Proposal

For

Second Year Project

Bachelor of Science in Information Technology

Online Doctor Appointment System(Detap)

Submitted by

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Read carefully before filling the form.

1. Please do not alter the layout of the application form. Information must be filled in the spaces provided, under set format.
2. Guidance notes in various fields should not be deleted.
3. Required information should be duly filled in the specified fields.
4. Required heads/fields which are not relevant to the project should be marked **N/A** (Not Applicable) or left blank and should not be deleted.

Guidelines and Forms

Submission Procedure

Duly filled proposal forms completed in all respects should be submitted in form of soft copy and a hard copy to project guide and project coordinator. On receipt of the applications the proposals will be evaluated by reviewer panel and proposal would then be defended by student groups. The project group may need to revise the proposal in light of the evaluator's recommendations.

For further information, please contact:

Project Coordinator

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Note: To update the table of contents, right click in the table and select '*update field*' and then select 'Update Entire Table'.

Application for Final Year Project

1. Project Identification

A Reference Number:

(for office use only)

B Project Title:

C Project Internal Guide:

Name:
Designation:
Organization:
Mobile # : Tel. # :
Email:

C1. Project External Guide:

Name: **NA**
Designation:
Organization:
Mobile # : Tel. # :
Email:

C2. Student Group Lead:

Name:
Roll No:
Department:
Mobile # : Tel. # :
Email:

D **Organizations Involved in the Project:**

(Please identify all affiliated organizations collaborating in the project, and describe their role/contribution to the project.)

D1. Industrial Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

D2. Academic Organizations:

#	*Organization Name*	*Role / Contribution*

D3. Funding Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

E **Key Words:**

(Please provide a maximum of 5 key words that describe the project. The key words will be incorporated in our database.)

- Doctor
- Appointment
- Hospital

F Research and Development Theme:

The Application **"Detap"** is developed mainly to help patients to make appointment with doctors in an easier way despite having to stand in queue.

G Project Status:

(Please mark ☑)

q New ☑ Modification to previous Project

☑ Extension of existing project

H Project Duration:

Expected Starting Date:

Planned Duration in months:

2. Scope, Introduction and Background of the Project

A Scope of the Project:

A Scope of the Project:

User scope : Gyalpozhing BHU, Mongar.

Future Scope : JDWNRH (Jigme Dorji Wangchuck National Referral Hospital)

System features are given below:

Receptionist(Admin):

Receptionist needs to login with username and password and in the his home screen, he can see the basic functionalities of Receptionist. He can view the registered doctors and patients. He can also view the patient's request and doctors requests and he will confirm the patients and doctors requests.

Doctor:

Doctor need to be registered by giving the necessary details like category, timing, etc. After registering he need to log in and in the home screen he can view the basic functionalities. He can view the patient request forwarded from admin and he can approved or cancel

Patient:

The patient needs to be registered and log in after logging on he can search for the doctor by giving the category, the reason or problem. Basing on the doctor availability the Receptionists will confirm the booking request and will send to message that the booking is confirmed.

Home: Any user can view the first page without logging into the system. There are three division namely; Doctor, Patient and Receptionist. The Receptionist can view or have access to the overall profile (details) of doctors, and patients. The doctors can also view the details of the patients and patient can also view the details of doctors and their status.

Registration: The patients will register with the system to check in for the follow up checkups with the respective disease doctor of the department. The doctors and receptionist should also register with the system.

Login: The doctors, receptionist, and patient will login after registration with the system in order to make changes. They should login with the valid details.

Update: The Receptionist will update the overall the doctors' schedule and department which are not in use.

Search: The patients can search for the doctors they would have to visit based on the health issues suffered, of different department and fix the appointment accordingly.

B Introduction (Project Background and Literature Review, Current State of the Art):

(Detailed summary of what all has been done internationally in the proposed area quoting references and bibliography. Please note that this section demonstrates the depth of knowledge of the project team and builds the confidence of the evaluators about capability of the team in achieving the stated objectives.)
(Please describe the current state of the art specific to this research topic.)

Project Background:

As we know that health is very important to every individual which is why the universal quote comes, "Health is wealth" and so does the hospital play a very crucial role in our daily life. Hospital is a place where the patients are given adequate and appropriate treatment with specialized nursing services and advanced medical equipment working for the better health of the patients.

Citing an example - of the current scenario of Bhutan, the very stage where covid-19 hits the nation; Let say if there is no hospital to treat or cure the infected people then it is obvious that the virus will rapidly spread to all the people living in the country which does not only affects the country spiritually but also makes it financially unbalance or unstable. Hereby, marking the importance of the hospitals and the improvised schemes opt in the medical sector.

Yet, we are again never sure that people living around would never fall sick, ill or suffer from any kind of diseases or not experience health issues and when it happens, people have nowhere to go but hospitals where they can get free medical treatments. Moreover, when people visit the hospitals it's not just one person visiting the hospital in a day, so many people coming and visiting the hospital to the most leads to delay in treatments or checkups which can be proven severe at times, encouraging for an updated and advanced version of the existing systems.

In manual system, patient has to stand in queue to get an appointment which consumes a lot of time. Furthermore, if the doctors cancel the appointment due to some emergency reasons, then a patient who has an appointment with the doctor will not know about the cancellation of the appointment. These people will only come to know about the canceled appointment when he or she visits the hospital. So, in order to reduce the complications and to save the patient time, we have our system – **"Detap"**, which will fix the appointments and update the doctor-patient schedule.

"Detap" is the solution I have come up for these health-related complexities in a manual based system. The main vision of this project is to create doctor patient handling management system that will help patients to reserve doctors' appointment and fulfill their prospects. In this system, doctors are allowed to manage their reservation slots through online and the patients can make appointments beforehand. In addition to that doctors specialized in different areas will be included and the patients have the option of choosing from the list of doctors according to their health problem.

Literature Review:

As we know hospitals and the health care centers plays a crucial role in our lives. The current advancement of the technology has enabled evolution of high-level technologies where the health information system is a very part of the advanced technology too. Our system will be providing best medical services to people where they can get to contact with doctor in quicker and easy way.

"**A Taxi Order Dispatch Model based On Combinatorial Optimization**" was a project that provided optimal matches between drivers and riders.This system will enable a user to access the information of drivers and their experience quicker. Drivers can also access the user's information as well as their destination and source. They have used the Bayesian framework to predict the destination of the user based on his/her travel histories. They perform rigorous A/B tests to compare their new taxi dispatch method with state-of-the-art models using data collected in Beijing. With those tests, they have concluded that their proposed method is significantly better than other state-of-the art models in terms of global success rate (increased from 80% to 84%). Moreover, they have also achieved significant improvement on other metrics such as user's waiting-time and pick-up distance. As for their destination prediction algorithm, they came to an end that their proposed model is superior to the baseline model where there are tens of millions of users every day.

BOOKAZOR - an Online Appointment Booking System

Bookazor is an appointment booking and scheduling web-based application which is used for booking appointments in the streams of parlor, hospitals and architects within a defined geographic area. This application is streamlined in an ionic basis. It is an open source SDK for hybrid mobile application development. It uses technologies like CSS, HTML, and JavaScript. Firebase plays a vital role in fetching data for appointment scheduling that helps to enhance application development effectively. It provides functionalities like analytic, database, messaging, and crash reporting which helps in focusing the users. The system includes NodeJS for storing the number of requests, each of which specifies a sequence of regions to be visited by a particular user. NodeJS server is used for offering appointments at specified times, using the table to check for availability of operatives in specified regions at specified times, and for inserting new jobs in the routes to reflect booked appointments. A scheduler periodically updates the routes e.g. by means of a simulated annealing process, to generate a new set of appointments and prevents duplication.

" Health Care Online Doctor Appointment Booking" by Biswas, Tomal (CSE 04806348). The main propose of this work was to provide a effective doctor and service system where the distance between doctor and patients or user can be reduced. They have developed this application in such a way that the doctors and users can directly interact with each other. Their application is based on online doctor appointment booking system and it is user friendly, simple, fast, cost-effective and saves time.

Among many features, the main feature is to book online doctor appointment. Other features are hospital information, address, contact information, etc. In their application, the information about the doctors are added by the admin and can also delete the doctors' information. Overall they developed this application to help the users or patients and as well as the staffs of the hospital to maintain appointment schedule in a better way, reduce time, minimize harassment and reduce the human effort.

Current State of Art:

The fact that in olden days there was no modern technology; everything was done manually which is known as book keeping system and this method is even used nowadays in hospitals. The manual system is not only time consuming and error prone but also inefficient and economically not feasible. However, because of technology advancement, some of the system came into existence. These systems are very advanced and reduces the workload. Many of the hospitals in Bhutan don't have the proper platform for fixing appointments with the doctors which brings inconvenience to both the patients and doctors during emergencies. In addition, the increasing population is also making it harder for the manual system to function properly. Therefore, in order to update this manual version, I have come up with the idea of automated online version of manual system, named as "Detap" application. The main objective of this project is to help patients to make appointments in easier and quicker way without having to stand in queue or having the difficulty in meeting their respective doctors.

C Challenges:

(Please describe the challenges, specific to this research topic, currently being faced internationally.)

1. Completion of task as per the timely assigned schedule.

Need to complete project within the given period of time which is challenging as some features will be difficult to developed in the specified duration

D Motivation and Need:

(Please describe the motivation and need for this work.)

Nowadays, there are many means by which to schedule a medical appointment. In the past, people used to make hospital appointments with schedulers in person or via telephone. However, these approaches may negatively influence patient satisfaction because they require verbal communication with real people who sometimes make mistakes, such as filling in the wrong appointment date or time, or sending the patient to the wrong health service provider. Due to limited staffing and phone lines, appointments can only be made certain times, and waiting times for registering were often prolonged and inflexible. Therefore, those reason plays a great role in motivating me to came up with ”Detap” application which will help patient to get appointment in easier way.

Moreover, the rapid growth of the population also plays as greater role in motivation to come up with Detap, where it becomes hardly possible for the manual system to incorporate all the people over repetitive health recites, increasing the cost. Nevertheless, the computerized ensuring the less cost.

3. Aim and Objectives of the Project

(Please write the actual aim of your project. Also, describe the measurable objectives of the project and define the expected results. Use results-oriented wording with verbs such as 'to develop..', 'to implement..', 'to research..', 'to determine..', 'to identify..' The objectives should not be statements and should not include explanations and benefits. The objective should actually specify in simple words what the project team intends to achieve (something concrete and measurable/ deliverable). Fill only those objectives that are applicable to the proposed project.)

AIM : To develop an application which can help patients to make appointments in easier and quicker way without having to stand in queue or having the difficulty in meeting their respectivedoctors.

OBJECTIVES :

- To Fix an appointment with the doctors.
- To better the scheduling of doctors.
- To save time

4. Methodology

A Development / Research / Test Methodology:

(Please describe the technical details and justification of your development and research plan and test plan and testing strategies. Identify specialized equipment, facilities and infrastructure which are required for the project and their utilization plan. The block diagrams, system flow charts, high level algorithm details etc. have to be provided in this section. Also, describe the overall methodology to be used for the particular research topic)

Methodology
General methodology:
Following are the process involved in the development of our system – "Detap"

Problem statement
The health problem is faced by every community. We never know when people will fall sick and whenever they fall sick, hospital is the place where people get treatment. While visiting hospital, they have to make appointment with doctor to get treatment. In manual system, people used to make hospital appointments with schedulers in person or via telephone. However, these approaches have negatively influence patient satisfaction because they require verbal communication with real people who sometimes make mistakes, such as filling in the wrong appointment date or time, or sending the patient to the wrong health service provider . Due to limited staffing and phone lines, appointments can only be made certain times, and waiting times for registering were often prolonged and inflexible. So, this system "Detap" will be the solution to the problem.

Literature review
After stating and identifying the problems, I will do research on the related topic from articles, books and other resources. There is no such existing system in our country which can be studied to have a hint in solving the problems but we have studied other related articles which can aid in solving the problems and refereed the aim and objectives of some other systems.

Requirement gathering and analysis
After collecting the required information for the stated problems and analyzing the problems in details, I will investigate the required solution from different ways such as brain storming, brain writing, survey and much more. And will write the documents in a proper way as a input to the design phase which can be helpful in providing more information and ideas while designing.

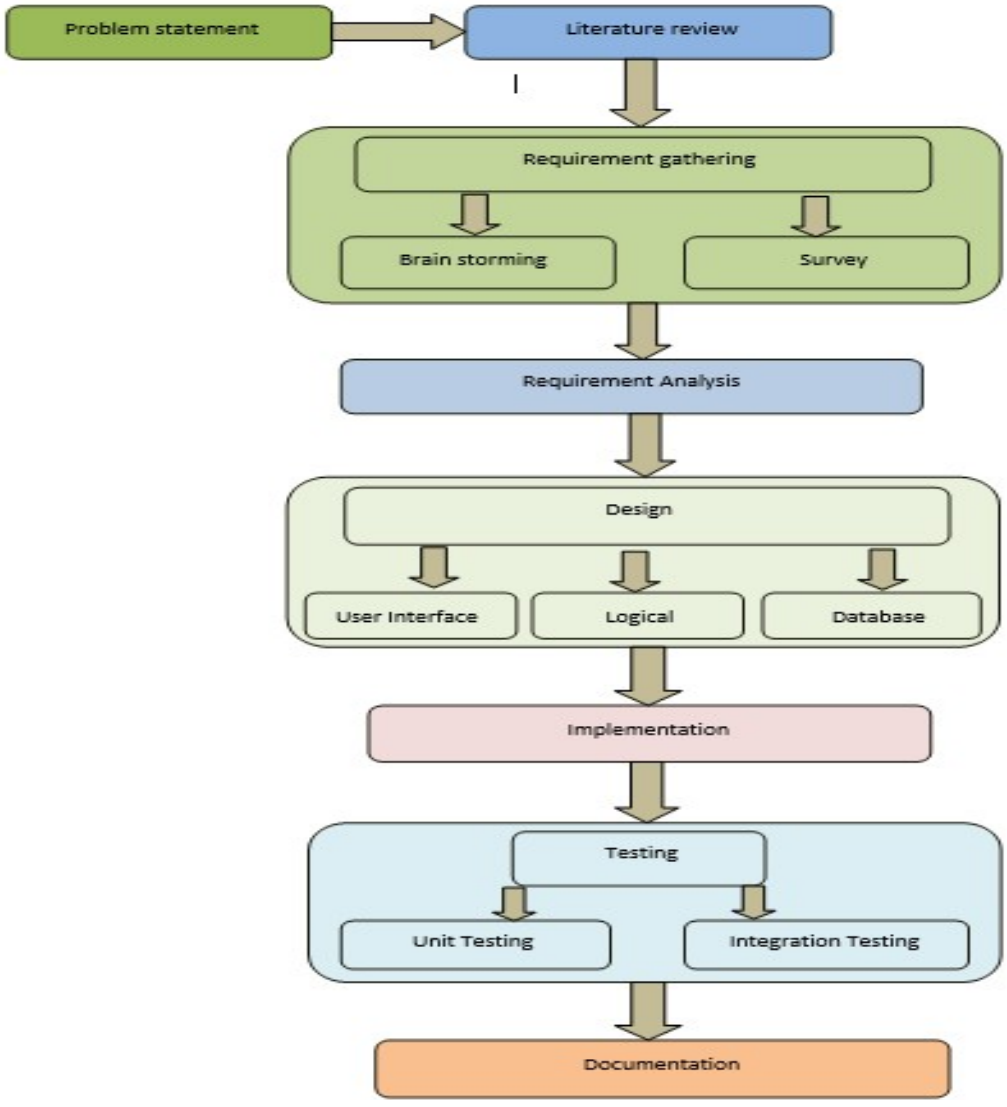
Design
After the above phase, we will design the system from the information collected in requirement specification phase. Problem solving and planning a solution for the problem also takes place in this phase which can be performed in a graphical representation.

Implementation
After completing the requirement and design phase, we will move on to the implementation phase which the theoretical and graphical representation of a system is converted in a form of a coding using programming language.

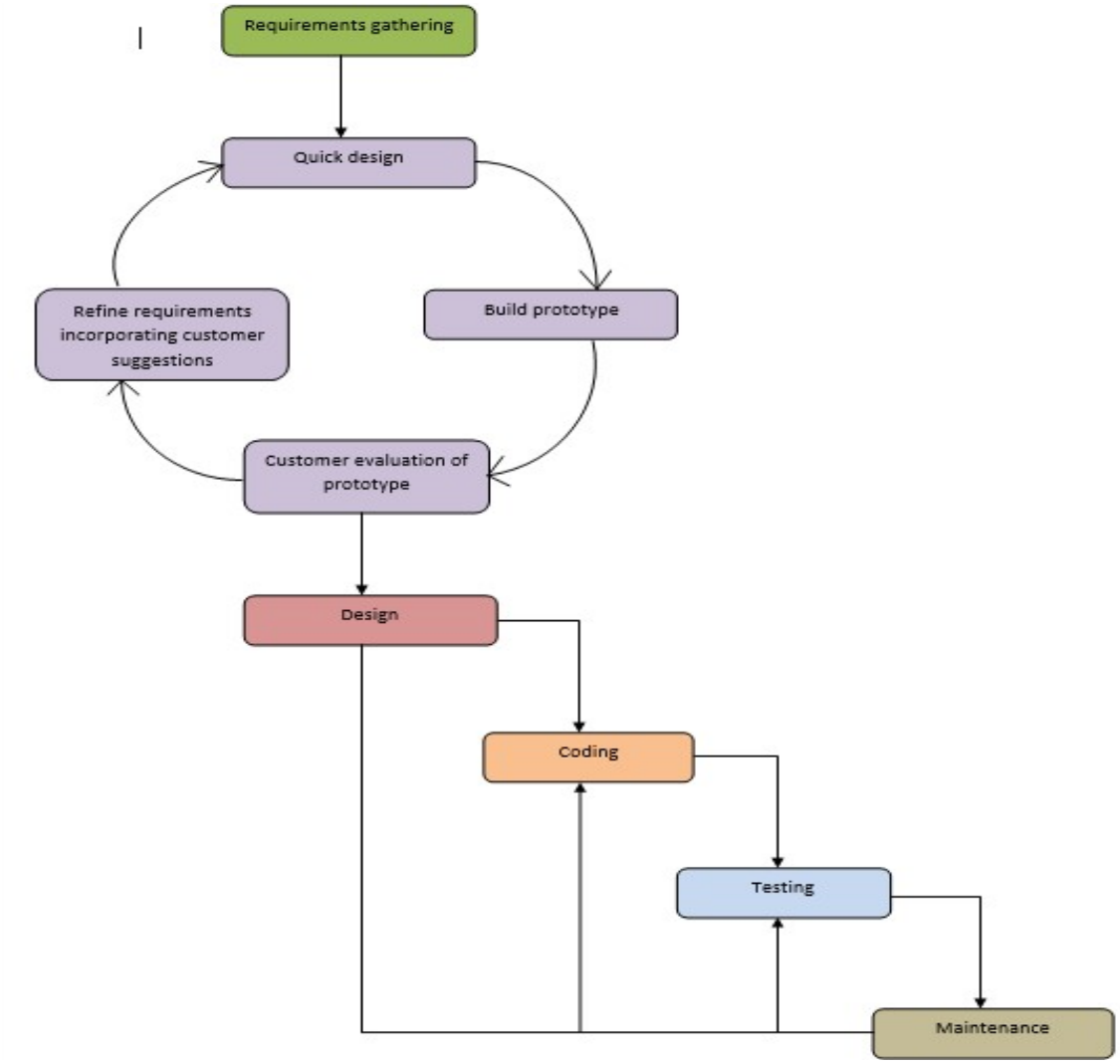
Testing
After implementation phase, we will work on testing phase which will focus on investigating and discovering the problems in the developed system. Here, the developer will find out whether the system developed is good enough for the deployment phase and will help in rectifying and reducing the errors or failures occur while developing the system.

Documentation
After completing all the features required for the developing system, documentation is done. This is the finalized phase in developing a system which is done at last.

General methodology to develop "Thetap"



The Methodology used for the development of the system – "Thetap"



Prototyping Model:

The prototyping model is just as coming up with an illustration or a blue print of the actual system software application which displays the unit functionality of the system under development process. Prototyping is more preferred basically, as it allows the evaluation of the system before the actual implementation where abatement of errors or complication can be well taken care of which is not possible after design phase.

It also reduces the time and cost invested in the development of the system as defects can be detected at an earlier stage, missing or difficult functions can also be easily identified leading to bet-

ter solution for the implications encountered. Therefore, prototyping model ensures us with the proper functionality of the system – "Detap"

B Project Team:	
Title / Position	***Number***
Project Internal Guide	
Project External Guide	
Student Team Members	
Others (please specify)	
Add more rows if required	

C **Project Activities:**

(Please list and describe the main project activities, including those associated with the transfer of the research results to customers/beneficiaries. The timing and duration of research activities are to be shown in the Gantt chart in Section 8.)

Installation of software and tools: Installing android studio version (2 and above), Java Development Kit (v8 or more) and database server. Resource gathering: Referring books, video tutorials, online reference related to android app development, Java programming language, MySQL and XML.

Design Phase: it includes designing user interface, database design and includes Understanding the functionalities, flow of information, keeping the design concepts in mind.

Development of the product: The development of app begins here with coding, using Android.

Testing the product: The product will undergo unit test to ensure that each unit functions properly and will also carry out integration testing to ensure that it produce a desired function after combining all the units.

Final Documentation: After all the phases are done we will prepare the documentation of the project, project report and at the last we will end with final project presentation.

D **Key Milestones and Deliverables:**

(Please list and describe the principal milestones and associated deliverables of the project. A key milestone is reached when a significant phase in the project is concluded, e.g. selection and simulation of algorithms, completion of architectural design and design documents, commissioning of equipment, completion of test, etc.) The timing of milestones is also to be shown in the Gantt chart in Section 8.

No.	*Elapsed time from start (in months) of the project*	*Milestone*	*Deliverables*
	-	*Commencement of the project*	
	10/02/2021-20/02/2021	Topic Selection	Selection of topic
	21/02/2021-13/03/2021	Literature Review	Collecting Literature review
	14/03/2021-25/03/2021	Requirement Gathering and Analysis	Survey and interview report
	26/03/2021-08/04/2021	Design	Use case and ER diagrams, class diagram and user interface diagrams
	09/04/2021-03/05/2021	Coding	Source code and Functional features implemented
	04/05/2021-16/05/2021	Testing	Test case
	17/05/2021-24/05/2021	Final Documentation	Complete android application

5. Benefits of the Project (Expected output/outcomes):

For user

- will be an easy platform for reserving appointment with doctor.
- Can make a schedule of a doctor without collision.
- Will connect the user into digital world.
- Save time

For developer

- Gain real time project skills

6. Risk Analysis/Feasibility

A Risks of the Project:

(Please describe the factors that may cause delays in, or prevent implementation of, the project as proposed above; estimate the degree of risk.)

(Please mark ☑ where applicable)	Low	Medium	High
Technical risk		☑	
Timing risk			☑
Budget risk	☑		

A1. Comments(Describe the risk):

- **Technical risk:**

  For the development of this application, the technical risk is medium because of the some requirement ram and also the possibility of damage being caused to the equipment due to repeated refinements of the prototype for this application.

- **Timing risk:**

  Developing a complete application within the given six month would be a tough task as we are not much experienced. Therefore, the timing risk is high in this project.

- **Budget risk:**

  For our project free software available online will be made use of therefore, the budget risk is low.

7. Project Approval Certificate

(Approval of Project Proposal by the Competent Authority (Department Chairman) and Project Review Team is mandatory before the start of project execution.)

Project Review Team:

Sl #	Name	Signature

(Please add more rows if required.)

Project Coordinator

Name:

Designation:

Email:

Date: Signature:

Competent Authority – Head of Department

Name:

Designation:

Email:

Date: Signature

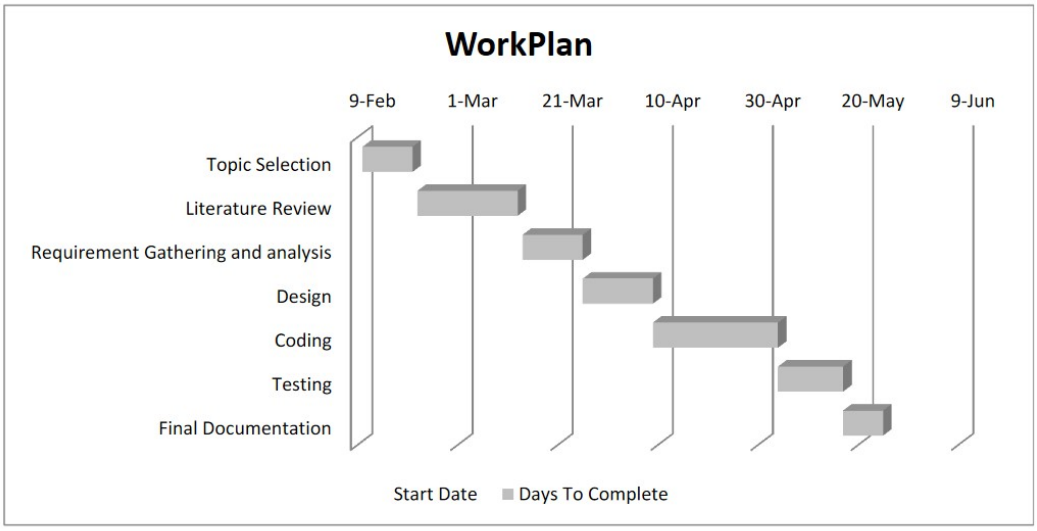
& stamp:

8. Reviewers Panel Comments

10. Project Schedule / Milestone Chart /Work plan

(Project schedule using MS-Project (or similar tools) with all tasks, deliverables, milestones, clearly indicated are preferred. Task should be measured in terms of hours)

Activities	Start Date	Days To Complete	End Start
Topic Selection	10-Feb	10	20-Feb
Literature Review	21-Feb	20	13-Mar
Requirement Gathering and analysis	14-Mar	12	25-Mar
Design	26-Mar	14	8-Apr
Coding	9-Apr	25	3-May
Testing	4-May	13	16-May
Final Documentation	17-May	8	24-May



13. Report Writing Guidelines

(Project report will be written under the specified guidelines.)

Bibliography

Akshay, V., Kumar, A., Alagappan, R. M., & Gnanavel, S. (2019, March). BOOKAZOR-an Online Appointment Booking System. In *2019 International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN)* (pp. 1-6). IEEE.

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