CHAPTER 3

PROPOSED MODEL

3.1 Introduction

As we mention in the chapter 2, that is the manual system do not work properly. That's why we need a new system that to reduce the problem of manual system. For this reason, we proposed a new system which name is "Emergency Ambulance System". Our proposed solution "Emergency Ambulance System" to make a truly online system to have met with online service facilities, all manual process has been automated through this system. A new system is proposed which is processed through computers. The system is operated by the users and Admin. Admin manage the list of the whole system, edited booking list, update bookilng list and delete boking list. Being web based makes this system available everywhere through internet and that overcomes the issue of the user requirements. The chapter is about the proposed system design. It will show how the system is designed, how the database is designed, which database is connected to which one. The chapter also contains implementation. In implementation flow chart and various kinds of code are presented.

3.2 Overview of Proposed System

The "Emergency Ambulance System" is a web- based application structured on PHP, MYSQL for providing better service and easiest access to Services and by using this system any institution can complete registration with schedule easily. This project is used by users,

    i   Admin

    ii   All users

The system includes the entities as their admin. Only few members, who called admin, are able to control that system. Update any system information such as upload a new Project, view all project, view selected users, view all feedback list, delete a booking list information, update a project information etc. There is no involvement of any user other than admin to update the core information due to security purpose.
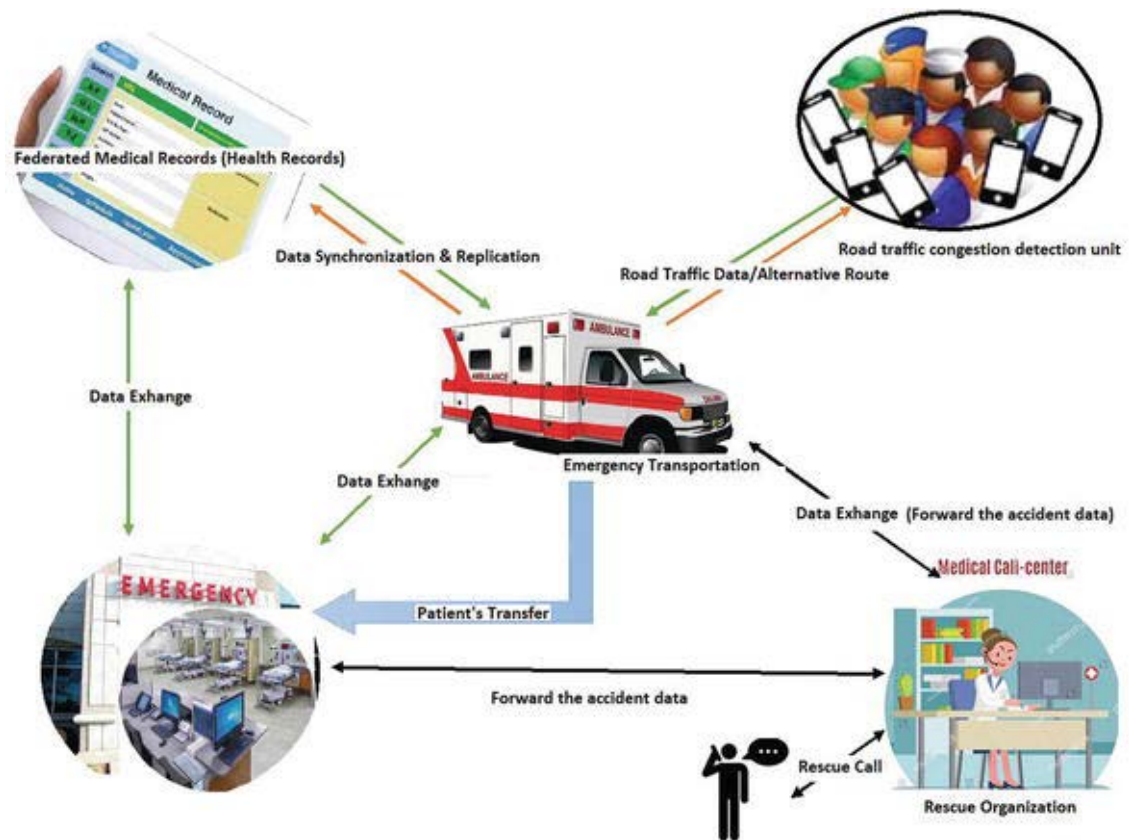
Figure 3.1: Emergency Ambulance System

The user, all types of users can show the all embulance list, search for ambulance and also they call for an ambulance or contact the admin through the registration. Admin can add information of their own. The admin searches the booking lists of ambulance.

3.2.1 Features

The following features of our proposed system which name is "Emergency Ambulance System " are given below.

    i.   Creating and changing issue at ease.

   ii.   It contains better storage capacity.

  iii. Works become very speedy.

  iv. Decrease the load of the user involved in existing manual system.

v. Well-designed reports.

vi. Easy and fast retrieval of information.

vii. Accuracy in work.

3.3 Feasibility Study

A feasibility study is a study that includes the analysis of the software if it is cost effective from the economic view, if it can fulfill the requirement technically, and if it is adaptable in the required environment. It also condiments the groundwork and determine whether the project should be taken or not. Finally, the net result will be rough plane for proceeding with the project. The probability the framework will be helpful to the association. The principle target of the practicality ponder is to test the technical, operational and economical attainability for including new modules and troubleshooting old running framework. All frameworks are practical in the event that they are boundless assets and vast time [18].

Figure 3.2: Function of feasibility study

3.3.1 Objective of feasibility study

A feasibility study evaluates the project's potential for success. So before start to design and develop a system feasibility study is very much important. From the feasibility study of the project, we have identified four fundamental criteria. As a feasible project complete successfully, the project will complete successfully [18].

The four dimensions are:

i. Technical feasibility

ii. Economic feasibility

iii. Operational feasibility

iv. Schedule feasibility

i.   Operational Feasibility

Operational feasibility assesses the extent to which the required software performs a series of steps to solve business problems and user requirements. This feasibility is dependent on human resources (software development team) and involves visualizing whether the software will operate after it is developed and be operative once it is installed. Operational feasibility is concerned with, how the user will accept the software. If the software does not meet the user expectation, then the user might not use the software. It is dependent on human resources available for the project and involves projecting whether the system will be used if it is developed and implemented. It is a measure of how well a proposed system solves the problems. And it takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. The system we developed, we tried our best to make it in such a way, and users of all level can easily use the software. Proposed ventures are useful just on the off chance that they can be transformed out into data framework. That will meet the association's working necessities. Operational possibility parts of the venture are to be taken as an imperative piece of the venture usage. A portion of the vital issues raised are to test the operational livability of a venture incorporates the accompanying

i. Is there enough help for the administration from the users?

ii. Will the framework be utilized and work appropriately in the event that it is being produced and actualized?

iii. Will there be any resistance from the user that will undermine the conceivable application benefits?

ii.   Economic Feasibility

Economic feasibility determines whether the required software is capable of generating financial gains for an organization. It involves the cost incurred on the software development team, estimated cost of hardware and software, cost of performing feasibility study, and so on.

For this, it is essential to consider expenses made on purchases (such as hardware purchase) and activities required to carry out software development. In addition, it is necessary to consider the benefits that can be achieved by developing the software. Software is said to be economically feasible if it focuses on the issues listed below. A system request is economically feasible if the projected benefits of the proposed system outweigh the estimated cost involved in developing, installing and operating it. To determine economic feasibility, we ascertain the following:

    i. The system is economic feasible in the sense that users need not to go to real estate company.

    ii. No special hardware is needed. So, Estimate the cost of needed equipment, the hardware that will be needed to develop the system. For example: need of a personal computer.

    iii. Estimate the cost of purchasing the necessary software.

    iv. Estimate the benefits that will result from the proposed system. Economic feasibility is usually answered from cost/benefit analysis. The purpose of cost estimation helps to classify what the system is going to do.

iii.   Schedule Feasibility

Schedule feasibility defines the degree to which a deadline for a strategy, plan, project or process is realistic and achievable. A project will fail if it takes too long to be completed before it is useful. Typically, this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period. Schedule feasibility is a measure of how reasonable the project timetable is based on given information the system will perform given tasks. Planning a project strategy and building a project schedule to

    i. Complete project within time and budget.

    ii. Resource management system.

    iii. Increase team productivity.

    iv. Increase project success rate.

    v. Realize significant time and resource savings.

We tried to complete the software within time limit. And almost we can do it. The proposed system will easily be accessible and it will be well organized and delivered the right information in the right place.

3.4 Requirements Analysis

It is a structured document detailing the descriptions of the system's functions, services and operational constraints. During this stage of research, more technical information and requirements are gathered about the proposed system. System Requirement Analysis: for any software development, the initial phase is to conduct a demand analysis. Demand analysis is the process of discovery, refinement, modeling, specification and review. The process is directly related to the quality of the software and subsequently studies significant impacts on the design and implementation. For this analysis, functional requirements and technical requirements are analyzed [19].

3.4.1 Requirements Specification

After analyzing the data collected, we formulated a number of requirements namely user requirements, system hardware and software attribute. These were grouped as user, functional, non-functional and system requirements.

i.   **User Requirements**

During data collection, we investigated and found out how the current system operates, not only that but also tried out which problems are faced and how best they can be settled. The users described some of the basic requirements of the system this includes search the admin can be the uploaded projects and searched by select the price, locations and area etc. Admin also update and change an upload project. The user can show the all project and different search in the upload project list.

ii.   **Functional & Non-Functional**

In the proposed project "Emargency Ambulance System" we described two types of requirements. Such as-

i. Non-Functional Requirement

ii. Functional Requirement

Non-Functional Requirement:

Non-functional requirement is essentially specifies how the system has behave and that it is a constraint upon the systems behavior. Non-functional requirements are vital to the success of software systems. If they are not properly addressed, undesirable results occur such as unsatisfied users, developers, and clients, and schedule and budget overruns to correct the software that was developed without the nonfunctional requirements in mind.

It describes the attributes of the system [19].

I. Efficiency

A system has to be effective and efficient for the highest utility to the user of the system. Broadly speaking, the effectiveness is a measure of the goodness of the output, while the efficiency is a measure of the productivity, i.e., the measure of the output against the input.

II. Reusability

Rreusability is the use of existing assets in some form within the software product development process. The system can be reused in any organization or site of the same group. The ability to reuse relies in an essential way on the ability to build larger things from smaller parts, and being able to identify commonalities among those parts. Reusability is often a required characteristic of platform software. Reusability brings several aspects to software development that does not need to be considered when reusability is not required.

III. Integrity

A system's state where its intended functions are being performed without degradation or being impaired by other changes or disruptions to its environments. For example: In our system only system administrator has rights to access the database, not every user can access all the information. Each user will be having rights to access of the user interface.

IV.   Availability

The system should be available at all times. That means any user can access the system anytime from their browser. A customer friendly system which is in acess of people around the world should work 24 hours. Incase of a hardware or database failure a replacement page will be shown.   Our system 'Property Management System' is availe for user to acess 24 hours in a day.

V.   **Delivery**

The whole system is expected to be completed in timely.

3.5 System Architecture

Systems Architecture is a generic discipline to handle objects (existing or to be created) called "systems", in a way that supports reasoning about the structural properties of these objects. It is a response to the conceptual and practical difficulties of the description and the design of complex systems. In figure below shows the proposed system architecture. It shows the users and admin communicate with the system. Users only show the all upload project and admin access all the sector in the system [20].
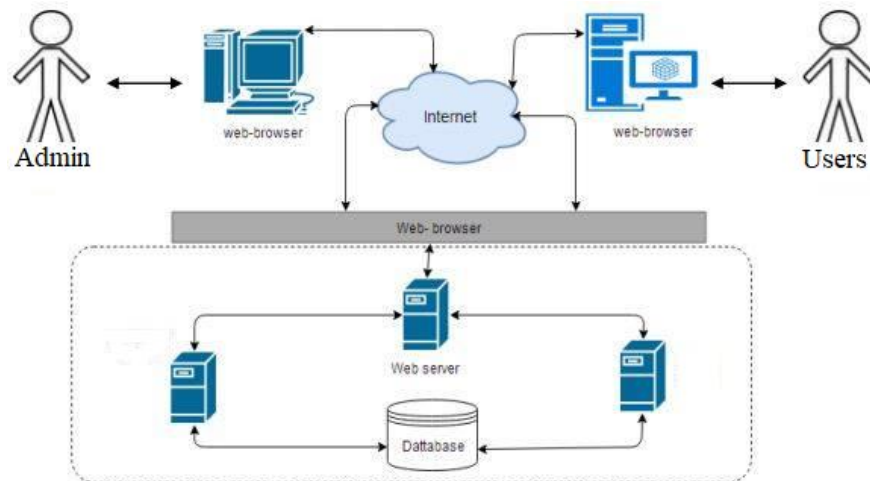
Figure 3.3: Basic system architecture

Here the user browses and search the ambulance and the admin panel manage all the access control and moderate the upload projects. The users get access to appointment material from Internet through a web browser. The 2-tier architecture gets connected with the first-tier architecture for

data exchange by means of web service. The 2-tier architecture values the use of a web server to connect to the Internet by handling all HTTP request completely for the static contexts, like images and files. It retorts to user's request through HTTP protocol, like granting back pages of HTML code. In the event the HTTP inquiry is to impart patient appointment reservation and scheduling service, the web server will forward the dynamic reply to a different server-side application situated at the application server to apply a technique to process the inquiry. The consequent feedback of application server will be reformed to HTML format from web server and will be advertised in the regulated HTML Web Page format.

3.6 System Design

In this section the design of the system will be described step by step. Systems analysis is the study of sets of interacting entities. System analysis is the process of gathering and interpreting facts, diagnosing problems and using the information to recommend improvements on the system. System analysis is a problem-solving activity that requires intensive communication between the system users and system developers. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture [21].
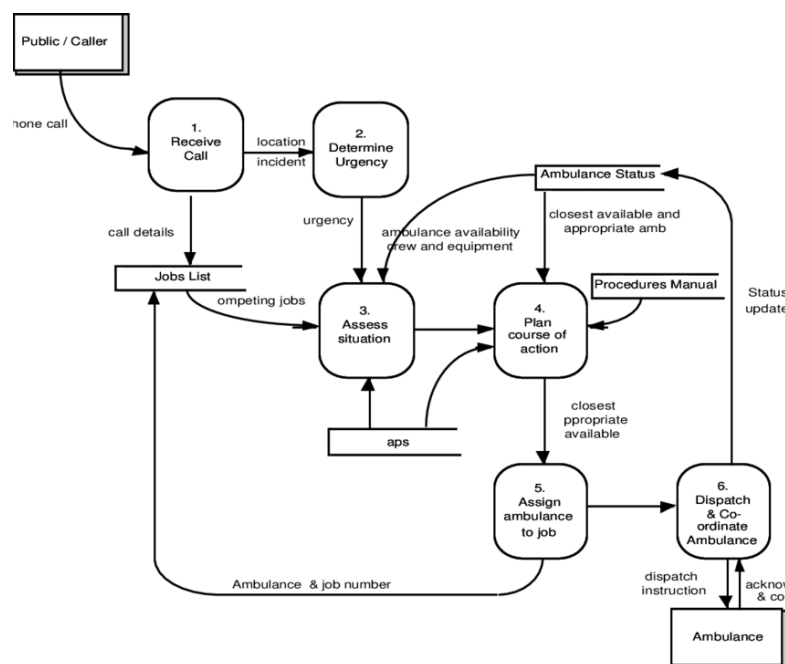

Figure 3.4: System function structure

3.6.1 Methodology

In this section we use waterfall model to develop our project which name is "Emergency Ambulance System". Various inconsistencies and mismanagement of this project are detected after the case study and our findings. By analyzing the finding and the demand of people of several categories, we have tried to remove those in consistencies and security in our system. Based on our findings and report we will implement the following functionalities to ablate drawback of existing system.

3.6.1.1 Phases of Water-fall Model

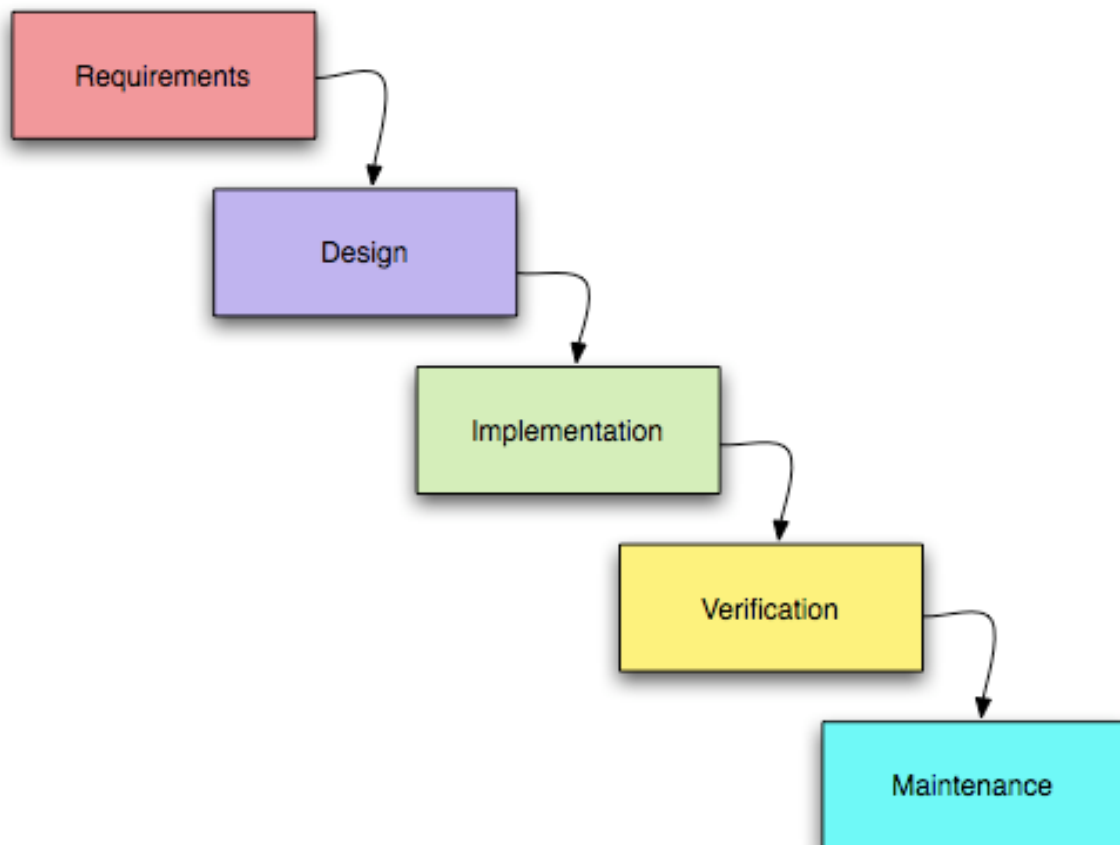There are 7 typical phases identified in Waterfall model and they are followed one by another in sequence [22].

Figure 3.5: Phases of water-fall model

i. **Requirement Specification**: Firstly, specify the requirement which is suitable for our project. All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document.

ii. **System Design**: The requirement specifications from first phase are studied in this phase and system design is prepared. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture.

iii. **Implementation**: With inputs from 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.

iv. **Integration and Testing**: All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

v. **Deployment of system**: Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.

vi. **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.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards (like a waterfall) through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model".

3.6.1.2 Advantages of Water-fall Model

i. Waterfall model is simple to implement and also the amount of resources required for it are minimal.

ii. In this model, output is generated after each stage (as seen before), therefore it has high visibility. The client and project manager get a feel that there is considerable progress. Here it is important to note that in any project psychological factors also play an important role.

iii. Project management, both at internal level and client's level, is easy again because of visible outputs after each phase. Deadlines can be set for the completion of each phase and evaluation can be done from time to time, to check if project is going as per milestones.

iv. This methodology is significantly better than the haphazard approach to develop software. It provides a template into which methods of analysis, design, coding, testing and maintenance can be placed.

v. This methodology is preferred in projects where quality is more important as compared schedule of cost [22].

3.6.1.3 Why We use Water-fall Model for This Project

i. The model is used only when the requirements are very well-known, clear and fixed.

ii. The project is simple.

iii. The project is complicated, but you have the expertise to deliver it.

iv. It is all we know and you have no support for change.

v. The upfront investment is not risky to make.

vi. We focus our system performance measures on delivery date and budget.

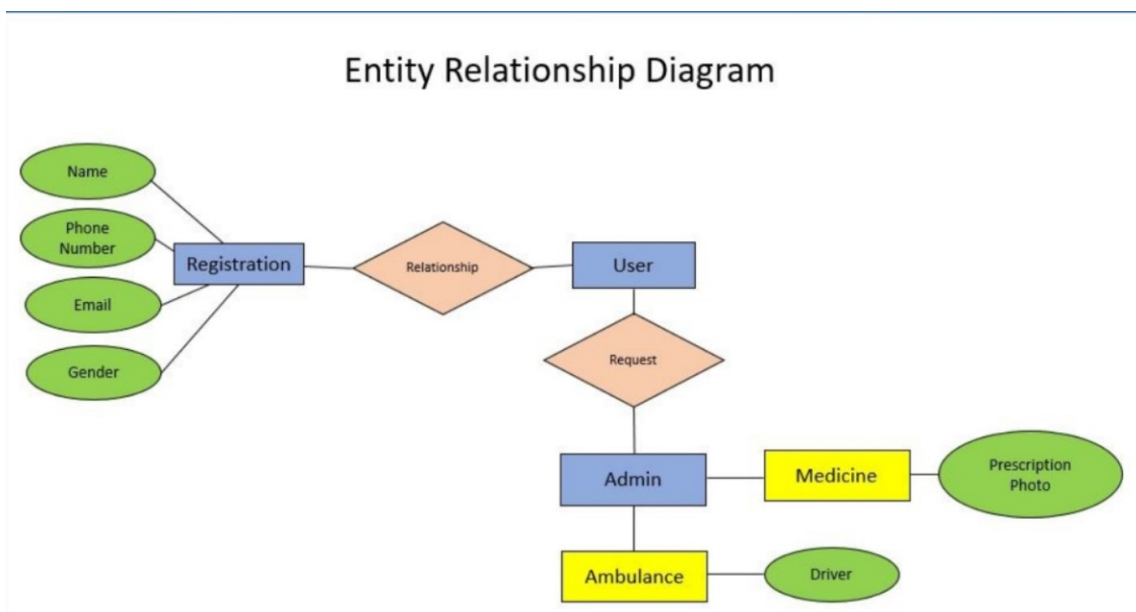## 3.6.2 Entity Relationship Diagram (E-R diagram)

Figure 3.6: E-R Diagram for Emergency Ambulance System

An entity-relationship (ER) diagram is a specialized graphic that illustrates their relationships between entities in a database. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to

represent relationships and ovals are used to represent attributes. This are describing in details in the chapter 2. ER modeling helps to analyze data requirements systematically to produce a well-designed database. This E-R diagram defines the database design of Emergency Ambulance System . The rectangle denotes the entity (log in, Booking ambulance, booking list, record, user Admin) the diamond denotes the relationship (has, manages, give feedback, search) & the oval shape denotes attribute (All types of attribute –like id, name, email, phone,prescriptions pictures, ambulance list documents, booking list information, location, area etc.). As like as user have some attributes like email, comment. Admin has login and manage add ambulace, update, delete and also manage the feedback and search sections.

3.6.3 Data Flow Diagram

Data flow diagram (DFD) represents the flows of data between different processes in a business. It is a graphical technique that depicts information flow and the transforms that are applied as data move form input to output. This are describing in details in the chapter 2 [23].

3.6.3.1 Context Diagram

The following figure describes about flow of data. It belongs to the user is to show the all uploaded project and search the property. Admin panel control the system every time. Admin can add a new ambulance, edit and delete the ambulance list. This is the main them of the context diagram [24].
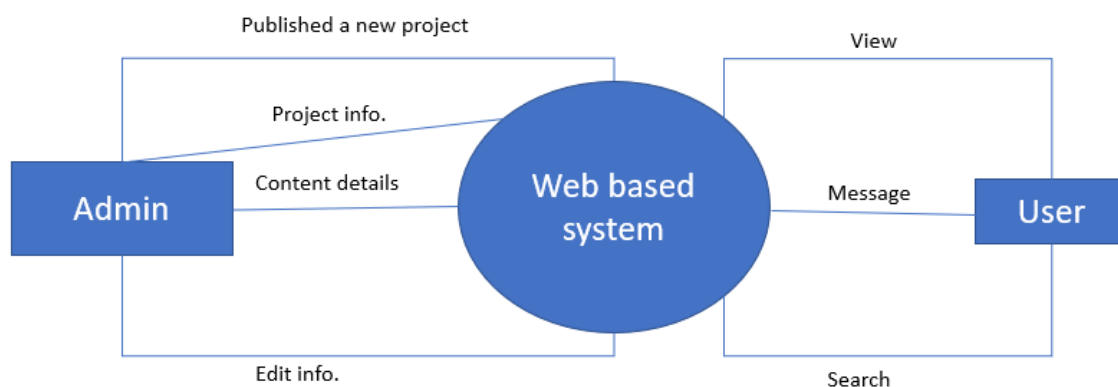

Figure 3.7: DFD context diagram

3.6.3.2 DFD Diagram Level 0

This is the level 0 diagram which describes more elaborately then the context diagram. The users can search all the uploaded list of ambulance and provide the valuable opinions. On the other hand, Admin can upload a new and modified project that show the user interface, edit a project, search a specific project and manage all the system.
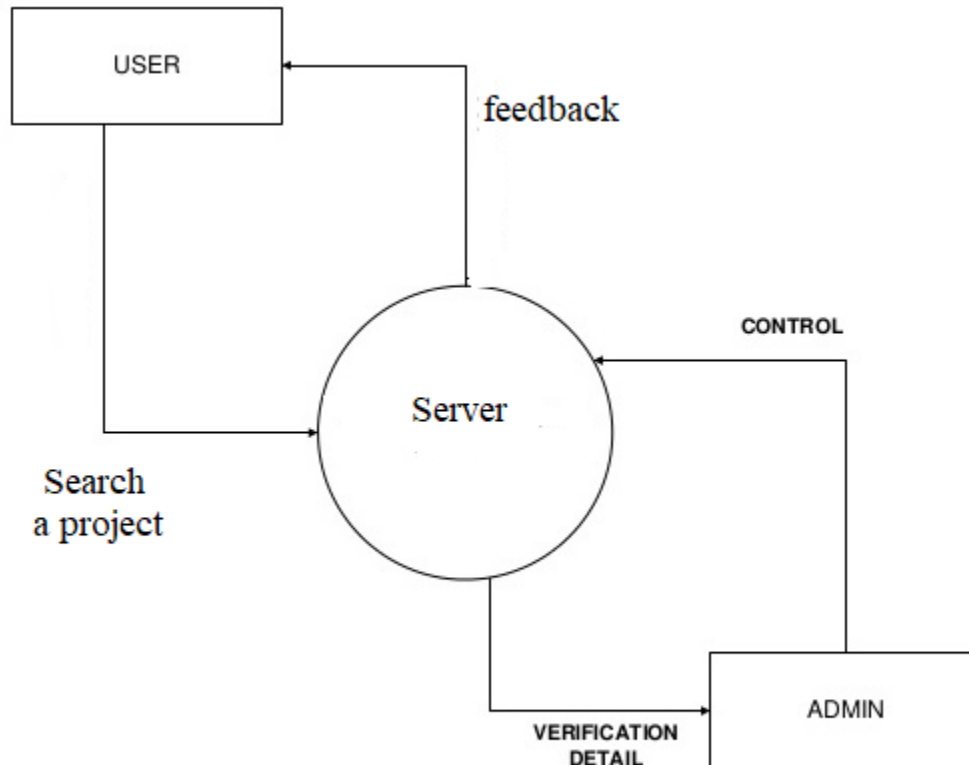

Figure 3.8: DFD Level 0

3.6.5 Use Case Diagram

A use case model describes what a system does without describing how the system does it; that is, it is a logical model of the system. The use case model reflects the view of the system from the perspective of a user outside of the system [25].

i.   Use Case Diagram

The following figure describes about the use-case diagram of user, that means which task can be done by users. Admin can also edit his profile like – change pasward, upload a project, search or view specific project, edit a project and feedback from users. Onthe other hand the user only search or view specific project and feedback a project.
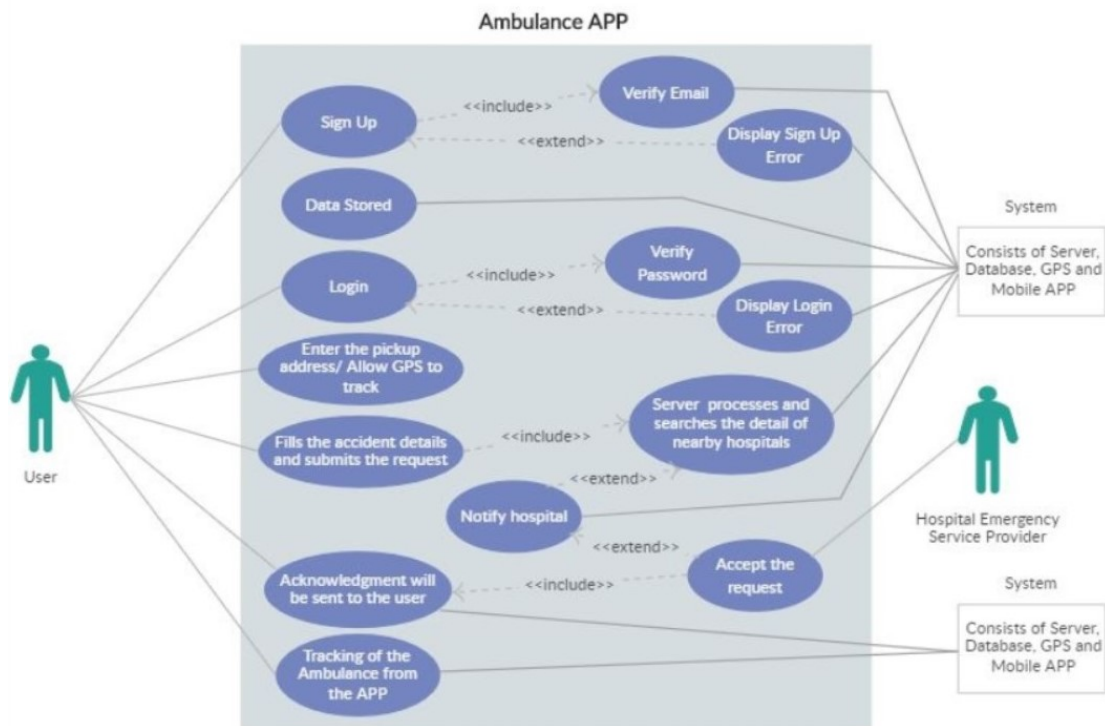

Figure 3.9: Use Case diagram

ii.   View admin

This section describes the admin details for student

     i.   After login the admin can view the admin panel.

     ii. Admin add, edit, manage all uploading booking list.

iii.   User

This section describe user,

     i.   User only can see the all upload booking list.

     ii.   Search an Ambulnace.

     iii. Booking an amblance.

               iv. Feedback about the services.

iv.   Login

This section describes the login process for admin.

         i. In this section only admin can login.

       ii. Users need to login for booking ambulance.

3.7 Database Design

This section will described how the system's database is degined. Database design is an important part of software design. The database design is directly related to the merits of the program to achieve the efficiency and simplicity of data access [26].
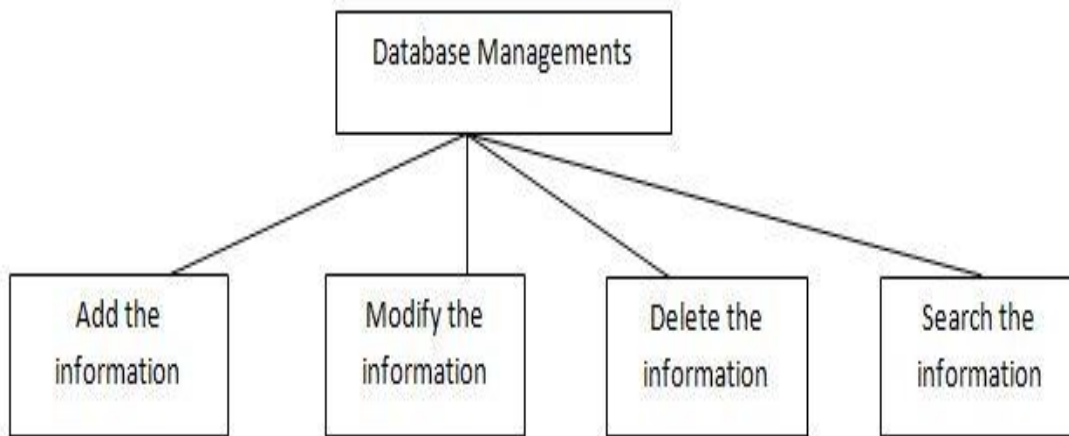

Figure 3.10: Basic of database design

3.7.1 Description of Data Objects in Database Table

The following table 3.1 contains the add ambulance table where the attributes are amb_id, ambulance_number, driver_name, ambulance_type. Here the amb_id is the primary key. The following table 3.1 is given below,

	amb_id	ambulance_number	driver_name	dr_p_nu	ambulance_type	ambulance_area	am_discrip	amb_photo	district_name
☐ 🖉 Edit 🖳 Copy ⊖ Delete	1	456825	Abdur Razzak	0175963552	high class	shamoli	it is a high class ambulance.	img/ambulance6.jpg	coxs bazar
☐ 🖉 Edit 🖳 Copy ⊖ Delete	2	45852-d	sabbir	01985466552	2nd class	songshod	valo na	img/ambulance6.jpg	Borishal
☐ 🖉 Edit 🖳 Copy ⊖ Delete	3	54564	tomal	012556655658	1st	dhaka	well	img/ambulance9.jpg	dhaka
☐ 🖉 Edit 🖳 Copy ⊖ Delete	5	dha-4456	michal khalid	012546895	frist class	shamoli	good	img/ambulance12.jpg	dhaka
☐ 🖉 Edit 🖳 Copy ⊖ Delete	6	cha-45863	jhonson	0125864823	2nd class	hatirjheel	good	img/ambulance10.jpg	sirajgonj
☐ 🖉 Edit 🖳 Copy ⊖ Delete	7	453453	saim	03241435456	icu	gazipur	sdfghjlhgfh	img/ambulance15.jpg	jamalpur

⬆ ☐ Check All   With selected: 🖉 Change ⊖ Delete 📤 Export

Table 3.1: Data object in database table for add ambulance

The table 3.2 contains the booking information like –booking_id, ambulance_type, pickup area, pick time, dropoff, name, phone number, email. Where the book_id is the primary key. Here is the following table 3.2 is given below,

+ Options

	book_id	ambulance_type	pickup	dropoff	pickup_time	dropoff_time	name	mobile	email	patient_location	emergency_type
☐ 🖉 Edit 🖳 Copy ⊖ Delete	22	non ac	ullapara	nobogram	00:00:10.3	00:00:12.0	murad	01556332545	sabbir@gmail.com	mohammadpur	Accident
☐ 🖉 Edit 🖳 Copy ⊖ Delete	23	ac	mohammadupr	nobogram	10.30	12.30	sabbir	01556331358	rayhan@gmail.com	dhaka	Accident
☐ 🖉 Edit 🖳 Copy ⊖ Delete	24	freezer	mohammadupr	hatirjhil	10:20	16:30	mithun	01556331359	admin@gmail.com	mohammadpur	Accident
☐ 🖉 Edit 🖳 Copy ⊖ Delete	25	ac	ullapara	nobogram	18:06	18:06	sabbir	01556332588	teacher@gmail.com	mohammadpur	Accident
☐ 🖉 Edit 🖳 Copy ⊖ Delete	31	icu	dhanmondi	bonani	10:20	15:30	sabbir bi	0198549649478	samiul@gmail.com	hospital	Others
☐ 🖉 Edit 🖳 Copy ⊖ Delete	32	icu	12	01	00:10	04:30	sunam	01858085086	samiul@gmail.com	mohammadpur	Heart attack

⬆ ☐ Check All   With selected: 🖉 Change ⊖ Delete 📤 Export

Table 3.2: Data object in database table for ambulance booking information

The table 3.3 contains the state information. The attribute of the tables is reg id, names, address, city. Here the reg id is the primary key. The following table 3.3 is given blew,

+ Options

	reg_id	first_name	last_name	address	city	state	zip	nid	age	gender	date	phone	email	blood	photo
☐ 🖉 Edit 🖳 Copy ⊖ Delete	2	samiul	siddique	nobogram	dhaka	125	1207	546453434354354354	15	male	2017-02-22	016958548512	samiul@gmail.com	AB+	img/7.jpg
☐ 🖉 Edit 🖳 Copy ⊖ Delete	4	abdur	razzak	lalmonirhat	hatibandha	hat	17896	01255668952168623526	25	male	1995-12-01	01622150390	razzak@gmail.com	B+	img/20170106
☐ 🖉 Edit 🖳 Copy ⊖ Delete	7	sdg	sdf	sdfg	fdg	dfg	0	dfg	0	male	0000-00-00	dfg	su@gmail.com	AB+	img/sunam.jpg
☐ 🖉 Edit 🖳 Copy ⊖ Delete	8	sab	sa		dfg	dfg	0	34524352345	34	male	2019-12-05	234	sab@gmail.com	AB+	img/sunam.jpg
☐ 🖉 Edit 🖳 Copy ⊖ Delete	9	pi	pi	gh	gdh	dfgh	0	324	34	male	2019-12-18	345	pi@gmail.com	AB+	img/df.jpg
☐ 🖉 Edit 🖳 Copy ⊖ Delete	10	Shumsuzzoha	Sunam	house no: 2, road no: 2, Nobodoy housing, adabor d	Dhaka	Mohammadpur	1207	2828487585896	26	male	1994-10-09	+8801858085086	shumssunam15@gmail.com	AB+	img/Homer_S wallpaper-978

Table 3.3: Data object in database table for registration information

The table 3.4 contains the order medicine information. Here the attributes are the med_id, med_quantites. med_id is the primary key. The following table 3.4 is given blew,

	med_id	medi1	quant1	medi2	quant2	medi3	quant3	medi4	quant4	name	mobile	email	shipping_loca	time	photo
☐ 🖉 Edit ⧉ Copy ⊖ Delete	1	napa	1	emoti	1	cop	1	lol	1	sabbir	01556331358	razzak@gmail.com	mohammadput	2019-04-29 12:08:20am	
☐ 🖉 Edit ⧉ Copy ⊖ Delete	2	napa	1	emoti	1	cop	1	lol	1	rayhan	015554265	razzak@gmail.com	mohammadpur	2019-04-29 09:35:04pm	img/sabbir.jpg
☐ 🖉 Edit ⧉ Copy ⊖ Delete	3	napa	1	emoti	1	cop	1	lol	1	murad	01556331359	razzak@gmail.com	mohammadpur	2019-04-29 11:22:22pm	img/Screenshot_
☐ 🖉 Edit ⧉ Copy ⊖ Delete	4	napa	2	nampi	1	clofenuck	2	civit	1	sabbir ali	0125566581	samiul@gmail.com	kadirabad	2019-04-29 11:39:49pm	img/form_1.png

☐ Check All   With selected: 🖉 Change   ⊖ Delete   📄 Export

Table3.4: Data object in database table for order medicine information

3.7.2 Database Schema

The database schema of a database is its structure described in a formal language supported by the database management system. The term "schema" refers to the organization of data as a blueprint of how the database is constructed.
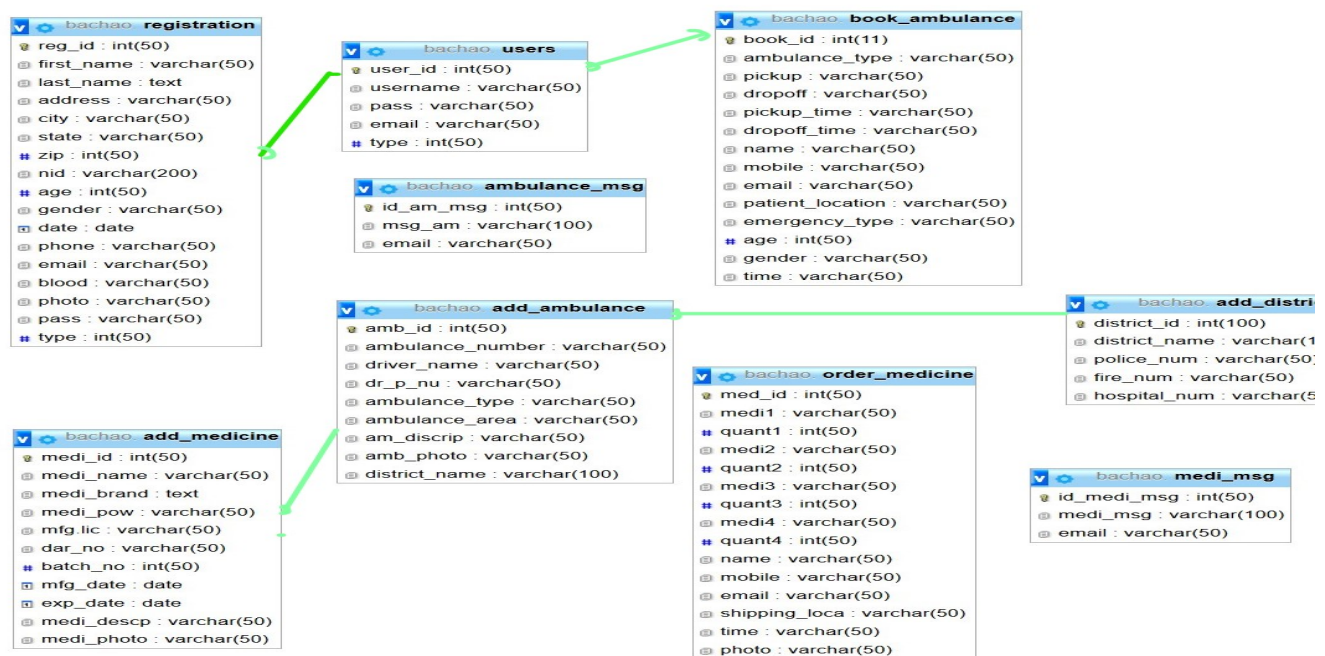

Figure 3.11: Database schema

The following figure describes about the database schema. Database schema means how the database table are connected to each other that means how the database is designed.

In figure 3.13, we see that one database is connected with other. The users table is connected with users and all are connected by admin.

3.8 Implementation

Implementation is the realization of an application or execution of plan, idea, model, design, specification, standard, algorithm or policy. This section describes the project implementation for developing the Online Course Registration System. The project implements PHP, MySQL, and standard HTML and CSS. The project will be capable of running on standard internet web browsers. The details of PHP, MySQL, and standard HTML and CSS are describing in chapter 2.

3.9 Conclusions

A good project depends on good design and good implementation according to the design. This chapter is actually about the system analysis which contains mainly used method to draw up the system procedure through diagrams, flowcharts, database schemas. That means how the system is designed, how the databaseisdesigned and implemented the whole system. Various types of system test are also included here with database tables and error handling. This chapter will be able clear the details about our project.