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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

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DOCTOR APPOINTMENT MANAGEMENT SYSTEM

1. INTRODUCTION

Globally, the field of medicine and health care sector is the backbone and very indispensable, fundamental and essential part of human lives. Hence, any error committed in the medical field and clinical services might lead to the conclusion of life. Nowadays, technology has been used substantially in every field. Technology has been flourishing and prospering in every aspect. With that being said technology has been used broadly and widely for the betterment of various operations and services in the field of healthcare and medical lines.

Booking appointments with the doctor is one of the compulsory clinical services that have been automated. Patient scheduling is one of the most important factors and it cannot be underestimated. A good appointment scheduling system uplifts patient satisfaction and as such, is a chief factor of medical services. The efficiency of health care delivery hinged solely on the effectiveness of the Patient scheduling system. It lessens clinical mistakes among specialists and furthermore diminishes the quantity of unsatisfied patients. Appointment systems have been extensively used to reduce patient waiting times and waiting-room congestion. Such systems have the potential to increase access to medical resources while reducing cost, as well as staff and patient dissatisfaction derived from unmet schedule constraints (Lekan, 2020).

Taking these into account, for the final year project I have decided to develop a web based online booking application, that is, a doctor appointment management system. This app will not only allow patients to book appointments staying at their homes through an online medium but will save their time to a great extent. With the help of this app, users will be able to book the appointment, will be able to look up to the doctors, cancel their appointment, check their booking status.

1.1 Problem Scenario

- People have to visit the hospital and wait for their turn and they have to stay in a queue for hours.
- Despite having to stay in a queue for hours, some might not get the tickets and it can be a huge waste of time.
- If the people are not pre-informed or uninformed about the doctor not being available, they might not get the service despite visiting the hospital.
- There are some websites and applications that claim to show the proper data and information but lack the essential features and do not show the proper information about doctors. Also, the UI is not user- friendly.
- It is cumbersome to add doctors and new staff manually.

1.2 Project as a Solution

In order to tame the mentioned problems above, this web app (doctor appointment management system) will be developed. This app can help patients to book the appointments, that too with the touch of fingers without having to visit at the hospital and wait for their turn in a queue for hours.

The 4 major roles in this app are:

Patients:

- Register themselves.
- Login themselves.
- Book and cancel the appointment.
- Check the booking status.
- Give review and ratings.
- Upload the report.
- Send the prescriptions.

Receptionist:

- Adds appointment details.
- Adds Patients' details.
- Views membership.
- Views pending bookings and completed bookings.
- Generates report.

Admin

- Add or assign the doctors.
- Adds Staff.
- View all members' details.
- View all booking details.

Doctor

- Register themselves.
- Login themselves.
- Views ratings and reviews.
- Reviews patients' reports.

2. AIM AND OBJECTIVES

2.1. Aim

The main aim of this project is to develop a feasible, effective and reliable web based online booking appointment system to book the appointment and to improve the quality services and to reduce the waiting time.

2.2. Objectives

- To do thorough and intense research regarding the relevant topics and the tools which will be implemented in the app.
- To acknowledge different products to make wireframes and GUI.
- To develop a web application with all the features included.
- To provide the convenient way of appointment reservation for users.
- To give staff an easy way in doing information maintenance and updates.
- To learn about web platforms thoroughly.
- To write the report about the application and the tasks accomplished.

3. EXPECTED OUTCOMES AND DELIVERABLES

After the accomplishment of this project, a web app which assures the proper booking along with the required details of doctors is expected. The features are divided as the modules which are listed below:

3.1 Primary Features

3.1.1 Online Appointment Booking Module

In order to book the appointment, patients have to book the ticket first. They can also cancel their appointment and check their booking status in this module.

3.1.2 Online Doctor Profile Listing Module

Patients can look up to the doctor's profile which will contain doctor's information and they can book the appointment by looking up to their details. The updated information about the doctor and clinic which can be seen by the patients to make informed decisions are handled by the admin.

3.1.3 Appointment Scheduling / SMS Reminder Module

Patients will get reminded regarding their appointment through this module. A reminder message or notification will be sent to them in their mobile which makes it feasible and efficient at the same time.

3.1.4 Online Payment and E-Billing Module

The online payment procedure will be shown and a bill will be generated after filling up the details.

3.1.5 Membership Discount Module

Once the patients use this application, they are considered as a member and they can get a certain amount of discount while booking the appointment.

3.1.6 Review Module

In this part, patients can leave their comments and give their review and ratings to the doctors.

3.1.7 Email Campaign Module

Receptionists can upload images as campaign advertisements on the patient's home page about the information on check-up camps, blood donation programs, health tips, free checkup camps, festival wishes and so on.

3.1.8 Generate Electronic Medical Record (EMR) Module

The receptionist can store medical history of patients, their treatment details, diagnosis and investigations. The system will upload x-rays, lab records and other medical images. This module will be convenient to those patients who forget to bring their prescription report card. Hence the receptionist can retrieve this information anytime through this web application.

3.1.9 E-Prescriptions

E-Prescriptions help patients to send their prescription reports to doctor. The doctor can give them prescription review and provide medicine information respectively where prescription is stored digitally at the time of emergency case or unavailability of doctor in the clinic.

3.2 Secondary Features

3.2.1 Adding notes module

Receptionist can address the meeting schedule of doctors and send them notification.

3.2.2 Chat box

Users can send the message if they have any queries and questions.

4. PROJECT RISKS, THREATS AND CONTINGENCY PLANS

As all the things have pros and cons, this app will also have to cope up with certain risks and threats and the points mentioned below are the risks.

- The app might not cover all the clinics and hospitals of Nepal.
- As this is my first time working on a web app, it might get hectic and complex to administer and execute all the features.
- One of the major risks is that this app might take a long time to reach up to the people and use it.
- The resources provided on the internet might not be adequate enough in order to accomplish the project.
- It might get difficult in designing and implementing the UI, and implementing the backend.
- All the users might not be comfortable enough to use a web application, so the app might not be compatible for some users.

In order to prevent and minimize the above risks, the contingency plans mentioned below will be prioritized.

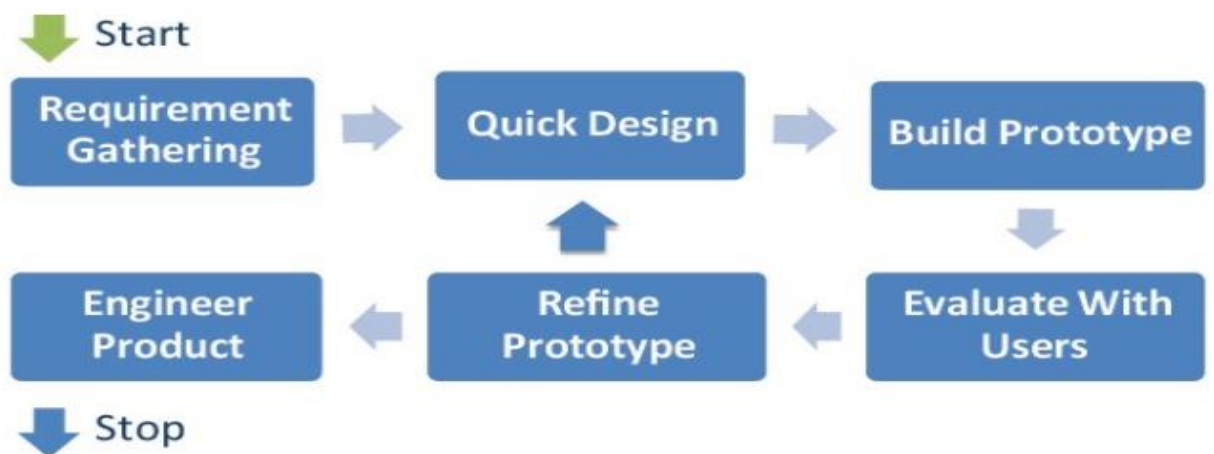
- Although this app might not cover all the clinics, this app can be implemented in other clinics in the future.
- To do immense and thorough research regarding all the features and implement it.
- To convince people to use the app by giving proper details and information about the app and if possible by promoting it to some extent.
- To consult and discuss with the respective supervisors regarding any confusions and if in case the resources are unavailable in the internet.

5. METHODOLOGY

5.1. Evolutionary Prototyping

The methodology that has been chosen for this project is evolutionary prototyping methodology. Prototyping methodology welcomes any kind of changes and the product can be developed accordingly considering the changes. The new features could be added, some old features which were considered could be removed in order to make the project more effective, efficient, practical and market ready. Also for developers, it is one of the top choices as it makes developers easy and feasible to develop the product and make changes as required.

Evolutionary prototyping is a software development method where the developer or development team first constructs a prototype. After receiving initial feedback from the customer, subsequent prototypes are produced, each with additional functionality or improvements, until the final product emerges (SpringerLink, 2020).



Prototyping Model

Evolutionary Prototyping Model

Figure 1: Evolutionary Prototyping (prototypeinfo, 2020).

6. RESOURCE REQUIREMENTS

6.1. Software Requirements

- **HTML, CSS, JavaScript, jQuery** and **Bootstrap** will be used for the front-end.
- For the back end, **Laravel** will be used which is the **PHP** framework.
- **MySQL** will be used for the database.
- **Balsamiq** and **Photoshop** will be used to make wireframes and GUI.

6.2. Hardware Requirements

- PC with windows 10

7. WORK BREAKDOWN STRUCTURE

A Work Breakdown Structure is a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. The Work Breakdown Structure is developed to establish a common understanding of project scope. It is a hierarchical description of the work that must be done to complete the deliverables of a project (Paradigm, 2020).

Given below is the work breakdown structure:

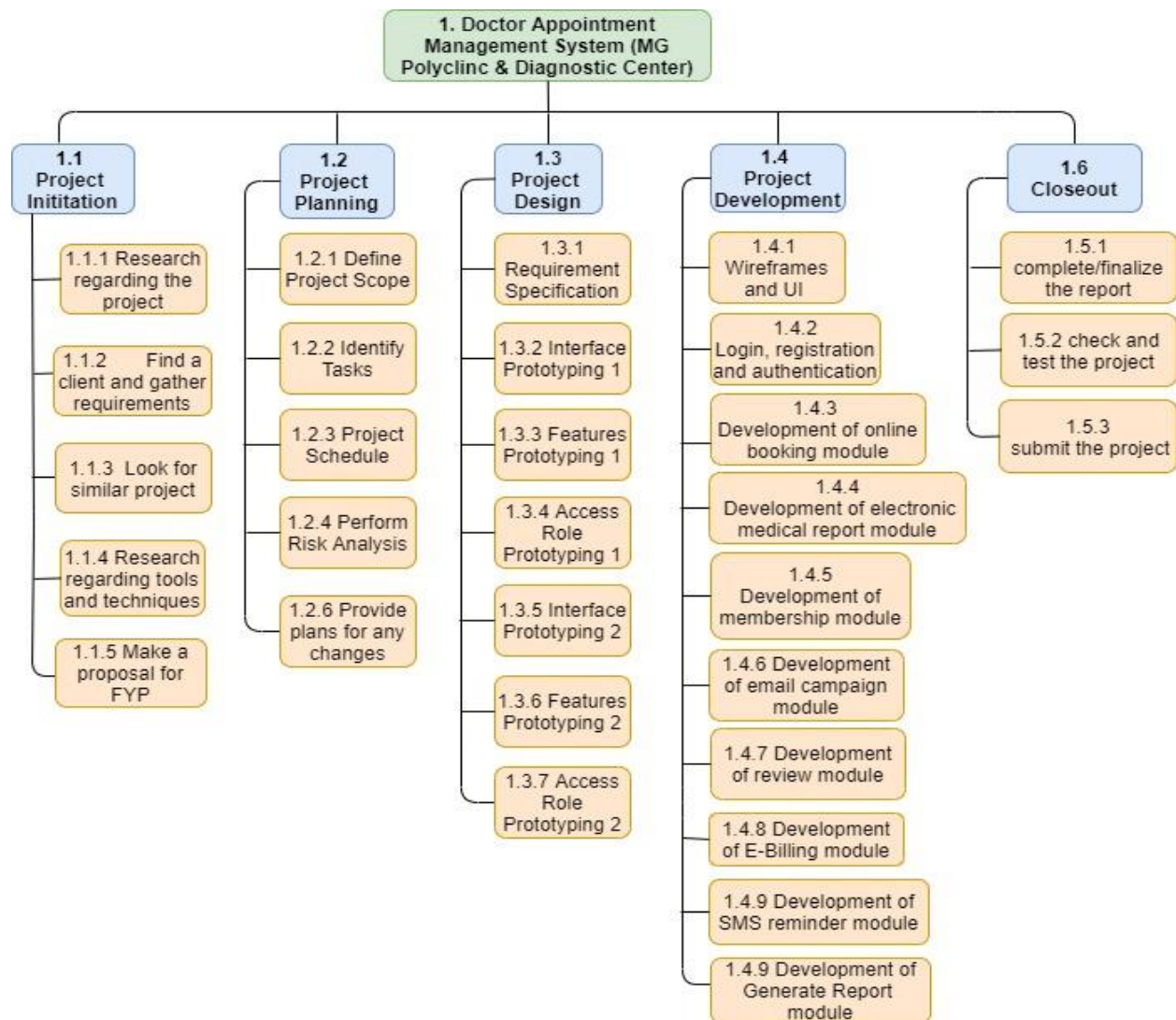


Figure 2: Work Breakdown Structure

8. MILESTONE

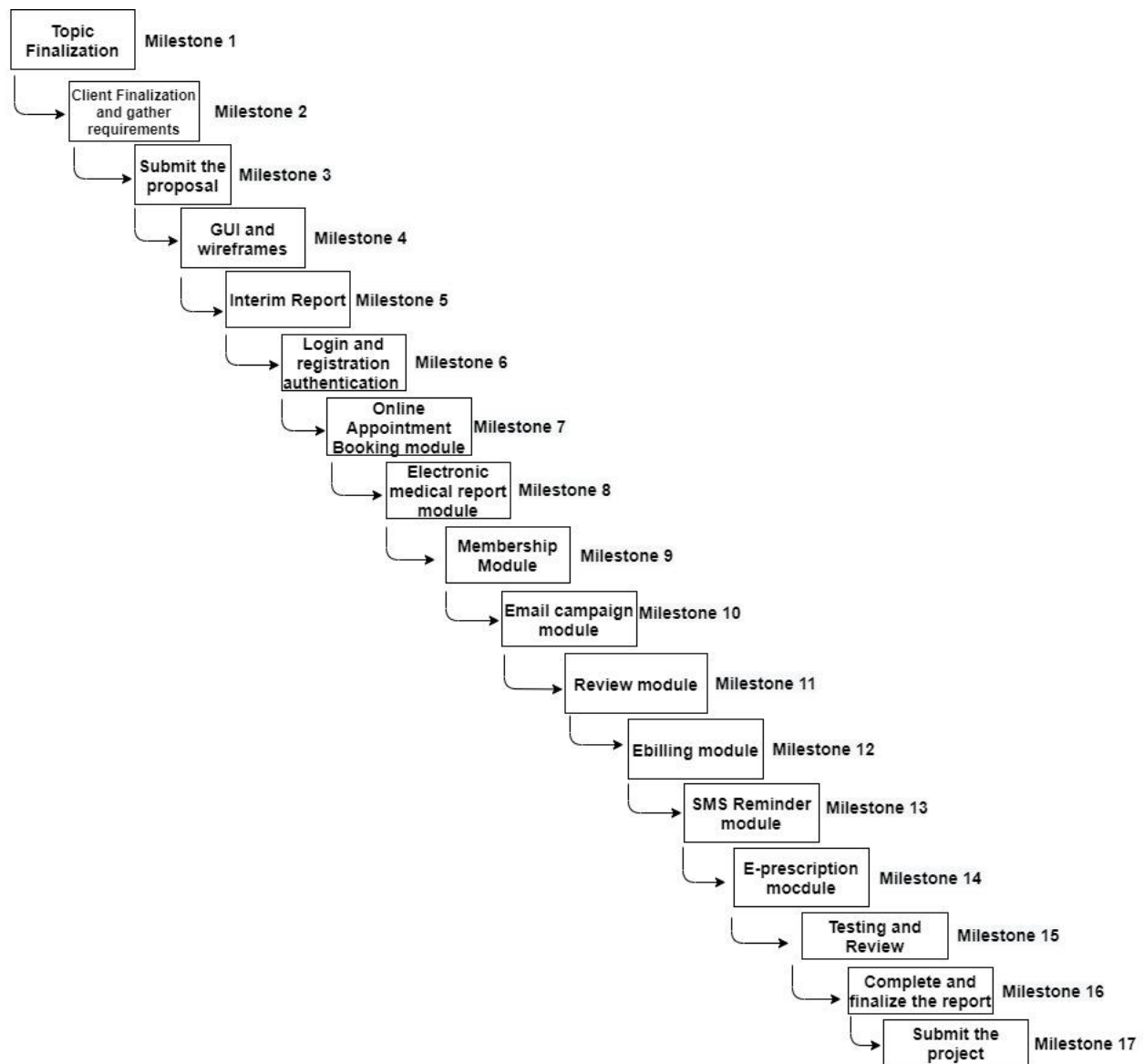


Figure 3: Milestones of the project

9. GANTT CHART

A Gantt chart is a graphical depiction of a project schedule. It's a type of bar chart that shows the start and finish dates of several elements of a project that include resources, milestones, tasks, and dependencies. The Gantt chart is the most widely used chart in project management. These charts are useful in planning a project and defining the sequence of tasks that require completion. In most instances, the chart is displayed as a horizontal bar chart (Investopedia, 2020).

Given below is the Gantt chart of my project.

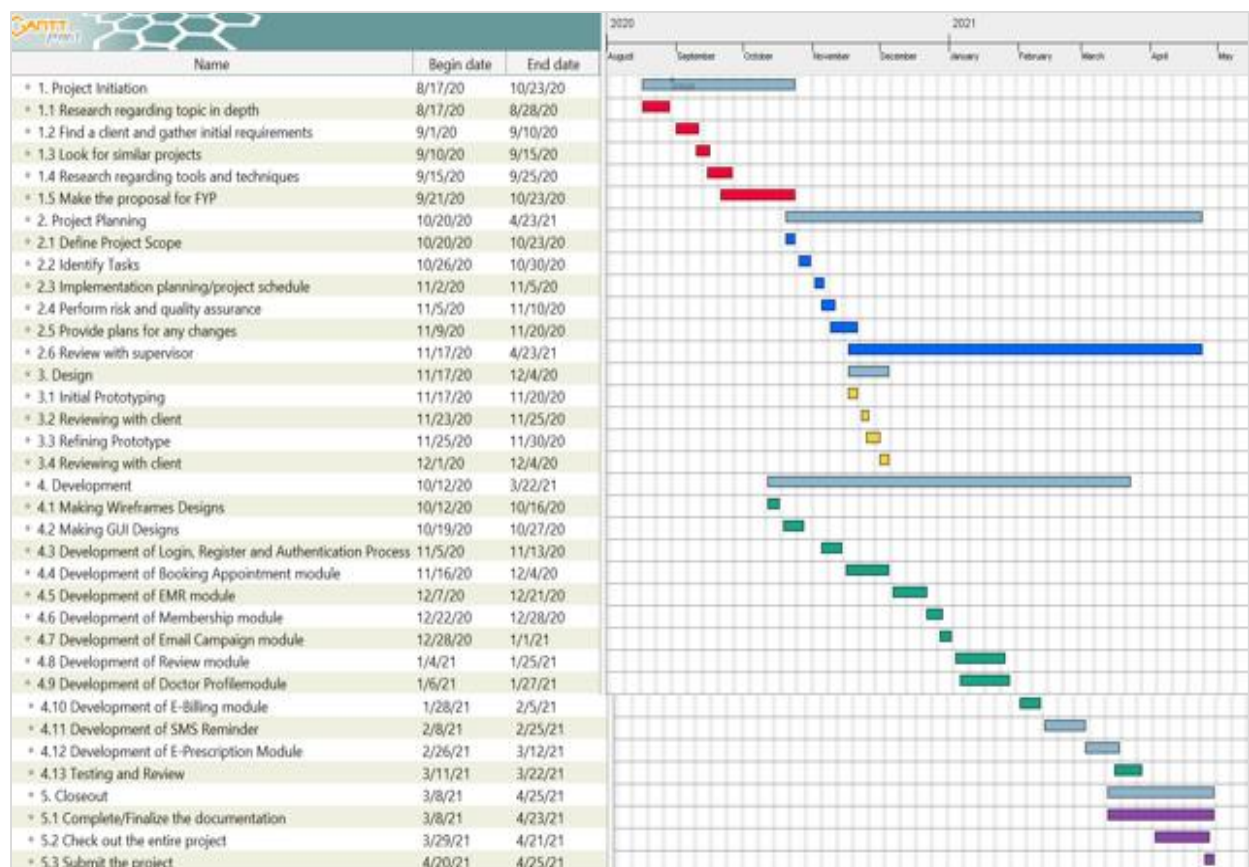


Figure 4: Gantt Chart

10. CONCLUSION

To sum up, this application specially focuses on making people's lives much easier. I decided to make this app as the medical sectors, hospitals and clinics are the most important and crucial parts of human lives. To complete this project, cent percent effort will be given with dedication and determination. Research will be done from the very scratch and will be implemented in this project. I am eagerly looking forward to working in this project and the knowledge and experience gained from this project will surely help me in my future as well and it will establish me as a web app developer.

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