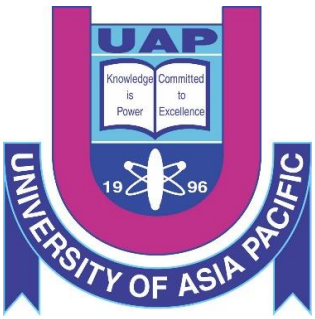

Virtual Doctor: A System for Human Health

System Analysis & Design
University of Asia Pacific
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Project Proposals:

Project Proposal Number 1: (**Virtual Doctor – A System for Human Health)**

Statement and Basic Features:

Mainly, this will be an App-based system and the main target is First aid treatment. When someone use it, this system will help people by asking different types of question and will try to prescribe a first aide type solution. Also, the GPS will locate the patient's location and if needed then show him the nearest hospital or call an Ambulance. Also, this system will help people to find who is the best doctor available in his area for his specific problem. So, this is main feature and there will be many more which we will introduce later.

- What is the objective of the System?

  Help people using Internet and Modern Technology.

- What resource we need to build this System.

  Money, Sponsor and Encouragement.

Project Proposal Number 2: (**Football Club Management System)**

Statement and Basic Features:

Football Club Management System will be a database application system to help, organize, manage and to reduce time consuming administration in key areas like Membership, Finances and competition. It will also promote or advertise the club with their records, histories and achievements. Also, the club supporters can directly interact to the club by using this System.

- Why this Idea?

  Football is the most popular game in Europe also in our country. But how many people know about our own football clubs and the histories? The answer is limited people know about Bangladeshi football. So, if a club can create this type of System common people or football supporters will know much more. Also, right now Internet is the best platform for knowing such that things. So, if a club think about this idea and create a public system, maybe Bangladeshi football will grow again.

Project Proposal Number 3: **(PC Configuration System & Tech Portal)**

Statement and Basic Features:

This System will be a great option for a tech enthusiast or a person who wants to build a personal computer for him. This System take input like: Budget, Vision and personal choice and then analysis this data according to the current market, the System will provide a perfect build or idea. Also, there will be more features like best product in budget, upcoming product, idea about current market, parts comparison and many more.

- Why this Idea?

  Computer and technology growing day by day. In Bangladesh, also we have so many products in market. That's why when someone wants to buy a Computer for him, he got confused. Then he chooses an unnecessary component which is not for his works. So, if someone wants an idea or a draft build, this system should be useful for him.

Abstract:

We live in a country where most people do not get a good health care service. They do not even know much about first aid treatment. At present, there are not so many online health care services. There are some apps in Google Play Store about Online Health services. But those apps have so many limitations. They do not have a helpline and apps freeze very often also they are mainly Dhaka-based. We want to overcome those limitations so that we can make our system accessible to all the people of our country. In our system, patients will consult with doctors through video calls. Also, there is a service called AI Doctor. Using this feature patient can get a fast treatment also without any cost. Then doctors diagnose the patients and give them a prescription. If the patient has a critical situation, the doctor will advise him to go to the nearest hospital or recommend a hospital where he can take his needed treatment. One of our best features is, we will keep all conversations between patient and doctor encrypted. So, the patient doesn't have to worry about the information of his disease being leaked. Since it is an app-based system, people can easily install our app on their phones. We did three feasibility analysis. Economical, technical, and organizational feasibility. We will be able to benefit from this system within 1 year which is very good for the investors. We also proved that using Cash-Flow Method. To visualize our project, we use Data-Flow Diagram, Use-Case, ER, and UML Class Diagrams to model the structural and behavioral aspects of the case study.

Introduction:

We live in 21st century. Our lives have become easier by technology. Technology affects the way individuals communicate, learn, and think. It helps society and determines how people interact with each other on a daily basis. Technology plays an important role in society today. As per this, human health is also connected to technology. Modern science and advances in medical treatment have helped people avoid disability and death caused by disease, lowered overall treatment costs, and has lowered death rates for heart disease, stroke, cancer, and other deadly diseases for several decades. But everybody doesn't get this kind of treatment. In Village area the number of proper doctors is still limited. So, the basic treatment and Information is still missing. And another problem is each year people are dying without the basic first aid treatment. Everyone doesn't have the all kind of basic first aid treatment knowledge. In that situation we need instant first aid knowledge. So, using technology and internet this system can decrease the number of deaths. Also help everyone, who is seeking heath related information's.

Problem Statement:

First aid treatment and solution are one of the major problems in Bangladesh. In village or remote area there are many people are dying without good treatment or a suggestion about health.

For solve this problem, we are going to build an app-based system and the main target is First aid treatment. When someone use it, this system will help people by asking different types of question and will try to prescribe a first aide type solution. Also, the GPS will locate the patient's location and if needed then show him the nearest hospital or call an Ambulance. Also, this system will help people to find who is the best doctor available in his area for his specific problem.

Motivation:

Access to healthcare services is critical to good health, yet rural residents face a variety of access barriers. Rural residents often encounter barriers to healthcare that limit their ability to obtain the care they need. In order for rural residents to have sufficient access, necessary and appropriate healthcare services must be available and obtainable in a timely manner.

We know that first aid knowledge is invaluable for both individual and for our community. It enables us to assist persons who become injured in the event of an accident or emergency situation until help arrives. First Aid treatment can help to save lives. It allows the rescuer to provide the victim comfort, gives us tools to prevent the situation from becoming worse. In some situations, if a patient doesn't receive basic first aid care immediately their situation will deteriorate – often rapidly. By being able to provide basic care you can stabilize a patient until emergency medical services arrive.

Accidents can happen anytime. Then we need Emergency medical services (EMS). Emergency medical services (EMS) is defined as the system that organizes all aspects of care provided to patients in the pre-hospital or out-of-hospital environment. Hence, EMS is a critical component of the health systems and is necessary to improve outcomes of injuries and other time-sensitive illnesses. But in that situation, we need emergency transportation and also the location of nearby hospital for getting emergency medical services.

So, we are going to build an app-based system and the main target is First aid treatment. When someone use it, this system will help people by asking different types of question and will try to prescribe a first aide type solution. Also, the GPS will locate the patient's location and if needed then show him the nearest hospital or call an Ambulance. Also, this system will help people to find who is the best doctor available in his area for his specific problem.

Goals & Objective:

- User friendly service.
- Provide first-aid treatment.
- Contract with specialist doctor through our system.
- Provide Hospital suggestion and Ambulance in serious case.

- Keep all treatment data without patient's information.
- Analyze stored data and using that data to create and improve the AI Doctor.
- Provide treatment data to pharmaceutical company for understand the treatment process and create medicines.

System Design Life Cycle:

The system development life cycle is a project management model that defines the stages involved in bringing a project from inception to completion. Software development teams, for example, deploy a variety of systems development life cycle models that include waterfall, spiral and agile processes.

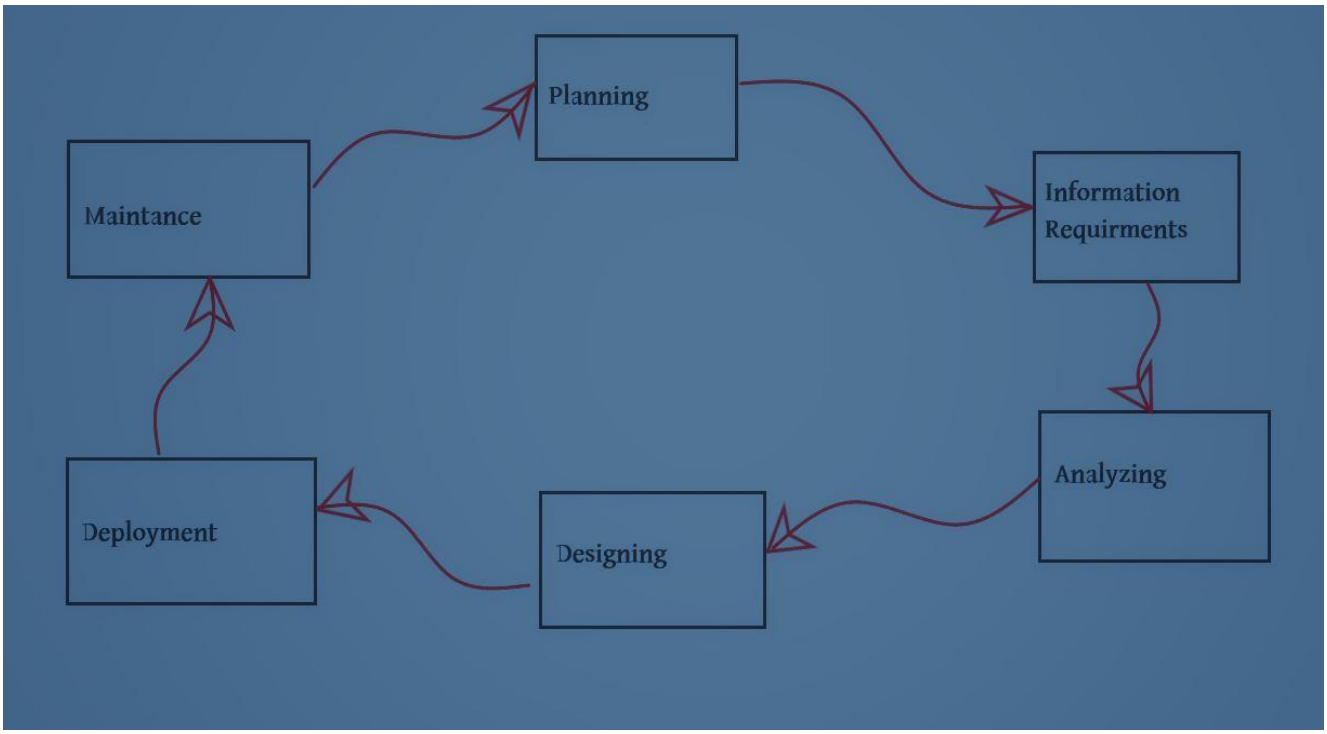
System Development Life Cycle (SDLC) is a conceptual model which includes policies and procedures for developing or altering systems throughout their life cycles.

SDLC is used by analysts to develop an information system. SDLC includes the following activities −

- Planning
- Information Requirements
- Analyzing
- Designing
- Deployment
- Maintenance

Phases of SDLC:

Systems Development Life Cycle is a systematic approach which explicitly breaks down the work into phases that are required to implement either new or modified Information System.



Requirement Analysis:

Requirement Analysis, also known as Requirement Engineering, is the process of defining user expectations for a new software being built or modified.

The main aim of this phase is to collect the details of each requirement of the customers so that the developers will clearly understand what they are developing. And determining whether the stated requirements are unclear, incomplete, ambiguous, or contradictory, and then resolving these issues.

Requirement Analysis of our project is divided into three phases. They are the followings:

- User Requirement
- Business Requirement
- Technical Requirement

User Requirement:

1. People never know when any injury may happen to them. Thus, it is always good to have emergency backup. They need immediate first aid treatment.
2. If first aid treatment doesn't work then people need instant information about nearby hospitals.
3. Sometimes transportation is a huge problem in our country. So, they need ambulance without any delay.
4. Organized information is the best thing to find out something instantly. People need the best doctor available in their area for their specific problems.

Business Requirement:

1. This system will save all treatment information for analysis also business purpose.
2. This system also works with investor. So that, they can invest their money to the system and gets a benefit.

Technical Requirement:

1. A good Database Language will be used for storing patients' treatments information.
2. The website also the App of this system will be efficient and properly optimized so that it uses lowest memory.

3. Here, Developers will use efficient algorithms. For that App and Website will be safe, secure and fast interaction between Patient and Doctor.
4. There will be also an AI Doctor. That part will be established by good and optimized programming language and Data Analysis.

Feasibility Analysis:

Feasibility analysis is one of the major Phase of SDLC in which an organization discusses about the cost and benefits of the software or system. It's also called the decision-making phase. Because profit from the system plays an important role if cost is very high then the company may face less. Feasibility analysis can be divided into three key components, which are Economic feasibility, Technical feasibility, and Organizational feasibility.

After the feasibility Studies:

1. The project may be accepted with some modification.
2. The project may be rejected.

There are three types of feasibilities that we must consider to ensure economically acceptable project:

- Economic Feasibility
- Technical Feasibility
- Organizational Feasibility

Economic Feasibility:

Economic feasibility is determined by identifying costs and benefits associated with the system, assigning values to them, calculating future cash flows, ROI, BEP and measuring the financial worthiness of the project. There is two method to do that.

For our system, we will use Simple Cash Flow Method.

Cash-Benefit Analysis – Simple Cash Flow Method

Development Cost	Year 0	Year 1	Year 2	Total
2 Servers	70,000	0	0	70,000
Others	30,000	10,000	10,000	50,000
Software License	50,000	0	0	60,000
Server Software	60,000	0	0	60,000
Development Labor	1,00000	70,000	70,000	2,40,000
Total Cost	3,10,000	80,000	80,000	4,70,000
Benefit				
Advertising	0	60,000	90,000	1,50,000
App Purchases	0	50,000	80,000	1,30,000
Sponsorship	0	70,000	70,000	1,40,000
Affiliate Program	0	40,000	50,000	90,000
Selling Merchandise	0	40,000	70,000	1,10,000
Total Benefit		2,60,000	3,60,000	6,20,000
Net Benefit	(6,20,000)	1,80,000	2,80,000	
Cumulative Net Cash Flow	(6,20,000)	4,40,000	1,60,000	

Return on Investment (ROI) = 31.91%

Break-even Point (BEP) = 0.85 Years

From, This analysis,

- Acceptable ROI
- Benefit starts from the First year.

So, Economically Acceptable Project.

Technical Feasibility:

A technical feasibility study assesses the details of how we intend to deliver a product or service to customers. It helps organizations like us to determine whether the technical resources meet capacity and whether the technical team is capable of converting the ideas into working systems. So, the main reason for the technical feasibility analysis is whether it will be a success or a failure.

Source of Risk:

1. Users have a lack of familiarity with our system?

   We will design the UI of our system in such a way that a young generation of people likes our system and also 40+ people can easily understand our system. Though our main target audience will 40+ people. We will put an option called FAQ in our system so that whenever anyone has difficulties understanding something or face any issue, they will get the solution easily. We will constantly update the UX by analyzing everyone's feedback so that we can fulfill users' requirements.

2. Whether the treatment that doctors will give to patients will be right?

   It is important that which doctor will consult the patients? We will review and take the best and the trusted doctors. We will store all the important things about themselves like national ID card, passport. So that we can take legal action against them if any bad things happen.

3. Will user data safe with us?

   User data has become very important at present time. A patient will not want to let a third party know what problem he or she is having. We will guarantee that the conversation between users and doctors will be encrypted. We will use Peer-server, server-peer encryption. No one will be able to access it except the user and the doctors.

Organizational Feasibility:

Organizational feasibility shows that how well the system ultimately will be accepted by its users and incorporated into the ongoing operations of the organization.
If we build it, will they come?

Our system will be one of the most efficient systems available on the market. Most of the system that is available now has mostly the duo and combo of poor UI and horrible UX design. Maximum of their features are not working. They don't take seriously users reviews, and also, they do not give data privacy. So, our research and development of this project will be always be based on the UX.

People from remote areas will be able to get the essential service at home without coming to the city at low costs.

If we will build it, will they come?

1. Our system will be one of the most efficient system available on the market.

2. People from remote areas will be able to get the essential service at home without coming to the city at low costs.

Complex Engineering Problem:

Motivation: We live in a modern and educated country. But Each year people are dying without the basic first aid treatment. Also, In Village area the number of proper doctors is still limited. So, the basic treatment and Information is still missing. Using technology and internet this system can decrease the number of deaths. Also help everyone, who is seeking heath related information's.

Fig 01: A news about health professional shortage in Bangladesh during pandemic time.

Source: https://cutt.ly/xlXBYuU / Bangla Tribune - 18 November 2020

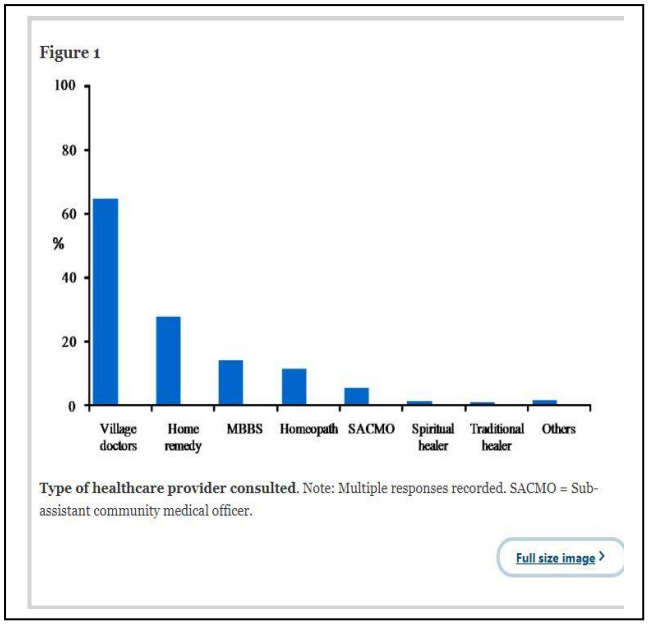


Fig 02: A research paper about the village doctor and their poor services.

Source: https://cutt.ly/TlXN34u / BMC International Health and Human Rights – 06 July 2010

Objective: The objective of the project is to use a real time data-based AI technology to solve the problem.

Critical Challenges: Working with hospitals stuffs, medicine company and doctors will be a critical challenge.

Conflicting Requirements: Without seeing the patient, prescribe a prescription will be a risk for doctors. Or they may think like that. Maybe they will hesitate to work. So, Doctors will a conflicting Challenge.

Some components of Complex Engineering Problem:

Knowledge Profile (K)
K1 – Natural Science
K2 – Mathematics
K3 – Engineering Fundamentals
K4 – Specialist Knowledge
K5 – Engineering Design
K6 – Engineering Practice
K7 – Comprehension
K8 – Research Literature

Attribute	**P1 and Some or all P2 to P7:**
Depth of Knowledge required	**P1:** one or more of K3, K4, K5, K6 or K8
Range of Conflicting requirement	**P2**: wide-ranging or conflicting technical, engineering and other issues
Depth of Analysis requirement	**P3:** no obvious solution
Familiarity of Issues	**P4:** Involve infrequently encountered issues
Extent of applicable codes	**P5:** outside problems encompassed by standards and codes of practice
Extent of stack-holder involvement and conflicting requirements	**P6:** diverse groups of stakeholders with widely varying needs
Interdependence	**P7:** many component parts or sub-problems

Let's explore how a few P's could be addressed through this project:

P1(Depth of Knowledge required- one or more of K3, K4, K5, K6 or K8)**:** Develop an App for this project (**K6** – Engineering Practice), This project generally requires a study of similar work with the same purpose as ours (**K8** – Research Literature), We must need some medical knowledge and hospital and doctor things (**K4** – Specialist Knowledge), Design the program (**K3** – Engineering Fundamentals), data related study and find a solution for a specific problem (K2 – Mathematics)

P2(Range of Conflicting requirement- wide-ranging or conflicting technical, engineering and other issues): Data Analysis with proper regularization while limited real data is available will be create a Conflict for this project.

P6(Extent of stack-holder involvement and conflicting requirements- diverse groups of stakeholders with widely varying needs)**:** Various group of stakeholders also the hospital and medicine stores can be benefited by this project.

P7(Interdependence- many component parts or sub-problems)**:** This project involves four subsystems mainly:

- Data Collection
- Data Analysis
- Application Model
- Machine Learning

List of activities (As):

Attribute	**Some or all of the following:**
Range of resources	**A1:** use of diverse resources (include people, money, equipment, materials, information and technologies.)
Level of interaction	**A2:** resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues.
Innovation	**A3:** creative use of engineering principles and research-based knowledge in novel ways.
Consequences for society and the environment	**A4:** consequences in a range of contexts, characterized by difficulty of prediction and mitigation.
Familiarity	**A5:** Can extend beyond previous experiences by applying principles-based approaches.

Let's explore how a few A's could be addressed through this project:

Attribute	**Some or all of the following:**
Range of resources	**A1(**Range of resources**):** This plan will require the collaboration of a variety of resources, including people (survey), money (project creation consideration), information, and technology.
Level of interaction	**A2(**Level of interaction**):** A good level of interaction is important with the hospital's stuffs, doctors and pharmacists. Also, the pharmacy departments faculty members.
Consequences for society and the environment	**A4(**Consequences for society and the environment**):** Using this system people will learn more about first aid treatment. That's why the rate of death will decrease. And this will be the consequence of the project for the society.

Design & Diagram:

During the design phase, developers and technical architects start the high-level design of the software and system to be able to deliver each requirement.

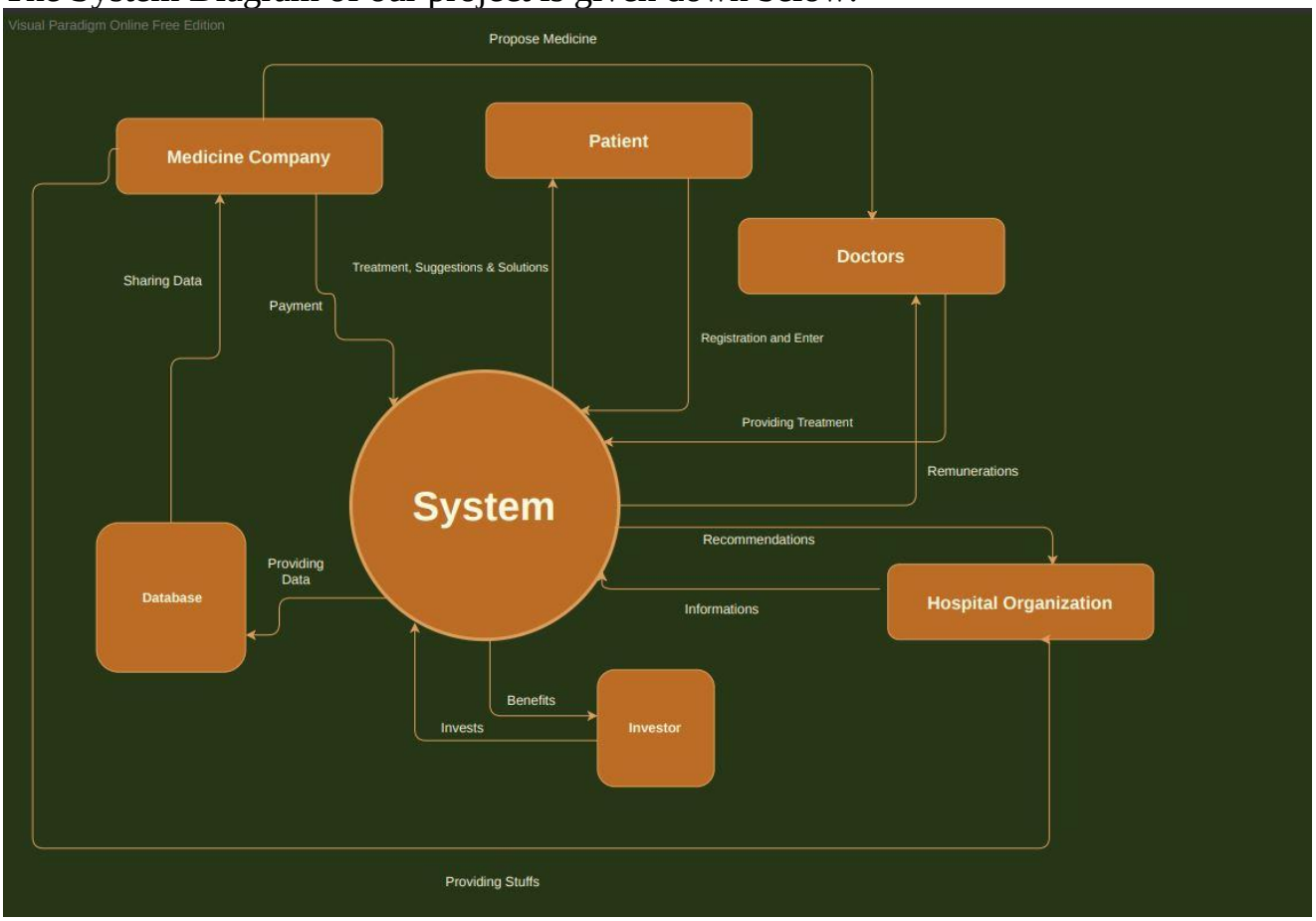
For this project, we are using –

- System Diagram
- Data-Flow Diagram
- Entity-Relationship Diagram
- Use-Case Diagram
- UML Class Diagram

System Diagram:

System Diagram is basically Zero Level Data-Flow Diagram. This Diagram Shows with basic that how the system works.

The System Diagram of our project is given down below:



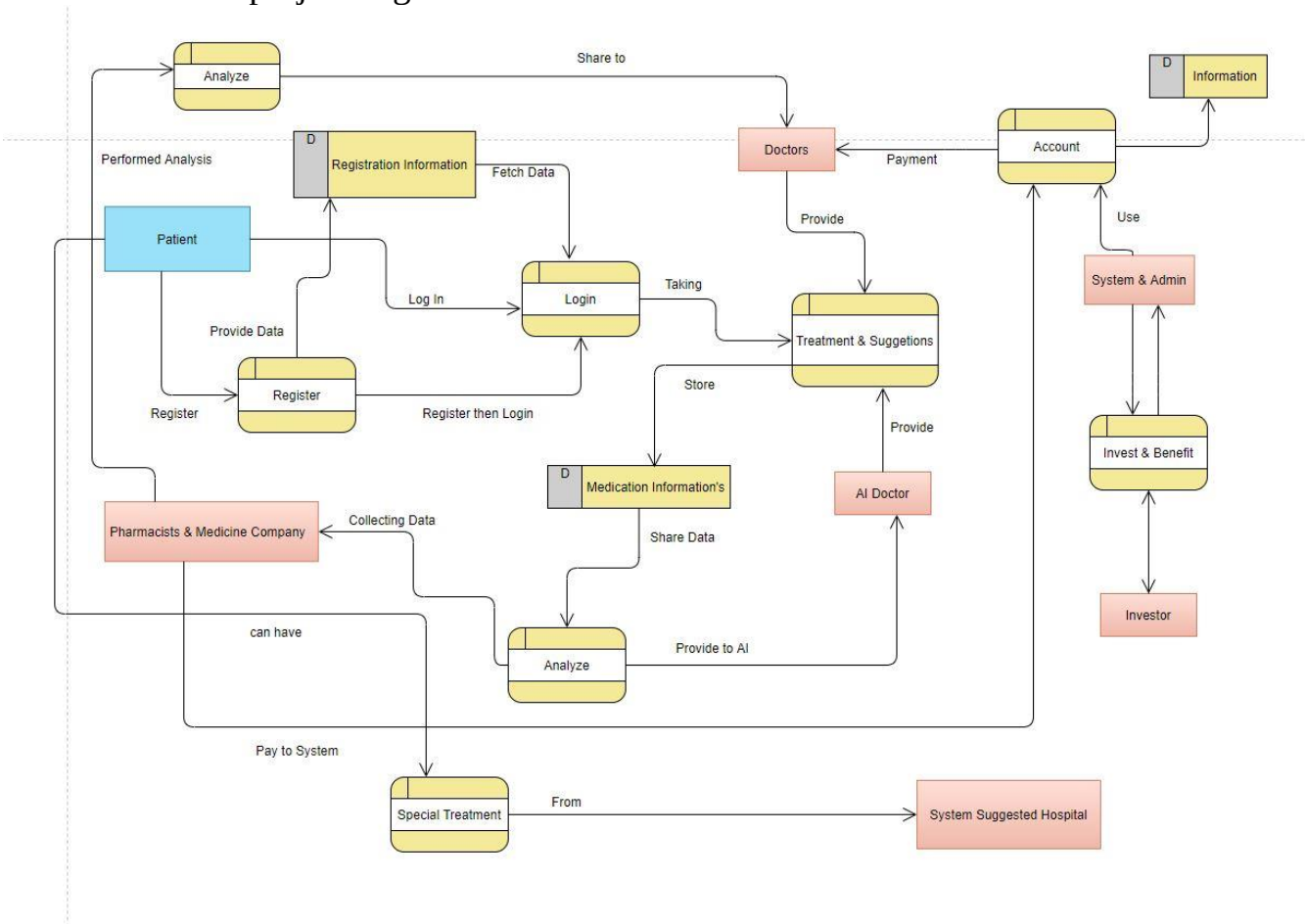
For our idea, here system is the root of the whole process. A patient can register and enter to the system and patient can get treatment; solutions form system. There is a Doctor entity who can provide treatment to the system and he will get a remuneration. There is a database, where every information will be saved. And pharmaceutical company can use these data for their resource. They also can share their report to the doctor.

There is investor who can invest money to the system. And he will get a Benefit. Also, when a critical patient come the system doctor can suggest nearest hospital for the patient. And if needed system also can call ambulance for the users.

Data-Flow Diagram:

Data flow diagram is a graphical representation of how data flow in a system

The DFD of our project is given down below:



In our project we used 7 external entity, 8 process and 3 datastore. here Patient is our main user. So, let's start from patient.

PATIENT is the main user for this system. when a patient come, he must REGISTRATION first. When he/she completed his/her registration In REGISTRATION INFORMATION Datastore their information will be saved. Then the patient can login. Or if the patient already has an account, then he/she can use direct LOGIN process. Patient can take treatment or suggestions from two way. Doctors will treat the patient by virtual call. And this is not free. On the other hand, AI doctor is a made-up free system. If they think patient in a critical condition, doctor will suggest that, patient can go for special treatment from system suggest hospitals.

The information's about treatment will be saved in MEDICATION INFORMATIONS Datastore. After ANALYZE that data, the report will be sent to the AI DOCTOR. For that system improvement and to the PHARMACITICULER AND MEDICINE

COMPANY. They will again analyze that report and share their new report to DOCTORS. There will be another process for them. They will pay to the system ACCOUNT for sharing data purpose.

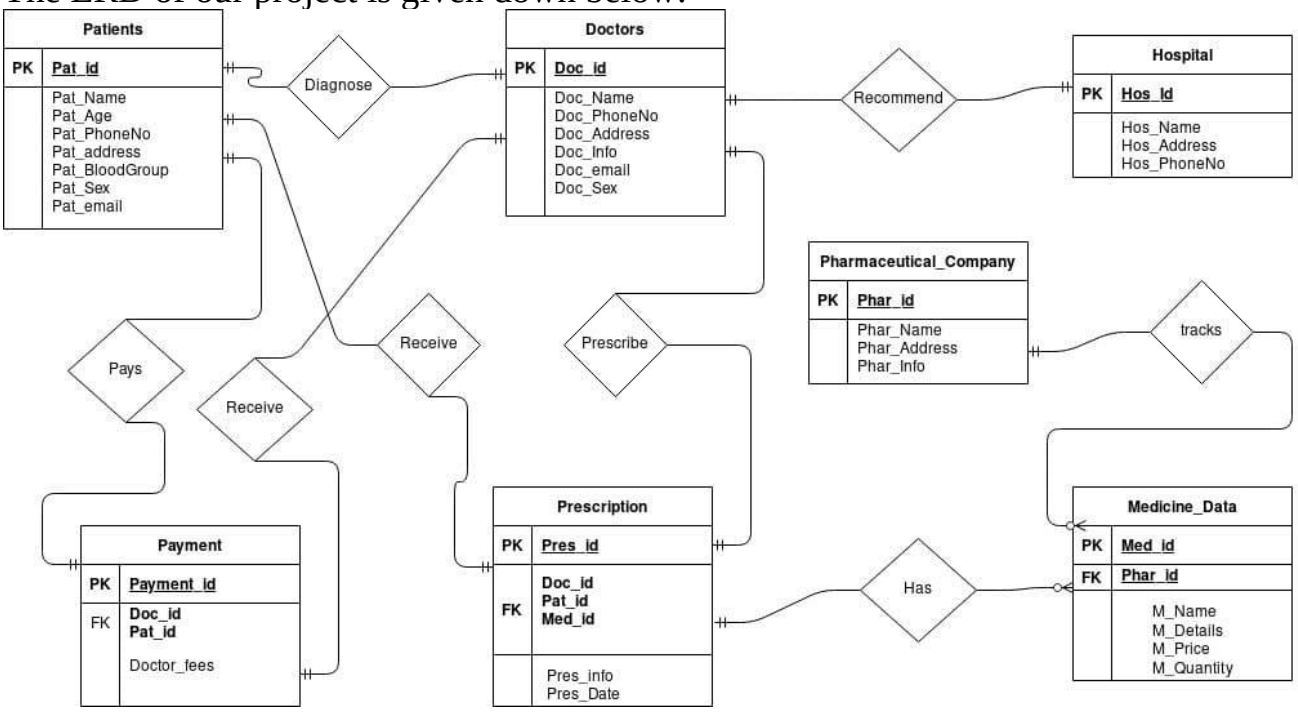
There will be a SYSTEM & ADMIN. This process will maintain the whole system also handle the system ACCOUNT. The system ACCOUNT has a INFORMATION Datastore. Here every account information will be stored. There is another process is INVESTOR. The investor will INVEST some to the system and get a BENEFIT.

Entity-Relationship Diagram:

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties.

By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases.

The ERD of our project is given down below:



This is our Entity Relation Diagram. From our ER Diagram we can see that there are seven entities/Tables which are Patients, Doctors, Hospital, Prescription, Pharmaceutical_Company, Medicine_Data and Payment. Every patient and Doctor have a unique identity. By this unique identity we can separate them from one patient to another or one doctor to another.

The patient's information is stored in the Patients entity. It has a total of eight attributes, and they are Pat_id, Pat_name, Pat_age, Pat_Address, Pat_PhoneNo, Pat_sex, Pat_BloodGroup and Pat_email, Here, Pat_id is primary key.

Then every doctor's information is stored in the Doctors entity where Doctors entity has a total of seven attributes and Doc_id is the primary key. Other attributes of Doctors entity are Doc_Name, Doc_PhoneNo, Doc_Address, Doc_info, Doc_email and Doc_Sex.

Prescription entity has total of 6 attributes which are Pres_id, Doc_id, Pat_id, Med_id, Press_info and Press_Date. Here, Press_id is the primary key and Doc_id, Pat_id, Med_id are Foreign keys.

Medicine's information is stored in Medicine_Data entity. It has a total of 6 attributes and they are Med_id, Phar_id, M_Name, M_Details, M_Price and M_quantity. Here Med_id is the primary key and Phar_id is the foreign key from Pharmaceutical_Company entity.

Then we have Pharmaceutical_Company entity which has four attributes: Phar_id, Phar_Name, Phar_Address and Phar_info. Phar_id is the primary key here.

And the last entity we have Payment entity which has four attributes: Payment_id, Doc_id, Pat_id and Doctor_fees. Payment_id is the primary key. Doc_id and Pat_id are the foreign keys from Doctors and Patients entity.

Here we can see a few relationships between entities as well. Doctor diagnose patient and prescribe a prescription and patient receive that prescription. Prescription has medicine data and that medicine data tracks Pharmaceutical Company. Doctor may recommend a hospital if the patient has a critical condition. Patient pays payment and that payment receive doctor.

Use-Case Diagram:

Use Case Diagram captures the system's functionality and requirements by using actors and use cases. Use Cases model the services, tasks, function that a system needs to perform. Use cases represent high-level functionalities and how a user will handle the system. Use-cases are the core concepts of Unified Modelling language modeling. A Use Case consists of use cases, persons, or various things that are invoking the features called as actors and the elements that are responsible for implementing the use cases. Use case diagrams capture the dynamic behavior of a live system. It models how an external entity interacts with the system to make it work. Use case diagrams

are responsible for visualizing the external things that interact with the part of the system.

The Use-Case Diagram of our project is given down below:

In this diagram, we can see that there are four actors (Patient, Doctor, Hospital Organization, Medicine Company). And there are seven use cases. First patient has to download the app. Patient have to register and then they can get access. As per their problem, patient will search for suggestions and solutions. Then if needed, they can search for a doctor. And on the other hand, if needed hospital organizations will recommend hospital and doctors' name as per their problem. Next doctor will be providing treatment to patients. Lastly, Medicine Company can connect with doctors and can suggest different types of medicine names to doctor.

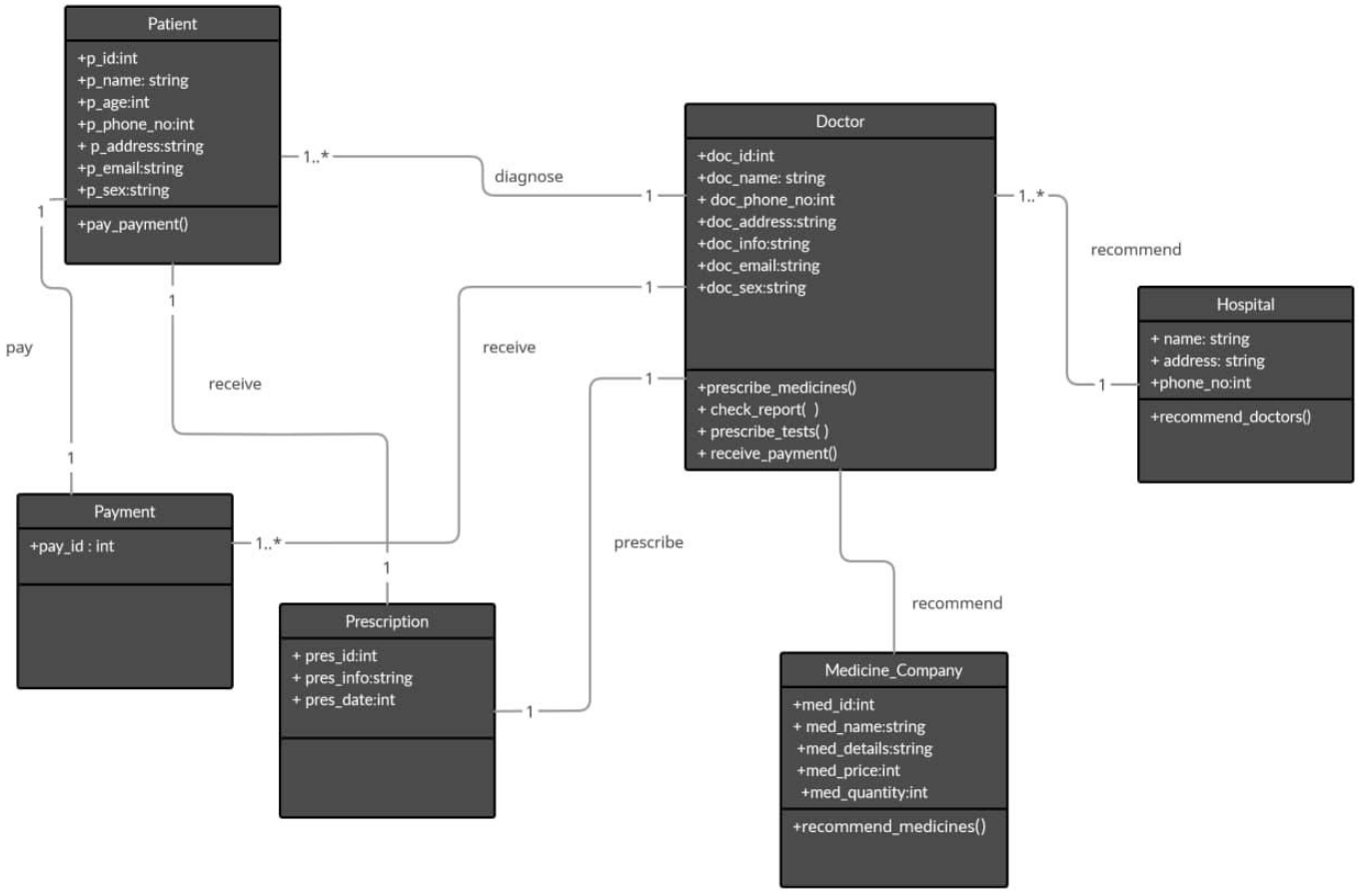
UML Class Diagram:

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

The purpose of class diagrams is –

1. Shows static structure of classifiers in a system
2. Diagram provides a basic notation for other structure diagrams prescribed by UML.
3. Helpful for developers and other team members too.
4. Business Analysts can use class diagrams to model systems from a business perspective.

The UML Class Diagram of our project is given down below:



Here we can see six classes. They are – Patient, Doctor, Hospital, Payment, Prescription, Medicine Company. In 'Doctor' class we have seven attributes and their types. The

attributes are – ‘doc_id’, ‘doc_name’, ‘doc_phone_no’, ‘doc_address’, ‘doc_email’, ‘doc_info’, and ‘doc_sex’. And ‘doc_name’, ‘doc_address’,’ doc_email’,’doc_info’ and ‘doc_sex’ – these are string types. ‘doc_phone_no’ and ‘doc_id’ – these are int types. ‘Prescribe_medicine()’, ‘check_report()’, ‘prescribe_tests()’, receive_payment()’ – these are operations(methods). Attributes’ and methods’ visibility all are set to public.

In ‘Patient’ class we have seven attributes and their types. The attributes are – ‘p_id’, ‘p_name’, ‘p_age’,‘p_phone_no’, ‘p_address’, ‘p_email’ and ‘p_sex’. And ‘p_name’, ‘p_address’,’ p_email’ and ‘p_sex’ – these are string types. ‘p_phone_no’,’p_age’ and ‘p_id’ – these are int types. ‘pay_payment()’ is the operation(method). Attributes’ and method’s visibility all are set to public.

In ‘Hospital class we have three attributes and their types. The attributes are - ‘name’,’ address,’phone_no’. ‘name’, ‘address’ – these are string types. ‘phone_no’ is the int type. ‘recommend_doctors()’ ’ is the operation(method). Attributes’ and method’s visibility all are set to public.

In ‘Payment’ class there is one attribute – ‘pay_id’. And ‘pay_id’ is the int type. Attribute’s visibility is set to public.

In ‘Prescription’ class we have three attributes and their types. The attributes are – ‘pres_id’, ‘pres_info’, ‘pres_date’. ‘pres_info’ is the int type. ‘pres_id’, ‘pres_date’ are the string types. Attributes’ visibility all are set to public.

In ‘Medicine_Company’ class we have five attributes and their types. The attributes are – ‘med_id’,’med_name’,’med_details’,’med_price’,’med_quantity’. ’med_name’,’med_details’ – these are string types. ’med_details’,’med_price’, ‘med_id’ – these are int types. ‘recommend_medicines()’ is the operation(method). Attributes’ and method’s visibility all are set to public.

Association (usage) relationships:

One doctor can give treatment to one and many more patients. That’s why we use 1 and 1..*. Next one hospital can recommend one and many more doctors. So we use 1 and 1..*. Then Doctor will prescribe one prescription for one patient and that patient will receive that prescription. So, we use 1 and 1.

So, we can say that A UML class diagram is a picture of the classes in an OO system their fields and methods connections between the classes that interact or inherit from each other.

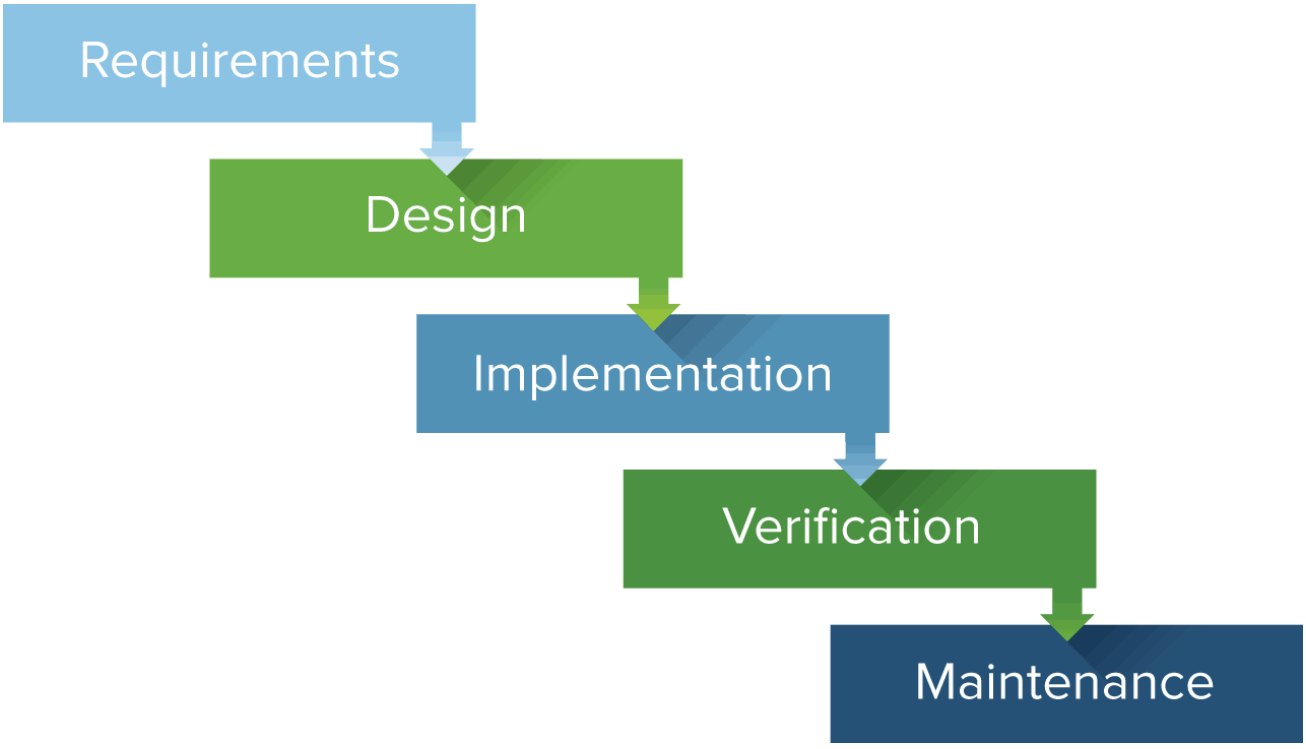
Methodology:

The Software Development Life Cycle (SDLC) refers to a methodology with clearly defined processes for creating high-quality software.

For this project, we are using Waterfall Methodology.

We are using Waterfall Methodology Because –

- Simple and easy to understand and use.
- Phases are processed and completed one at a time.
- Clearly defined stages.
- Process and results are well documented.



Requirement Analysis:

In our project, we gather every requirement and analyze with details which is related our project. For this phase the main focus is the Patient, Doctors, Pharmaceutical Company and how to build an artificial doctor.

After this phase, we have decided to use:

- Include two type doctors. One is virtual doctor. Another one is real doctor who can provide treatment using virtual call.
- Collect every patient treatment information for data analysis. Also use data for business purpose. (we must hide the patient personal information).

System Design:

The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.

For Design, we have used System Diagram, Data Flow Diagram, E-R Diagram, Use-Case Diagram and UML Diagram.

Implementation:

With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.

For Website:

Design: HTML, CSS, Bootstrap, JavaScript & jQuery

Language and Framework: Python & Django

Database Management: MongoDB

For Mobile App:

Language and Framework: Dart & Flatter

Database Management: MongoDB

Verification:

this phase is basically depending on another two sub-phases. After implementation testing is require to make sure that the solving the needs addressed and gathered during the requirements phase.

So, when we complete the implementation past, we test the system to see that is the system is really fulfill the users' requirements or not.

Once all testing is done; the product is deployed in the customer environment or released into the market. So, If the system working properly then the system is ready for users.

Maintenance:

There are some issues which come up in the client environment. To fix those issues, patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

When the users start using the system then the actual problems come up. They will post about the bug or errors and that need to be solved as soon as possible.

Conclusion:

Our project Virtual Doctor: A System for Human Health is an app-based system which is very convenient for human being. Virtual doctor visits are perfectly safe and effective ways to interact with your doctor through email, phone or a web-based portal. The most salient benefit that virtual care offers patients is convenience. Instead of traveling to and from a hospital, clinic or other healthcare facility to meet a doctor or clinician, virtual visits empower people to confer with their caregivers from the comfort of their own home. This app also helps people to get instant first aid treatment ideas and people can easily get information about nearby hospitals and doctors as per their needs. In sum-up, we can say that this app is well organized and functional for our society.

THE END