9:** Monitoring system — System will alert user when medication is about to be expire.

**Objective 10:** Communication — Will provide a way to communicate information with one another.

**Objective 11:** Payment method — System will provide methods for patient to make payment for the services they have used.

**Objective 12:** Cart — Client can save the product they need for future use.

## 2.2 SYSTEM Objectives

The following is the list of system objectives:

**Objective 1**: Both web-based and android application will be provided

**Objective 2**: Google Search will be integrated into the system for search

**Objective 3**: Messengers and emails will be provided for contact, where user can write, call or send an email.

**Objective 4**: Two factor authentication will be integrated for security.

**Objective 5**: Google pay, and Apple Pay will be integrated for payment.

**Objective 6**: Servers will be used to handle the network traffics.

**Objective 7**: Mongo Atlas will be used to store and access data.

**Objective 8**: Cloud based architecture will be used to host the application.

**Objective 9**: Maps will be used to find nearby stores.

**Objective 10**: alarm system will be integrated to notify patient for taking medication.

**Objective 11**: Notes option will be given to save diet descriptions, health articles.

**Objective 12:** Oximeter and pulse meter will be provided to monitor user health.

**Objective 13:** Translate will be used to provide multi-lingual application.

**Objective 14:** User manual will be incorporated within the system for customers awareness.

# 3 Project Feasibility, Risks and Metrics

Project feasibility and metrics are summarized below:

## 3.1 Project Feasibility Concerns

**Market readiness**: check if the project is market ready. There are many such application available in the market, we need to add functionalities that would make the application appealing.

**Hardware**: Different devices will have different hardware running on them. For example, two mobile phones may have different screen resolutions, screen size etc. we need to account all of this to ensure the application delivers a personalized experience to each user.

**Software**: There is constant update in software happening to make the system run smoothly. We need to build an application that is compliant with any software on which it runs.

**Scalability issue**: when the load increases (i.e. more traffic on the page) additional servers needs to be added to balance it. Extra Server could end up costing more. We need to build an infrastructure that helps manage traffic, while handling less server load.

**Security issue**: User information and data are stored in database, so there is a constant risks of information leaks, the need for security is greater than ever. Adding two factor authentications will make the application more secure thus keeping the data safe.

**Resource**: The application depends on infrastructure, such as servers. There may be a situation in which servers may be down and the whole architecture can freeze. In order to avoid this, we need to closely track the system.

**Advertisement**: Not many will think about an application that will track their welfare on a daily basis after the pandemic is over. User numbers can decline on a daily basis. This pandemic season will be the perfect time to market the application and build user popularity. We need to incorporate features that will meet the needs of the user in order to achieve this.

**Linguistic**: Application will be launched in different region of the world. We need to incorporate features where the language inside the program adapts to the local language to make the application efficient.

**Cost:** Additional hardware or software necessary for the project to complete may entail additional costs. We need to build a project that meet all the requirement with minimum use of additional resources.

## 3.2 Project Risks

**Government Policy**: There might be sudden changes in government policy, as development stage proceed the application can becomes more and more complex, it is vital that we closely monitor such changes as it would be difficult to make sudden changes.

**Employee**: When a developer leaves due to unavoidable conditions. This can cause delay, of an entire project. We need to ensure team member share knowledge so that another person can continue to work on project.

**Sudden Growth in Requirements:** Resources that were not previously known will create a last-minute challenge to reaching deadlines as the project progresses.

**Breakdown of specification**: During the development phases, integration of code can be a problem due to miss communication between the developer causing unnecessary delay in progress of the project.

**Productivity Issues**: Developers may sometime tend to take things at ease to begin with. As a result, there might be a significant loss of time while completing the project.

**Shortage and Late Delivery of Hardware Devices:** The industry may have less hardware availability, given the current situation, and the hardware may take more time to be delivered than anticipated, causing needless delays in production.

**Server Failure:** Server normally needs three to four days to be up and running while the server is down. In this project, losing time is unaffordable. To stop such a situation, we need to closely track our servers.

## 3.3 Project Metrics

**Users:**  forecast of the number of users using the system, number of units loaded or sold from the day of release

**Finishing on time**: Project plan followed the schedule and was able to meet the deadline without having to compromise on anything.

**Satisfaction Level of Customers:** End user provided a good review about the application. A quality review can evaluate whether our product meet the standards set as specified by our quality plans.

**Cost**: Compare our actual net budget with our initial estimated cost. For example, if we spend less than the initial estimated cost without losing quality, then our product did well.

**Productivity**: Compare work done previously to today’s work done. That is, how much work is being done on a regular basis.

**Actual Cost**: A rough picture of the project's progress can be provided by carefully tracking the amount of money invested on the project.

**Statistics of number of users**: If number of new user increase on a regular basis then we can be sure that something good was delivered.

**Client Satisfaction**: If the client is satisfied that all his minimum requirements were fulfilled within the given budget.

**Return of investment**: After the product is launched, relative to the money spent, we can look at the amount of sales received.

**Schedule Difference**: We can have a rough idea about the success of the project by looking at the schedule. Is the project running ahead of time or behind of the planned budget?

**Employee Satisfaction:** When the developer is happy by the outcome of their product they built. Happy employees mean a happy (successful) business.

**Sustaining the change:** Application developers face many challenges during application development life cycle. With all the risk involved if the project was complete before deadline without any compromise in quality and was able to meet client’s satisfaction. Then the project would be considered successful.

# 4 Project Scope and Process Model

Project scope includes the following:

1. Login: User must register, only authorized user will be allowed to use the product.
2. Vital signs: Maintain all vital signs such as Blood pressure, glucose level will be monitored.
3. Medication: notification or alarm system to alert the user for medication intake.
4. Diet: Allow user to keep track of their food intake, calorie count and their weight.
5. Notes: Allow user to save their diet descriptions, prescription in system.
6. Security: To prevent unauthorized access. This is particularly important in order to avoid falsifying information or to avoid the risk of leak in user information.
7. Search: User will be allowed to search for nearby store and other information’s.
8. Monitoring: Application should inform user that medication are not consumed or should keep track of user health rate on a daily basis.
9. Communication: Email and messenger options will be provided for communication purpose.
10. Training Customer: A brief test plan and user manual must be provided with the final product.
11. Resource’s: All the hardware equipment’s and software tools required for the application.
12. Team: A group of hardworking developers.
13. Payment methods: Allow user to make a payment for services that are used.
14. Cart: User can save product for future use.
15. Understanding: User manual and online help features
16. Options to book an appointment to meet doctors over call.
17. Home delivery of the product purchased in case it is difficult to travel.
18. Billing and invoice would be readily available for future references.

The following is a list of items out of scope:

1. Post project maintenance
2. Tax Issues.
3. Vacation and social and health insurance costs.
4. Contract negotiation and legal concerns.
5. In-app purchases and other subscriptions.
6. Advertisements inside the application.
7. Feedback option for particular store or product.
8. Addition of multiuser account.
9. Make appointment to visit doctor in person.
10. Guarantee or warranty on product purchased.
11. Login or registration via social media.

## 4.1 Project Process Model

Agile Model:

We have chosen agile model over traditional model throughout the product development lifecycle. Agile model is a combination of iterative and incremental process model whose primary focus is customer satisfaction. Iteration involves team working on Planning, Requirement Analysis, Design, Coding and Testing.

Agile model believes that every project needs to be handled differently. Iterative approach is taken and working model is built over it. Each build is incremented, and the final build holds all the features that satisfies the client requirements.

Diagram illustrates the agile model (source internet)

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Agile development process includes:

* Individuals and interactions – In agile development motivation is important, as are interaction like pair programming, teamwork.
* Working Software – Demo of working software is considered to be the best mean of communication with the customer.
* Responding to change – Agile development is focused on continuous development and quick response to change.

Agile development methods is used over other traditional models like waterfall model because agile is based on adaptive software development method. Whereas other approach is based on predictive approach.

Predictive method entirely depends on the requirement analysis and planning done in the beginning of the life cycle. Any change that need to be incorporated later on goes through a lot of cycle.

Agile uses adaptive approach, there is a detail planning and also there is clarity on future tasks. Team adapts to changing requirements dynamically. The product is tested frequently minimizing the risk of major failure in the future.

Client satisfaction is the main priority of agile methodology. It is a very realistic approach to software development. Suitable for changing requirements given the flexibility to the developers.

We use agile scrum framework. Scrum framework helps team work together. Scrum is a iteration of plan, build, Test and review. Team working in a scrum environment is extremely transparent. Everyone is aware of what the other member of team is doing.

Reason why we choose scrum is because with scrum work is done by development team simultaneously rather than sequentially. Because of this everything is flexible and changeable during the life cycle of the project.

There will be frequent inspection point built into the framework to allow the team to inspect for an error before the final submission.

We can prioritize the task to be completed, that usually means the task to be completed first will probably affect the return on investment the most. Change can be supported and integrated into a project during any given time of life cycle.

Team in a scrum environment constantly investigate how things are going and revises those items that do not seems to make sense.

## 4.2 Project Context

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# 5. Assumptions and Constraints

## 5.1 ASSUMPTIONS

The following is a list of assumptions:

* Assumption 1- We assume that all our users are over the age of 18.
* Assumption 2 - Post project maintenance issues will be ignored after the product has been delivered to the client.
* Assumption 3 - Tax related Issues based on government policies of different region will not be considered.
* Assumption 4 - vacation and social and health insurance costs are not taken into account while billing. All the charges would be shown without making any consideration to insurance.
* Assumption 5 - contract negotiation and legal concerns are not being consider while developing the product.
* Assumption 6 – All our team member have the required skill to complete the project.
* Assumption 7 - We assume that user will have active internet connection and memory available on the device.
* Assumption 8 - We assume that all our resources are available and are in good condition.
* Assumption 9 - Cost of the product might change on a daily basis inside application.
* Assumption 10 - We will have access to all the resources that is needed for the development of the product.
* Assumption 11 – Suppliers will deliver all the required products on time.
* Assumption 12 - The scope of the project will not change through out the development life cycle.

## 5.2 CONSTRAINTS

The following is a list of constraints:

* Constraint 1 - Time constraint: The project is very aggressive. The product needs to be completed within a span of three months. Which means extra efforts needs to added by developers in-order to have bias for error and for the product to be tested before the final roll out.
* Constraint 2 - Cost Constraint: Need to develop both android application and web application for the product. Product must be developed with in the given budget. All the hardware and software cost, testing and development must be managed with in the given budget whilst maintaining the quality of the product.
* Constraint 3 - Resource constraint: We have a small group of developers to develop the product and test it before its final roll out. Documentation need to be maintained by every developer incase developer leave job due to unavoidable condition, new member or already existing member can use this to progress in the product development life cycle.
* Constraint 4 - Quality Constraints: The product must be fully functional with in the given budget and time period and should also meet client expectation and user satisfaction.
* Constraint 5 - Market Constrain: Finding the right market for the application is needed. the application is best suited to the condition around. Delay in marketing may lead loss of customers.
* Constraint 6 - Scope: The product must contain all the functionality specified by the client. Integration of these functionalities might be a cause of problem as they will be developed by different developer. In such case we might phrase the product functionality to meet the requirement of the client.
* Constraint 7 – Server: Enough servers are not available to handle load when the number of user increases. As the traffic increases the load on server will increase and this might cause server to go down.
* Constraint 8 – Hardware: Hardware must be bought that helps in checking users well-being. Adding too many devices may cause the product to go outside budget. In order to maintain that very few devices will be used.
* Constrain 9 – Product may not work on specific infrastructure. The device is assumed to have an active internet connection and good storage option availed in order to use the product.
* Constrain 10 – Sustainability Constraint: The product must be sustainable with in the given budget. For the product to last long in the market best quality resources must be used.
* Constrain 11 – Customer Satisfaction Constraint: If the cost for building a product turns out to be more than expected than some of the functionality will be forced to trade off. Perhaps sacrificing the customer satisfaction.

# 6. Project Tasks, Schedule and Cost

**Estimation table**

|  |  |  |
| --- | --- | --- |
| **Number** | **Factor** | **Measure** |
| 1. | Project Name. | Personal Health Monitoring system (PHMS). |
| 2. | Project Type. | Application. |
| 3. | Project Duration. | Three Months. |
| 4. | Project Start Date. | September 10, 2020. |
| 5. | Project End Date. | December 10, 2020. |
| 6. | Platform. | Android Mobile and world wide web. |
| 7. | Maximum Team Size. | 6 members. |
| 8. | Project Manager. | 1 member. |
| 9. | Developer Team Size. | 3 members. |
| 10. | Testing Team Size. | 2 members. |
| 11. | Average Design Time. | 2 months. |
| 12. | Average testing time. | 1 month. |
| 13. | Requirements. | Hardware and Software. |

Estimation table above specifies estimated start date, project duration, number of members in a team and much more.

**Cost Estimation Table**

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement** | **Cost per Requirement** |
| 1. | Project Manager | 100$/hour. |
| 2. | Developer. | 70$/hour |
| 3. | Testing. | 70$/hour. |
| 4. | Server. | 0.8$ /hour. |
| 5. | Database. | 0.5$ /hour. |
| 6. | Cloud Utilities. | 1.2$/ hour. |
| 7. | Hardware. | 317$/Three Month. |
| 8. | Testing Software. | $75/three month. |
| 9. | Building/Utility charges | 25% of total salary. |
| 10. | Health related charges | 25% of individual salary. |

Cost Estimation table above gives a clear explanation about the entire budget of the project.

* Considering the above criteria, the project will be completed over a span of three months. From September to December. The project is scheduled to begin on September 10, 2020 and to be finished by December 10, 2020.
* A team of 6 members will build the product. There will be 5 developers to perform testing and development, besides the project manager.
* The product will be available to consumers at a lower price as the cost of constructing the project is estimated, taking into account the time needed to build the project. The project will be completed within the client's budget estimate given.
* With the total expenses calculated, if the product were delivered to the consumer with a three percent raise, the profit ratio of the company will grow in a proportion of one to two.

# 7. Conclusion and Recommendations

To develop a Personal Health Management System (PHMS), our team of six has been approached. The proposal has a duration of three months. From September to December, beginning from. We are asked to create a Web and Android application that records a human being's well-being.

Our team has brilliant minds that truly represent the customer. They have the ultimate skills that match the needs of the client to their best. We are therefore optimistic enough to finish the project within the deadline specified. Our team's aim is to develop a website and android application that is simple and easy to use for customers and meets the requirements of the client in the budget offered.

We have decided to consider the feasibility report for the project's development. Some features like login, medication, diet, notes, search, communication and much more will be included in the application. We have intended to use Agile Scrum methodologies to answer all project specifications in this manner we will create a product that do not end up with errors close to deadline.

The program will be hosted on a cloud platform. All user data will be maintained with extra security measures will be added to avoid data leakage. Also, in the worst-case situations, all the requirements need can be taken care of.

The project will be finished entirely within a span of three months. With a user manual for customers, the portal and system will be ready to utilize. Basically, in the end, we would provide the client with the right software that meets all their requirement.

# Appendices

A screenshot of a cell phone

Description automatically generatedAmazon Web Server Cost:

Database:

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