



## **Independent University, Bangladesh**

An undergraduate internship report submitted by  
Sakib Islam Shuhrid (Student ID: 1631384)

In consideration of the partial fulfillment of the requirements for the degree of  
**BACHELOR OF SCIENCE**  
in  
Computer Science and Engineering  
Department of Computer Science and Engineering  
Autumn 2020

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## **Web Application Development of “Nagad Blood” at Xen Tech**

An undergraduate internship report submitted by  
Sakib Islam Shuhrid (Student ID: 1631384)

has been approved on --/--/--.

**Md. Abu Sayed**

Internship Supervisor & Lecturer

Department of Computer Science and Engineering  
School of Engineering & Computer Science  
Independent University, Bangladesh



# Attestation

I certify that this report is my own work, based on my personal work by me during my Internship. And that I have acknowledged all material and sources used in this report.

I also certify that this report has not previously been submitted for assessment in any other unit or team and that I have not plagiarized the work of other students.

It has been completed under the guidance of Md Abu Sayed (Internal Supervisor) and Anwar Sayef Anik (External Supervisor). All the sources of information used in this project used in this project and report has been duly acknowledged for it.

-----  
Signature:

-----  
Date:

-----  
Name



## Acknowledgements

First and foremost, I desire to express my deepest sense of gratitude to Almighty Allah, it is because of His mercy and blessing that I have come so far. It has been a great privilege to work for Xen Tech as an Intern. I have received so much support and encouragement from the individuals of Xen Tech who have years of experience in Software Development. I would like to thank the members of Xen Tech for spending their valuable time and knowledge which was essential for the completion of this report.

I express my gratefulness to my internal supervisor, Md Abu Sayed, Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh (IUB), for his invaluable instructions, continuous guidance, support and motivation during my internship period and preparation of this report.

My gratitude also extends to all other employees of Xen Tech who helped me learn so much in my own skill development process and made me fit right in the environment. Many many Thanks to the Xen Tech team of this project, for their time, effort and expert skills. Special Thanks to Shahriar Hridoy for designing and drawing the application's logo.

Finally, I proudly acknowledge the great sacrifices, good wishes, moral support, fruitful advice, inspirations and encouragements from my family members, relatives and friends.

Sakib Islam Shuhrid

January, 2021



## Letter of Transmittal

27<sup>th</sup> January 2020

Md. Abu Sayed

Lecturer,

Department of Computer Science and Engineering,

Independent University, Bangladesh

Subject: Letter of Submission for Internship Report, Autumn 2020

Dear Sir,

This is to inform that with due honor and respect, I, Sakib Islam Shuhrid (ID: 1631384) from Internship Course of Summer 2020 Semester, Section 4, would like to submit my Internship report. This report is based on my internship program and the project I have worked on. My internship was conducted from 1<sup>st</sup> October 2020 to 31<sup>th</sup> December 2020 and it has been completed at Xen Tech.

This report is based on my experience and the work I did at Xen Tech during my internship program. The primary goal for my internship was to gain experience from working in the software engineering industry and familiarize myself with all the different technology related fields of the company, including research and development, documentation, software development and to get acquainted with software development processes and practices.

Over the period of my internship at Xen Tech, I had to learn and adapt to the evolving technologies being used in different situations and requirements and to be able to apply them in real life projects.

I hope the following report can achieve your approval and is adequate.

Sincerely,

---

Sakib Islam Shuhrid, 1631384

Email: 1631384@iub.edu.bd



## Evaluation Committee

**Signature:** .....

**Name:** .....

**Supervisor:** .....

**Signature:** .....

**Name:** .....

**Internal Supervisor:** .....

**Signature:** .....

**Name:** .....

**External Supervisor:** .....

**Signature:** .....

**Name:** .....

**Convener:** .....



## Abstract

With the development of so many apps and addictive games out there in the web and mobile application market, people are spending more time on their phones than ever. While this does seem like a good way to spend the time; it does put the human health at high risk as their bodily movements have declined, to top it off ever since the start of the Coronavirus pandemic, people are being asked to stay home which has brought in a bigger decline in bodily movements; some people do exercise at home to stay healthy but significant others have become lazy and have put their health at a greater risk.

To deal with such a situation, a certain group of developers at Xen Tech; including myself, have decided to work on a this application that involves people at their need. It has been decided to call the application, “Nagad Blood”. Sometimes people have to face the difficulty in finding the blood group Donors at right time. Help Line has attempted to provide the answer by taking itself the task of collecting Blood bank project nationwide for the cause and care of people in need.

At any point of time the people who are in need can reach the donors through our search facility. By mobilizing people and organization who desire to make a difference in the lives of people in need. On the basis of humanity, everyone is welcome to register as a blood donor.

Nagad\_Blood Bank Management System (NBBMS) is a browser based system that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank. This project aims at maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a better way. Aim is to provide transparency in this field, make the process of obtaining blood from a blood bank hassle free and corruption free and make the system of blood bank management effective.

The background, scope, objectives and other analytical points about this application will be discussed in detail in this report. Company Profile of Xen Tech will also be addressed.



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# Chapter 1: Introduction

## 1.1 Background

With the development of so many Apps and addictive games out there in the mobile app market, people are spending more time on their phones than ever. While this does seem like a good way to spend the time; it does put the human health at high risk as their bodily movements are reduced. To make matters worse ever since the start of the Coronavirus pandemic, people are being asked to stay home which has brought in a bigger decline in bodily movement since their daily activity outside has come to a halt. While some people are conscious about their health and do adequate exercise to stay healthy, significant others have become lazy and have put their health at a greater risk. Even if they are not spending time on their mobile phone, they are still spending a lot of time doing something while sitting or lying down as they don't have any reason to move around in their homes.

The Nagad Blood Bank Management System is great project. this project is designed for successful completion of project on blood bank management system. the basic building aim is to provide blood donation service to the city recently. Blood Bank Management System (BBMS) is a browser based system that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank. This project aims at maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a better way. Aim is to provide transparency in this field, make the process of obtaining blood from a blood bank hassle free and corruption free and make the system of blood bank management effective.

The Nagad Blood system project report contains information related to blood like:

- Blood type
- Date of Donation of blood
- Validity of Bloods
- Available Blood group

## 1.2 Objectives

The main objective of this application is to automate the complete operations of the blood bank. They need maintain hundreds of thousands of records. Also searching should be very faster so they can find required details instantly.

To develop a web-based portal to facilitate the co-ordination between supply and demand of blood . This system makes conveniently available good quality, safe blood and other blood components, which can be provided in a sound, ethical and acceptable manner, consistent with the long-term well being of the community. It actively encourage voluntary blood donation, motivate and maintain a well-indexed record of blood donors and educate the community on the benefits of blood donation. This will also serve as the site for interaction of best practices in reducing unnecessary utilization of blood and help the state work more efficiently towards self-sufficiency in blood.

The system will provide the user the option to look at the details of the existing Donor List, Blood Group and to add a new Donor. It also allows the user to modify the record. The administrator can alter all the system data.

## 1.3 Scope of the Project

Features available to the user after the development of this web application Nagad Blood:

- ❖ Donor Registration
- ❖ Blood Login
- ❖ Blood Donor
- ❖ Equipment
- ❖ Blood Recipient
- ❖ Blood collection
- ❖ Blood Camp
- ❖ Stock details
- ❖ Blood issued

## 1.4 Company Profile







## WE ARE CREATIVE WE ARE XEN

Xen Tech is a Web and Mobile Application Development Company, located in Dhaka. We work for Startups and Established Brands alike. Working with clients, we build compelling apps that provide permanent illumination and value to their customers. Xen Tech has a great understanding of mobile and web-based technology. Using our expertise, we bring out the best for a company. If you're a Startup or an Established Company, we can build your products maintaining the scale of your business's needs.

We know how to use clear designs and updated web technologies in proper ways to provide you with the best user experience. XEN TECH highly believes that websites have the ability to speak to people on an emotional level. So, we think you should get fun while using the website. Also, websites should be such that leave long-lasting impressions on their visitors. We also believe that **WEB IS FOR EVERYONE**. So, it should provide the best quality services whether the visitors are on their phones, tablets, or PCs!


### TECHNOLOGIES WE LOVE


Laravel

django

WORDPRESS

Flutter

Vue.js

React

## 1.5 Background of the Company

Xen Tech is a software consulting company based in Dhaka, Bangladesh. It was founded in the year of 2015. Xen Tech is comprised of a small team of software craftsmen who learn, collaborate, and innovate together. They host regular live events (workshops, meetups & talks) that are geared towards sharing with the local community. Xen Tech is all about the dream to provide the best web solutions and create a unique user experience. Each completed project makes us more hungry, hungry for designs, more and at least some more twinkles.

## 1.6 Mission, Vision and Values

The company was set up with the intention to produce high quality software products by training software engineers who can contribute locally and internationally. To engage local developer communities and encourage a culture of knowledge skill transfer. Xen Tech offers mentorship and internship programs besides hosting regular workshops and tech sessions.

## 1.7 Company Departments

Xen Tech maintains a flat organizational structure. Teams and responsibilities are generally formed and assigned around the nature and requirements of specific projects.

## 1.8 Product and Services

**Web Application Development:** Full stack JavaScript web application development and hosting

**Mobile Application Development:** Hybrid mobile application development for Android/iOS

**Event Hosting:** Host events aimed at sharing with the local community

## 1.9 Operation Details

The nature of work conducted at Xen Tech is research and development focused, using both cutting-edge and proven technologies as required for a given project. The Xen Tech team works on a range of projects which include developing voting technologies for the Bangladesh government, considerate video-audio conferencing apps, 3D reconstruction medical software, complex web and mobile applications, and mobile-based games.





## 1.10 Advisors

***Zunaid Ahmed Palak*** \_ State Minister of Bangladesh Government in charge of Information & Communication Technology Division.

## 1.11 Clients of the Company

- 1) Mi Xiomi
- 2) GP Accelerator
- 3) DreamWeaver
- 4) Nagad
- 5) Turtle Venture
- 6) Transfer Tech Academy
- 7) Pathao
- 8) The Examinar
- 9) Dhaka Talk
- 10) Learning 101
- 11) Better Stories
- 12) Camera House
- 13) Pathao
- 14) Khazana Mithai
- 15) Amaya

## 1.12 Address and Contact Information

**Address:** Road 7, House 26, Block C

Niketon Gulshan 1,

Dhaka, Bangladesh.

**Contact:** <http://xentech.io>



# **Chapter 2: Literature Review**

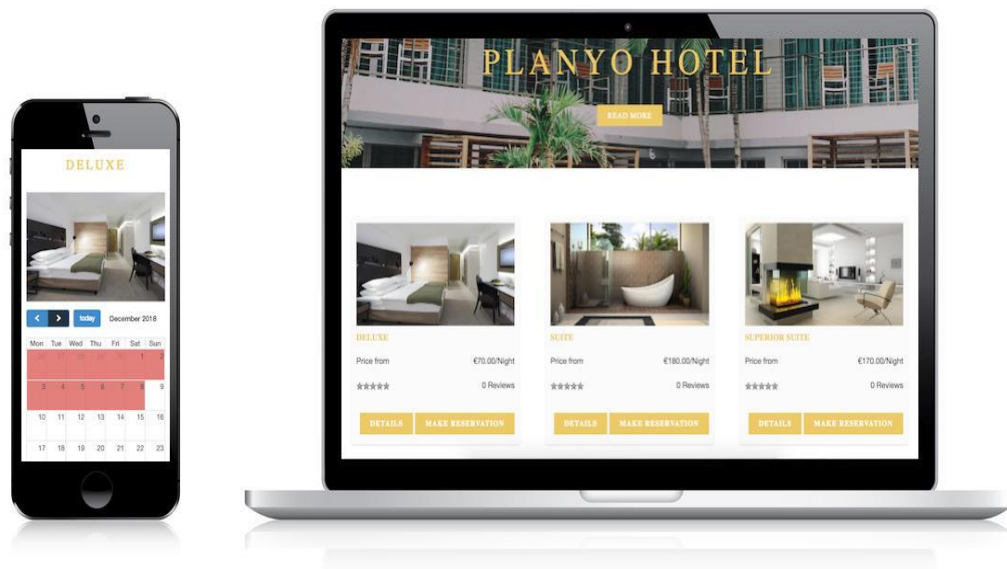
## 2.1 Project relation to Undergraduate Courses

Knowledge and skills gained from undergraduate courses have helped in the development of “Nagad Blood” project. It would have proven more difficult if these courses were not covered before working on this project. Some of the courses are:

- **CSE 203 Data Structure:** This course was about teaching how to handle and manipulate complex arrays, objects, classes, array of objects, objects of array, nested arrays, nested objects, etc. As “Nagad Blood” involves many complex data structures, the skills gained from this course made handling them much easier.
- **CSE 213 Object-Oriented Programming:** This course is a deep dive into classes and its objects of programming. It also taught how to write modular programs which made codes less repetitive and more reusable. It helped to design “Nagad Blood” code in a modular format. Also, as the application grew bigger, this practice helped avoid writing new modules from scratch by using parts of old modules and adding new functions to them.
- **CSE 303: Database Management:** This was the first course which taught how to design and plan a project. It covered popular planning and strategy practices such as System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model and Notation Diagram and many more. These techniques helped in the development planning and strategy of “Nagad Blood” and also they helped in writing this report.
- **CSE 309: Web Applications and Internet:** This is the course where the development of web applications was taught. It covered very important technologies that are highly in demand in the industry, such as HTML, CSS, JavaScript, jQuery, View Engines (Handlebars and embedded JavaScript), Node.js, Express.js, MongoDB. The tools and technologies learned from this course immensely contributed to the development of “Nagad Blood” as it is a web application built with the web technologies and it has a backend server which had to be deployed to the server as well.

## 2.2 Related Works

### Planyo Hotel Reservation



**Figure 2.1:** UI screenshots of Planyo Hotel Reservation

Planyo Hotel Reservation is an online platform to booked or reserve hotel rooms, restaurant or halls. The application and “Nagad Blood”, both keeps the data of the user safely and works same, one is for hotels and the other is for appointment blood and donor at any time.

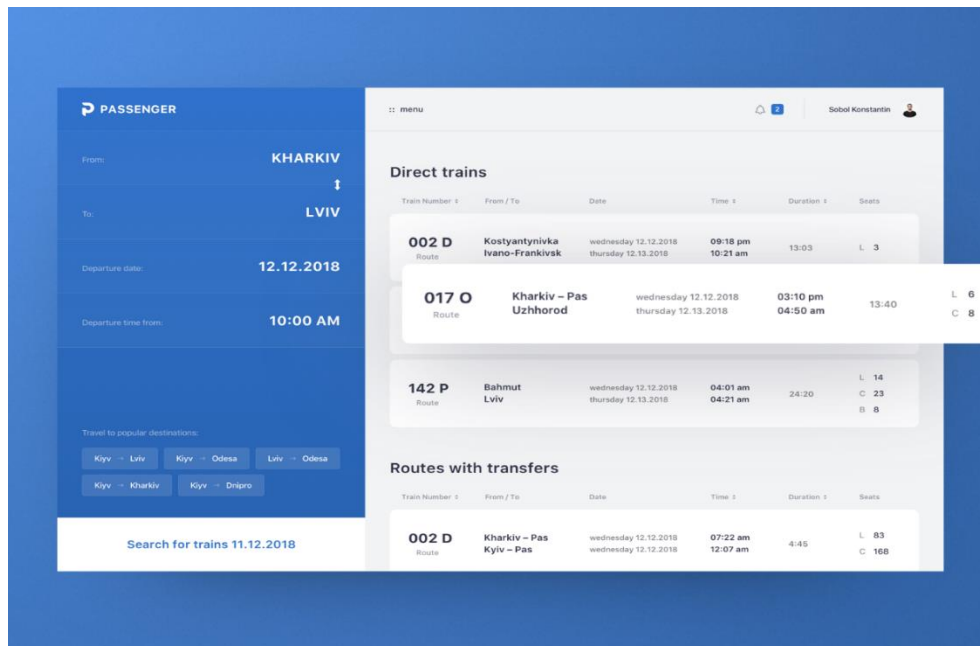
## Crystal Run Healthcare



**Figure 2.2:** UI screenshots of Crystal Run Healthcare

A unique application for people. It has made in USA and “Nagad Blood” is from Bangladesh. There are many difference with “Nagad Blood”. But the main similarity is both can avail the health related facility at any time but it is only for the people of USA and Nagad Blood inspired itself from Crystal Run Healthcare with more facility and easy convenient to users.

## Passenger



**Figure 2.3:** UI screenshots of Passenger

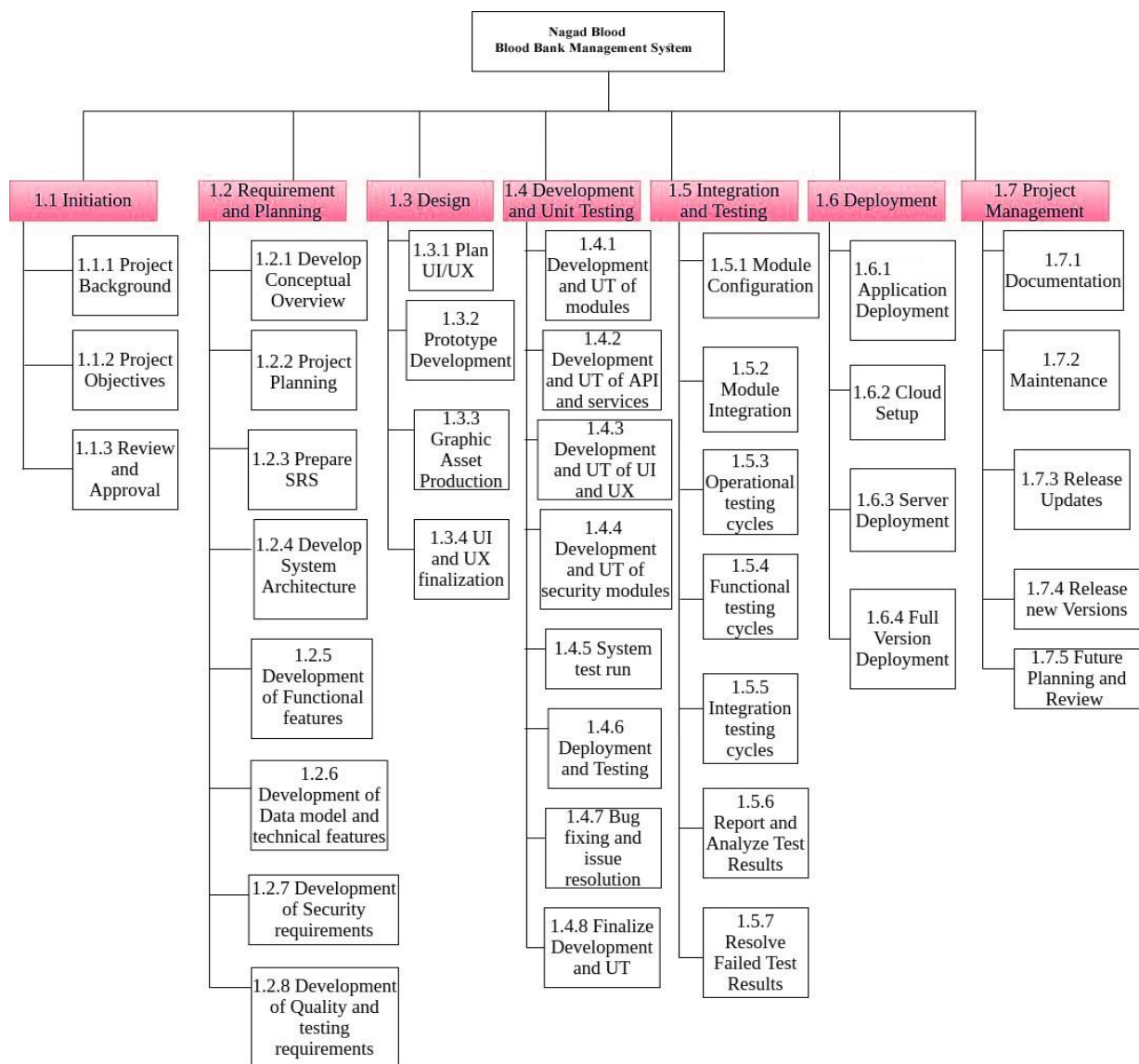
“Nagad Blood” has kind a same interface like Passenger. Passenger is the online appointing and booking of Bus or Bus seats. It is used in Canada and Mexico. It has Mobile and Web version like “Nagad Blood” and running successfully and it is available in google play store.



# **Chapter 3: Project Management and Financing**

### 3.1 Work breakdown Structure

The WBS is a method for getting a complex, multi-step project done. It is a way to divide and conquer large projects, so things are done faster and more efficiently. Work breakdown structure (WBS) is a hierarchical tree structure that outlines a project and breaks it down into smaller portions. The goal of a WBS is to make a large project more manageable. Breaking it down into smaller chunks means work can be done simultaneously by different team members which leads to better team productivity. Below is the WBS of “Nagad Blood”



**Figure 3.1:** Work breakdown Structure of “Nagad Blood”

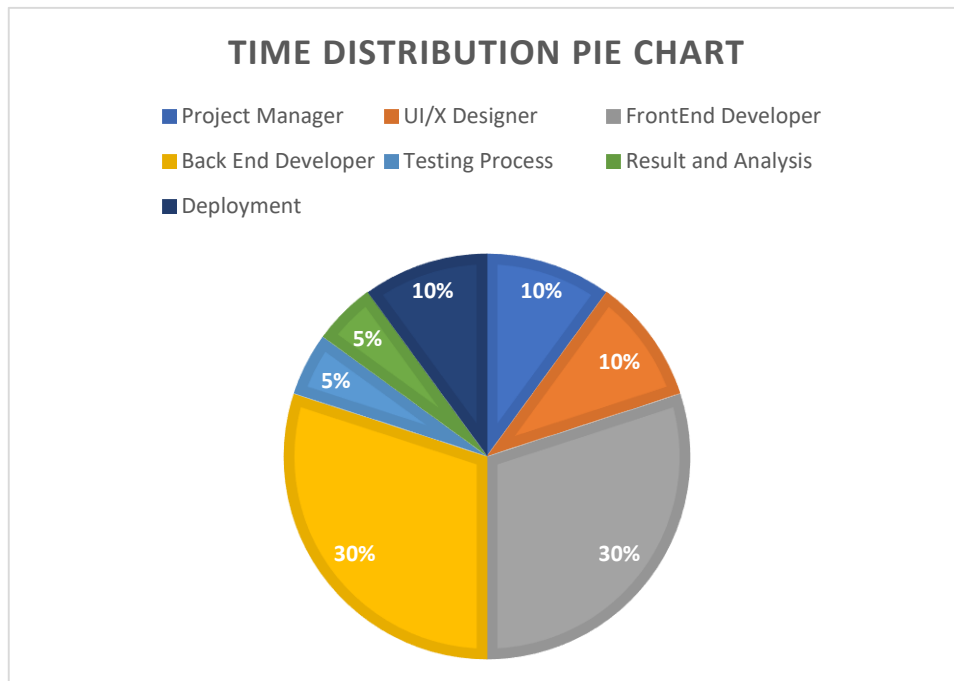


## 3.2 Process Activity wise Time Distribution Table

Work Breakdown Structure is collected where all the activities are included. We attempted to total these works in a time outline. Along working with a group extend, overseeing the time and working nearby with group individuals time planning. This entire work is isolated among the venture group. To preserve this workflow conveyance time is assessed is nearly 93 days for the project.

Serial	Activity	Days	Work Percentage
1	Project Manager	9	10%
2	UI/X Designer	9	10%
3	Front End Developer	23	30%
4	Back End Developer	25	30%
5	Testing Process	12	5%
6	Result and Analysis	8	5%
7	Deployment	7	10%
	Total	93	100%

**Table 3.1:** Time Distribution Table



**Figure 3.2:** Time Distribution Pie Chart

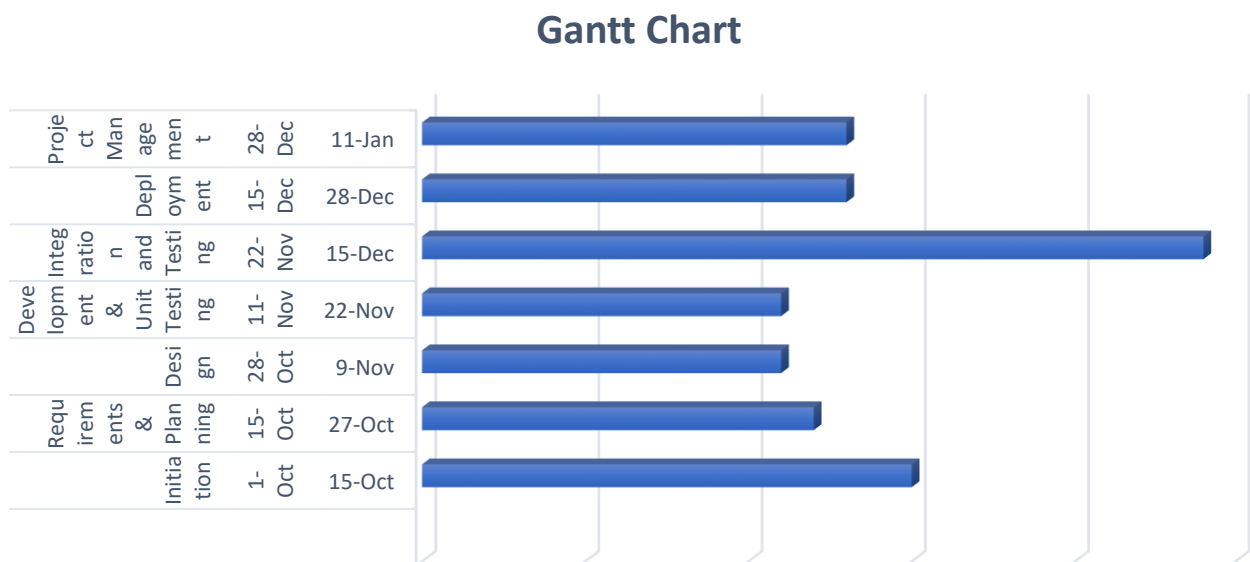
### 3.3 Gantt chart

A Gantt chart has been produced to help plan and schedule project tasks. It helped assess how long the project should take, determine the resources needed and plan the order in which tasks will be completed. It also helped in managing the dependencies between tasks.

The Gantt chart was also useful for monitoring the project's progress once it has started. It helped in having a clearer vision of what should have been achieved by a certain time frame and when the project fell behind schedule; appropriate actions were taken to bring it back to course.

Below is the produced Gant chart for “Nagad Blood”.

Tasks	Start Date	End Date	Duration
Initiation	1-Oct	15-Oct	15
Requirements & Planning	15-Oct	27-Oct	12
Design	28-Oct	9-Nov	11
Development & Unit Testing	11-Nov	22-Nov	11
Integration and Testing	22-Nov	15-Dec	24
Deployment	15-Dec	28-Dec	13
Project Management	28-Dec	11-Jan	13



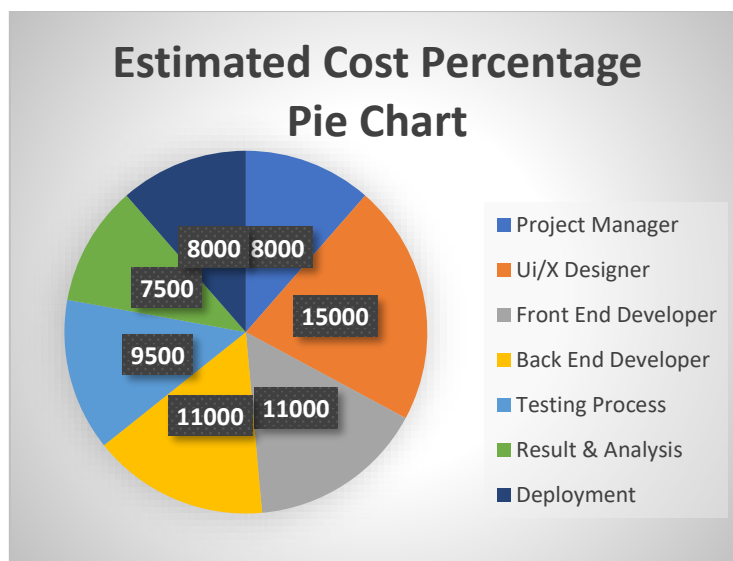
**Figure 3.3:** Gantt Chart of “Nagad Blood”

### 3.4 Estimated Cost

The starting Evaluated Costing was around nearly 99,000 BDT. This is the approximate cost of the project. It can be expanded on the changes in the software and keeps up fetched.

Serial	Activity	Days	Costing
1	Project Manager	9	8,000 BDT
2	UI/X Designer	9	15,000 BDT
3	Front End Developer	23	11,000 BDT
4	Back End Developer	25	11,000 BDT
5	Testing Process	12	9,500 BDT
6	Result and Analysis	8	7,500 BDT
7	Deployment	7	8,000 BDT
	Total	93	70,000 BDT

**Table 3.2:** Estimated Cost Table



**Figure 3.4:** Estimated Cost Percentage Pie Chart

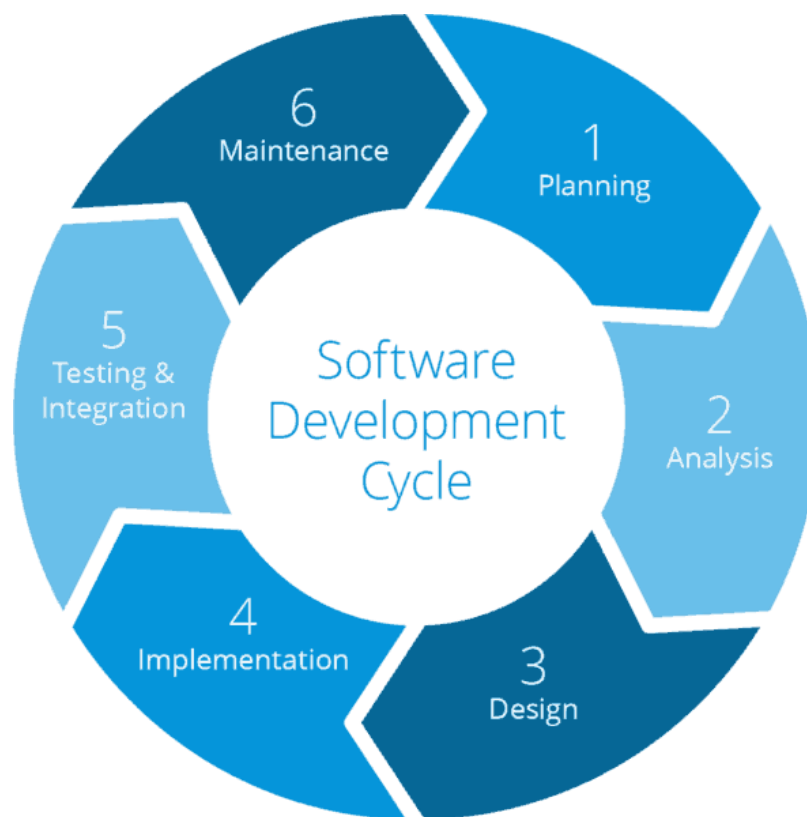


# Chapter 4: Methodology

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## 4.1 Software Development Methodology

In software engineering or computer programming, a software development process is the process of dividing software development work into distinct phases to improve design, product management and project management. It is also known as a system development life cycle (SDLC). We can characterize SDLC as a framework or structure that describes the activities performed at each stage of a System Development Project. So, it has some basic stages to be followed during the development phase.



**Figure 4.1:** Software Development Life Cycle (SDLC)

The methodology may include the pre-definition of specific deliverables and artifacts that are created and completed by the project team to develop or maintain an application.

Fundamentally, programming or framework advancement approach is a system that is utilized to structure, plan, and control the way toward building up a data framework.

There are several system development methodologies or models that are used in developments; among them, some of the most used are given below:

- Waterfall Model
- Prototyping
- Agile
- Spiral Model
- Rapid Application Development
- V-Model
- Incremental
- Evolutionary Model

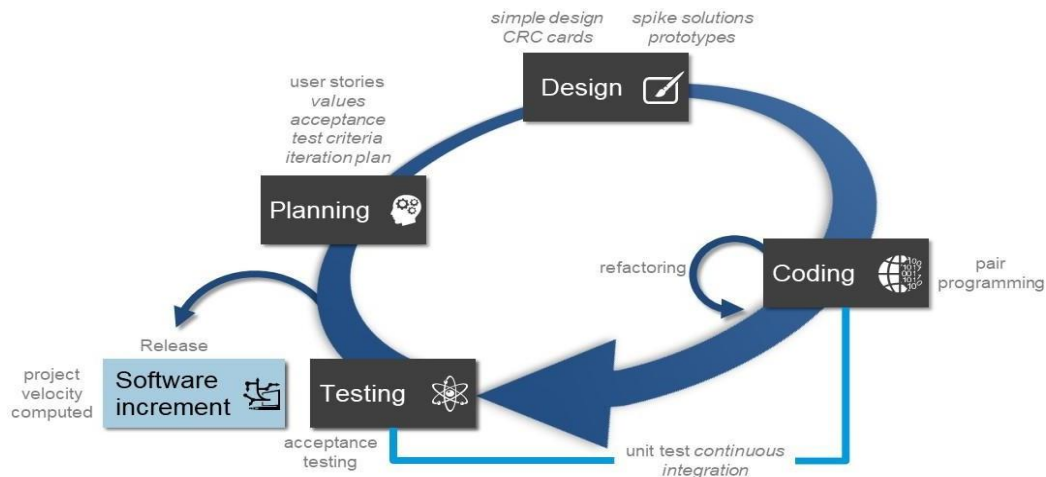
## 4.2 Extreme Programming (XP) Methodology

For methods, the developers of Xen Tech follow the most current methods of system development methodologies, that is the Agile method. To be more specific, we follow the Extreme Programming (XP) method which is an agile software development framework that aims to produce higher quality software, and higher quality of life for the development team. XP is the most specific of the agile frameworks regarding appropriate engineering practices for software development. The teams are expected to be self-organized, hence Extreme Programming provides specific core practices where each practice is simple and self-complete & combination of practices produces more complex and emergent behavior.

The five values of XP are communication, simplicity, feedback, courage, and respect:

- **Communication:** XP stresses the significance of the proper sort of correspondence through group gatherings, team meetings and conversations.
- **Simplicity:** do only absolutely necessary things such as keep the design of the system as simple as possible so that it is easier to maintain, support, and revise.
- **Feedback:** Through constant feedback about their previous efforts, teams can identify areas for improvement and revise their practices. It also supports simple design.
- **Courage:** raise issues that are hampering workflow, stop doing something that does not work and try something else, accept and act on unpleasant feedback, etc.
- **Respect:** members of the team need to respect each other in order to communicate with each other, provide and accept feedback and to work together to identify simple designs and solutions.

## XP Workflow



**Figure 4.2:** Extreme programming Methodology

## 4.3 Extreme Programming Advantages

Extreme Programming solves the following problems often faced in the software development projects:

- **Slipped Schedule:** ensure timely deliveries.
- **Cancelled projects:** focus on continuous customer involvement ensures transparency with the customer and immediate resolution of any issues.
- **Costs incurred in changes:** extensive and ongoing testing makes sure the changes do not break the existing functionality. A running working system always ensures sufficient time for accommodating changes such that the current operations are not affected.
- **Production and post-delivery defects:** emphasis is on the unit tests to detect and fix the defects early.
- **Misunderstanding the business and/or domain:** making the customer a part of the team ensures constant communication and clarifications.
- **Business changes:** changes are considered to be inevitable and are accommodated at any point of time.

- **Staff turnover:** intensive team collaboration ensures enthusiasm and good will. Cohesion of multi-disciplines fosters the team spirit.

## 4.4 Web Application Development

Web application development is the cycle and practice of creating web applications. There is an agreement that the cycles included are augmentations of standard computer programming measures. Thinking about this, alongside its extraordinary attributes, famous systems utilized incorporate the twisting methodology and business-situated way to deal with application advancement, among different models that address the prerequisites for an iterative cycle. Similarly like with a customary work area application, web applications have shifting degrees of danger. An individual landing page is significantly less unsafe than, for instance, a stock exchanging site. For certain undertakings security, programming bugs, and so forth are significant issues. On the off chance that chance to market or specialized multifaceted nature is a worry, documentation, test arranging, change control, necessities investigation, structural depiction and formal plan and development practices can relieve hazard. Web application improvement is the cycle engaged with building a web application. It is more centered around connecting with the program than standard designing cycles. Most instances of web application improvement will include characterizing the issue, modeling the arrangement, drawing in with clients, embracing a system/picking an instrument, lastly, building and testing the web application - as a rule, iteratively with clients.

A web application, regularly alluded to as a web application, is an intelligent PC program worked with web advancements (HTML, CSS, JS), which stores (Database, Files) and controls information (CRUD), and is utilized by a group or single client to perform undertakings over the web. Muck is a mainstream abbreviation and is at the core of web application advancement. It represents Create, Read, Update, and Delete. Web applications are gotten to by means of an internet browser, for example, Google Chrome, and regularly include a login/information exchange instrument

There are some major development approaches when building Web applications:

- **Static Web Applications:** A static website contains Web pages with fixed content. Each page is coded in HTML and displays the same information to every visitor. Static sites are the most basic type of website and are the easiest to create. Unlike dynamic websites, they do not require any Web programming or database



design.

- **Dynamic Web Applications:** A server-side dynamic web page is a web page whose construction is controlled by an application server processing server-side scripts. ... A dynamic web page is then reloaded by the user or by a computer program to change some variable content.
- **E-Commerce Web Applications:** E-commerce (electronic commerce) is the activity of electronically buying or selling of products on online services or over the Internet. ... Online shopping for retail sales direct to consumers via Web sites and mobile apps, and conversational commerce via live chat, chat box, and voice assistants.
- **Progressive Web Applications:** A progressive web application is a type of application software delivered through the web, built using common web technologies including HTML, CSS and JavaScript. It is intended to work on any platform that uses a standards-compliant browser, including both desktop and mobile devices..
- **Portal Web Applications:** A portal application is a Web-accessible, interactive tool on a secured website that delivers both related and unrelated applications, services and links. Portal applications provide data in an easily understandable format, modify or manipulate the data, and communicate with companies or individuals about the data.
- **Animated Web Applications:** Web animation is used on all kinds of web pages. They can be small web animations that happen as a visitor is scrolling through a web page to draw attention to an element, an animation that demonstrates a product, or a promotional web animation that shows off something entertainingly and engagingly.
- **Content Management System:** A content management application (CMA) is the front end component of a content management system (CMS). The CMA interface allows users to create and manage corporate or website content. A CMA usually includes templates that automate many of the repetitive aspects of content creation and editing.

## 4.5 Back-end Development

Back-end Development refers to the server-side of development. It is the term used for the behind-the-scenes activities that happen when performing any action on a website or a mobile application. Backend development focuses on databases, scripting, and the architecture of web and mobile applications. Code written in the back-end helps to communicate the database information to the browser or the mobile app.

Back-end Development involves:

- **Web Development Languages:** involves a series of server-side programming languages like Java, JavaScript, Python, Ruby, .Net, etc.
- **Database:** use of various Database Management System (DBMS) technology is another important part of backend development. HTML, CSS, Php, MySQL, MongoDB, Oracle, SQLServer, Redis are widely used for this purpose.
- **Server:** a computer or computer program which manages access to a centralized resource or service in a network. Current most popular servers are Apache, Nginx, IIS servers and Microsoft IIS. Typically, Linux is used in administering servers.
- **Application Programming Interface (API):** a set of protocols, routines, functions and/or commands that are used to develop software or facilitate interaction between distinct systems. APIs are available for both desktop and mobile use and are typically useful for programming GUI (graphic user interface) components, as well as allowing a software program to request and accommodate services from another program.

## 4.6 Development Tools Used

In the development of the Web Application, “Nagad Blood” several modern application development tools were used.

### 4.6.1 HTML:



**Figure 4.3:** HTML5 Logo

HTML5 is a markup language utilized for organizing and introducing content on the World wide Web. It is the fifth and last significant HTML form that is a World Wide Web Condortium (W3C) suggestion. The current particular is known as the HTML Living Standard. It is kept up by a condortium of the significant program merchants (Apple, Google, Mozilla and Microsoft), the Web Hypertext Application Technology Group. HTML5 was first delivered in a public confronting structure on 22 January 2008 with a significant update and W3C Recommendation" status in October 2014. Its objectives were to improve the language with help for the most recent sight and sound and other new highlights to keep the language both effectively decipherable by people and reliably comprehended by PCs and gadgets, for example, internet browsers, parsers, and so forth, without XHTML's unbending nature; and to stay in reverse viable with more seasoned programming. HTML5 is proposed to subsume HTML 4 as well as

XHTML 1 and DOM Level 2 HTML. HTML5 incorporates nitty gritty handling models to empower more interoperable executions; it broadens, improves, and justifies the markup accessible for archives and presents markup and application programming interfaces (APIs) for complex web applications. For similar reasons, HTML5 is additionally a possibility for cross-stage portable applications since it incorporates highlights planned in view of low-fueled gadgets. HTML is the skeleton of any site. Without HTML, a program would not realize how to show text as components or burden pictures and records or different highlights.

#### 4.6.2 CSS:



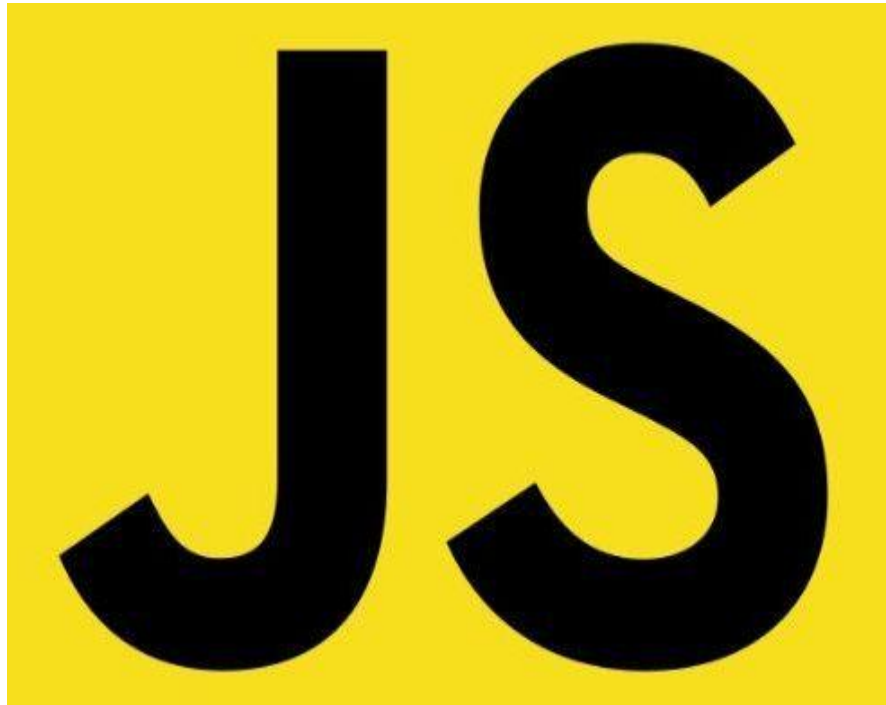
**Figure 4.4:** CSS3 Logo

Falling Style Sheets (CSS) is a template language utilized for portraying the introduction of an archive written in a markup language, for example, HTML.CSS is a foundation innovation of the World Wide Web, close by HTML and JavaScript.

CSS is intended to empower the division of introduction and substance, including format, shadings, and text styles. This partition can improve content availability, give greater adaptability and control in the detail of introduction attributes, empower different pages to share organizing by indicating the important CSS in a different .css document which lessens unpredictability and reiteration in the underlying substance just as empowering the .css record to be stored to improve the page load speed between the pages that share the document and its arranging. Partition of arranging and substance likewise makes it possible to introduce a similar markup page in various styles for various delivering strategies, for example, on-screen, on paper, by voice (by means of discourse based program or screen peruser), and on Braille-based material gadgets. CSS additionally has rules for substitute designing if the substance is gotten to on a portable device.

The name falling comes from the predefined need plan to figure out which style rule applies if more than one principle coordinates a specific component. This falling need plot is unsurprising. The CSS particulars are kept up by the World Wide Web Consortium (W3C). Web media type (MIME type) text/css is enrolled for use with CSS by RFC 2318 (March 1998). The W3C works a free CSS approval administration for CSS records notwithstanding HTML, other markup dialects uphold the utilization of CSS including XHTML, plain XML, SVG, and XUL.

### 4.6.3 JavaScript:



**Figure 4.5:** JavaScript Logo

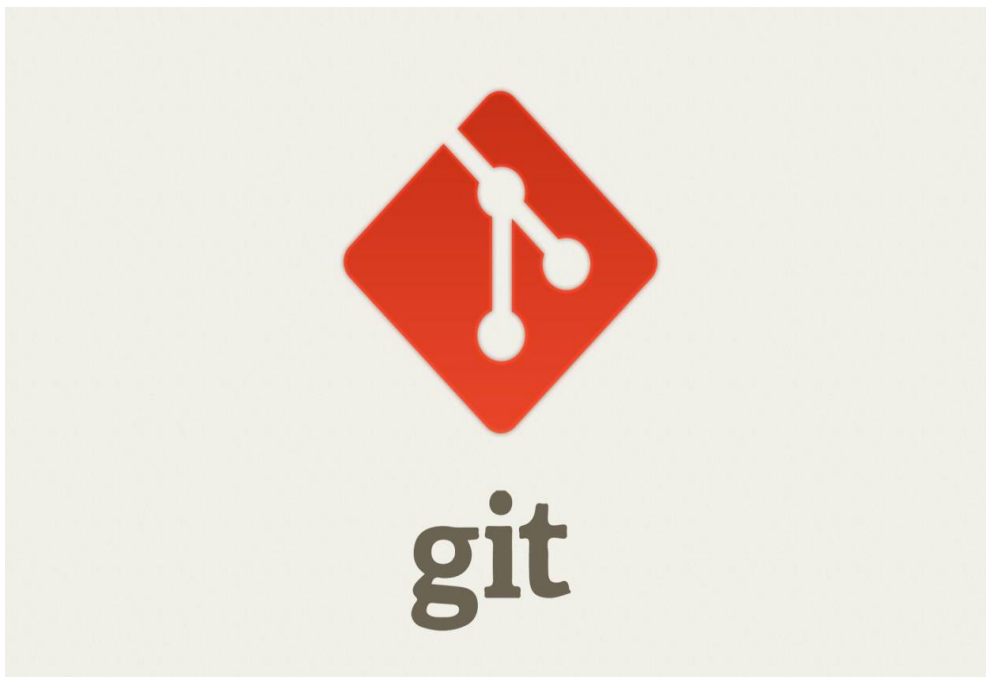
JavaScript regularly truncated as JS, is a programming language that adjusts to the ECMAScript particular. JavaScript is significant level, regularly without a moment to spare gathered, and multi-worldview. It has wavy section grammar, dynamic composing, model based item direction, and five star capacities. Close by HTML and CSS, JavaScript is one of the center innovations of the World Wide Web. JavaScript empowers intelligent pages and is a fundamental piece of web applications. By far most of sites use it for customer side page conduct and all significant internet browsers have a devoted JavaScript motor to execute it.

As a multi-worldview language, JavaScript underpins occasion driven, useful, and basic programming styles. It has application programming interfaces (APIs) for working with text, dates, ordinary articulations, standard information structures, and the Document Object Model (DOM). Nonetheless, ECMAScript itself does exclude any information/yield (I/O, for example, systems administration, stockpiling, or illustrations offices, as the host climate (generally an internet browser) gives those APIs.

JavaScript motors were initially utilized uniquely in internet browsers, however they are currently inserted in certain workers, typically through Node.js. They are additionally installed in an assortment of utilizations made with structures, for example, Electron and Cordova.

In spite of the fact that there are similitudes among JavaScript and Java, including language name, grammar, and individual standard libraries, the two dialects are unmistakable and vary enormously in plan.

#### 4.6.4 Git:



**Figure 4.6:** Git Logo

Git is a free, open-source distributed version control system. It is used for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files. Its goals include speed, data integrity, and support for distributed, non-linear workflows

**Version control** is a system that records changes to a file, or set of files, over time so that specific versions can be recalled later.

#### 4.6.5 PHP:



**Figure 4.7 : PHP Logo**

PHP code is typically prepared on a web worker by a PHP mediator actualized as a module, a daemon or as a Common Gateway Interface (CGI) executable. On a web worker, the consequence of the deciphered and executed PHP code – which might be any kind of information, for example, produced HTML or parallel picture information – would frame the entire or part of a HTTP reaction. Different web format frameworks, web content administration frameworks, and web systems exist which can be utilized to coordinate or encourage the age of that reaction. Moreover, PHP can be utilized for some, programming errands outside of the web setting, for example, independent graphical applications and mechanical robot control. Self-assertive PHP code can likewise be deciphered and executed by means of order line interface (CLI).

The standard PHP mediator, fueled by the Zend Engine, is free programming delivered under the PHP License. PHP has been broadly ported and can be conveyed on most web workers on pretty much every working framework and stage, for nothing out of pocket. The PHP language developed without a composed proper detail or standard until 2014, with the first execution going about as the true standard which different usage meant to follow. Since 2014, work has proceeded to make a formal PHP particular.



This is a worker side scripting language that is embedded in HTML. By PHP I used to oversee dynamic substance, information bases. I figured out how to limit clients to get to certain pages of this site utilizing PHP.

#### 4.6.6 Bootstrap:



**Figure 4.8 : Bootstrap Logo**

Bootstrap is a free and open-source CSS structure coordinated at responsive, portable first front-end web advancement. It contains CSS-and (alternatively) JavaScript-based plan formats for typography, structures, catches, route, and other interface segments.

I used bootstrap version 4.5 to make this page responsive so that the User Interface and User experience gets better. In bootstrap there are different components which helps me to add some dynamic functionalities. Here in this Nagad Blood application I took help from bootstrap documentation.

## 4.7 Other Non-Development Tools Used

Other than development tools, other essential tools were also used by us, the development team of “Nagad Blood”. These tools helped ease communication, keep track of workflow, repository hosting, etc. To develop the software I use PHP Framework, JavaScript, query, Bootstrap, HTML, CSS, PHP, MySQL, etc. First I have implemented HTML to make the skeleton of the project. After that, to design it I implemented CSS and made it responsive by applying Bootstrap. Respectively I have used PHP, MySQL to connect the database. I used XAMPP, which is a free, and open-source cross-platform web server key stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP. I worked through Local host, which is a local server that allowed me to host my website online on a local IP that is visible only in my system, by connecting to a web server like Apache Web Server.

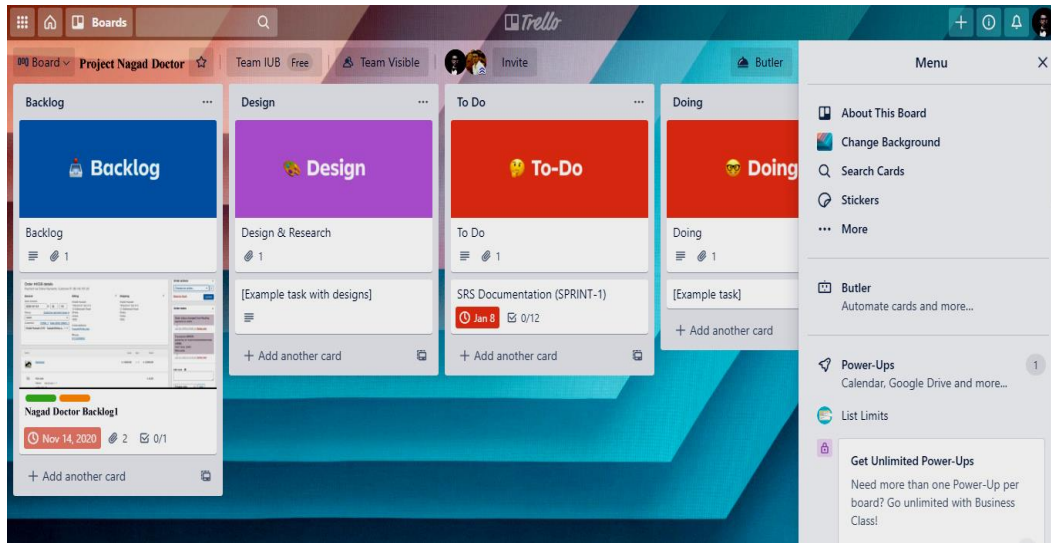


**Figure 4.9:** Logo of XAMPP



**Figure 4.10:** Logo of MySQL

### 4.7.1 Trello:



**Figure 4.10:** Trello Task Management Board

Trello board helped to keep track of the workflow. It helped to know what needs to be done next, which task is being handled by whom, which tasks are in progress and which tasks are completed.



# **Chapter 5: Body of the Project**



## 5.1 Description of the Project

The Nagad Blood Bank Management System is great project. this project is designed for successful completion of a project on blood bank management system. The basic building aim is to provide blood donation service to the city recently. Blood Bank Management System (BBMS) is a Web-based application that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank.

This undertaking targets keeping up all the data relating to blood contributors, distinctive blood bunches accessible in each blood donation center and assist them with dealing with a superior way. Task point is to give straightforwardness in this field, make the way toward acquiring blood from a blood donation center issue free and debasement free and make the arrangement of blood donation center administration successful.

### 5.1.1 Blood Camp Management And Reporting

Provides recording of subtleties of camp start from designation of staff, subtleties of offices accessible in the camp scene. Provides appointing of giver to a specific camp and produce camp coordinator report. Automated report age of camp subtleties for accommodation to the Government

### 5.1.2 Donor Management

The framework permits programmed segment information age dependent on the part chosen in the blood giver or donor structure. The framework permits mass update for serology for blood units. Serology result for some, givers can be refreshed immediately. The framework takes into consideration either part creation before serology test or the other way around. In light of the serology test, the segment made are refreshed consequently. The framework permits bar-coded blood sack number section. All contributor related reports are dominate downloadable. All Reports gives separating over numerous components like Blood Group, sexual orientation, zone, blood Camp, date of gift, contributor type and so on. The framework gives simple connect to simple alter or adding subtleties for different areas of the benefactor structure. During structure filling, the framework informs the client how much level of giver information has been refreshed.



### **5.1.3 Donor Test Results Management and Reaction Data Management**

Gives filterable determinations to benefactor choices. Dominate download of all reports. The reports are profoundly configurable and can be designed to show information according to foundation necessities.

### **5.1.4 Search based on Component ID, Donor Registration ID, Donor Blood Bag Number and Donor Name**

Gives filterable determinations to benefactor choices. Dominate download of all reports. The reports are profoundly configurable and can be designed to show information according to foundation necessities.

### **5.1.5 Nagad Blood Components Management**

Programmed age of components of Donor form. In view of the date of assortment, the framework naturally infers the date of expiry and prohibits issue of segment if unit has lapsed. Until the Blood serology test is done, the framework denotes the status of the part as test anticipated. What's more, exclusively after serology test is done, the segment is set apart for prepared for issue. The accessible parts list is accessible and the framework naturally produces the rundown of segments that are prepared for issue to be accessible.

### **5.1.6 Patient Management System**

Captures tolerant individual data just as the clinic where blood is required. The framework considers saving a unit for 24 hours for a patient. The blood segment gave, the installment made just as connection to the last bill is accessible when the patient page is opened. The information permits report like: Issue Register, Reserved Units and Patient Inventory List. The framework considers catching bonding response information.

### **5.1.7 Blood Issue and Billing**

Ability to give changes in the last installment receipt for concession for blood unit. The framework forestalls blood issue if cross-coordinate isn't done or falls flat. Final bill gets produced just if just the installment has been represented. Final bill gets produced just part chosen has been serology tried and is prepared for issue. Auto-created last receipt. Auto-produced Cross-coordinating report.



### 5.1.8 Managing Practical Solutions For Nagad Blood Bank Management

The framework permits segments to be made before serology and the other way around. The framework takes care to naturally refresh the parts when serology is finished.

## 5.2 Systems Analysis

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System Analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. Analysis specifies what the system should do. This chapter contains parts of System Analysis that will help understand the project better.

### 5.2.1 Six Element Analysis

Process	System Roles					
	Human	Non computing hardware	Computing hardware	Software	Database	Comm. & Network
Donor Registration	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Send Request or Request for Blood	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN



View Blood Request	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Blood Camps	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Donor Login	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Search Blood Group	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Contact	User	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Admin Login	Admin	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Admin Panel	Admin	N/A	Pc/Laptop/ Functional smartphone / tab/ Web	Any version of Windows, Android or iOS	PHP My Admin	WAN
Using Admin Links	Admin	N/A	Pc/Laptop/ Functional smartphone / tab/Web	Any version of Windows, Android or iOS	PHP My Admin	WAN

**Table 5.1: Six Elements Analysis of “Nagad Blood”**





## 5.2.2 Feasibility Analysis

Feasibility Study is a study to evaluate feasibility of a proposed project or system. Feasibility study is the feasibility analysis or it is a measure of the software product in terms of how much beneficial product development will be for the organization in a practical point of view. Feasibility study is carried out based on many purposes to analyze whether software products will be right in terms of development, implantation, contribution of project to the organization, etc.

Main parts of Feasibility Study :

- **Technical Feasibility:** In Technical Feasibility, current resources; both hardware and software along with required technology are analyzed/assessed to develop the project. This technical feasibility study gives a report whether there exists correct required resources and technologies which will be used for project development. Along with this, feasibility study also analyzes technical skills and capabilities of technical team, existing technology can be used or not, maintenance and up-gradation is easy or not for chosen technology, etc. “Nagad Blood” is built using HTML, CSS, Bootstrap, JavaScript, Php, etc.. These are the technologies that are very popular in the modern industry and everyone involved in the making of this project had the skills to work with at least one of the technologies mentioned. Hence, it can be concluded that the project is Technically Feasible.
- **Operational Feasibility:** In Operational Feasibility degree of providing service to requirements is analyzed along with how easy the product will be to operate and maintain after deployment. Along with these, other operational scopes are determining usability of the product and determining whether a suggested solution by the software development team is acceptable or not etc.  
“Nagad Blood” is a made for the people safety blood donation and blood collection and need but for any end user it is quite self-explanatory. Even if a user is confused on how to use the application, they can simply refer to the “About Nagad Blood on Website” section to have a much clearer idea of how the application operates; and so the project can be determined as Operationally Feasible.
- **Economic Feasibility:** In Economic Feasibility study cost and benefit of the project is analyzed; a detailed analysis of what will be the cost of the project for development which includes all required cost for final development like hardware and software resource required, design and development cost, operational cost, etc. After that it is



analyzed whether the project will be beneficial in terms of finance for organization or not. In the development of the web application of “Nagad Blood”, the services that needed being paid were the Server and “Nagad Blood” Mobile application launching to Google Play Store. Since the cost of these services had to be paid yearly, it can be easily covered from the estimated revenue gained from advertisements and paid subscriptions. Thus, in conclusion, it can be said that the project is Economically Feasible.

### 5.2.3 Problem Solution Analysis

Nagad Blood, the project of blood bank management system is known to be the main project that is designed for the blood bank to gather blood from various sources and distribute to the needy people who have high requirements. Due to the impact of Covid19 on transfusion services there are 4 identified challenges. Those are Blood component shortage, Blood Donor, Donor and Staff safety and catering to the convalescent plasma need. Nagad Blood Management System is designed to handle Donor's details with profile, searching blood groups more conveniently with safety maintaining. If we count for problems, there are lot of without blood bank. Such as scarcity of rare blood groups, unavailability of blood during emergency, less awareness among people about blood donation and blood transfusion. Deaths due to lack of blood during operations. Nagad Blood Management System ensures this problems solution with its unique and dynamic features. Existing blood bank system is maintained manually with lot of manpower and recorded in excel sheets and for that data may lost or teared at any time, loss of date due to mismanagement, retrieval of the data and reports takes a lot of time to produce but Nagad Blood Management System keeps the data stored in its database with safety, security and updated timely and providing online services at anytime from anywhere.



## 5.2.4 Effect and Constraints Analysis

Effect	Constraints	Analysis
Data Loss	Internet Connectivity	System Crash, Hackers or Steal data, Virus can be a factor of data lost.
Time Complexity	Internet Connectivity	To excess to a specific information it requires a lot of time to find and compute, where time complexity takes place
Analysis the Data	Internet Connectivity	Some error occurs due to fetching manually different information
Human Error	Not Applicable	Data input wrong such as user name or password or email etc.
Data Steal	Hackers	Data can be stolen.

**Table 5.2:** Table of Effect and Constraints and Analysis

## 5.3 System Design

System design is deriving a solution which satisfies software or system's requirements. We can define software design as translating requirements into software components and interactions among them. Any design may be modelled as a directed graph made up of entities with attributes which participate in relationships. Design represents the system, how it will work and how it can be assessed for quality. Design is the way to translate client's requirements into a system or software product accurately. Software architecture provides an abstract representation of the overall structure of software. This chapter contains numerous design level diagrams to have a clearer understanding of the system and flow of data.

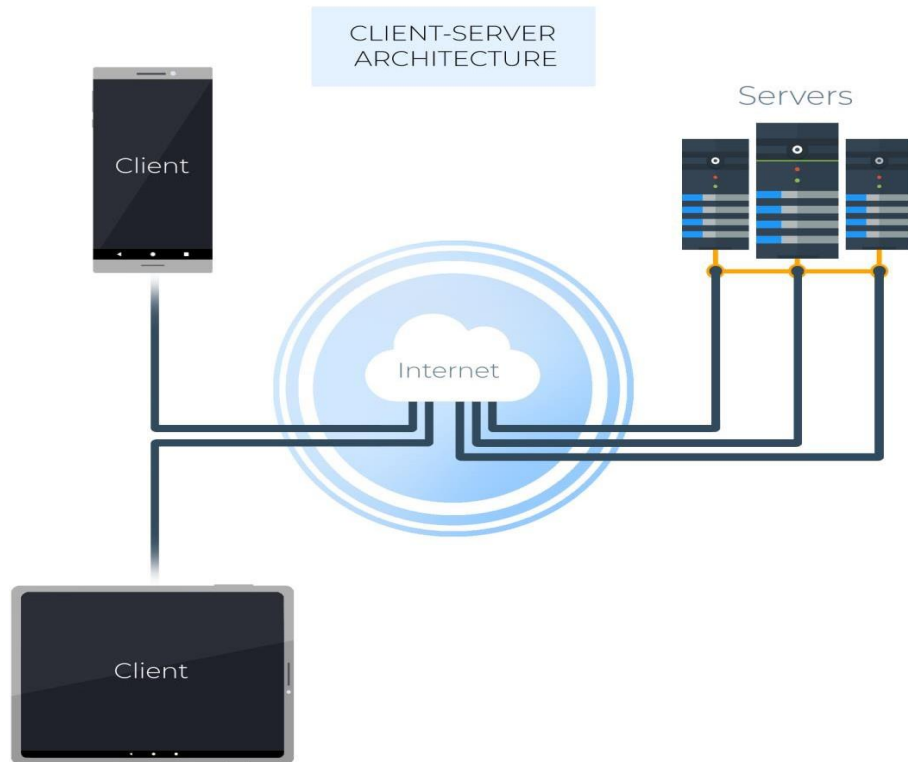


### **5.3.1 Architecture of the System**

Software architecture is what defines and structures a solution that meets technical and operational requirements. Software architecture optimizes attributes involving a series of decisions, such as security, performance and manageability. It describes the organization and interaction of software components. There are many types of architectures that are used among them. We are using the client server architecture for our “Nagad Blood” web application system.

### **5.3.2 Client server architecture**

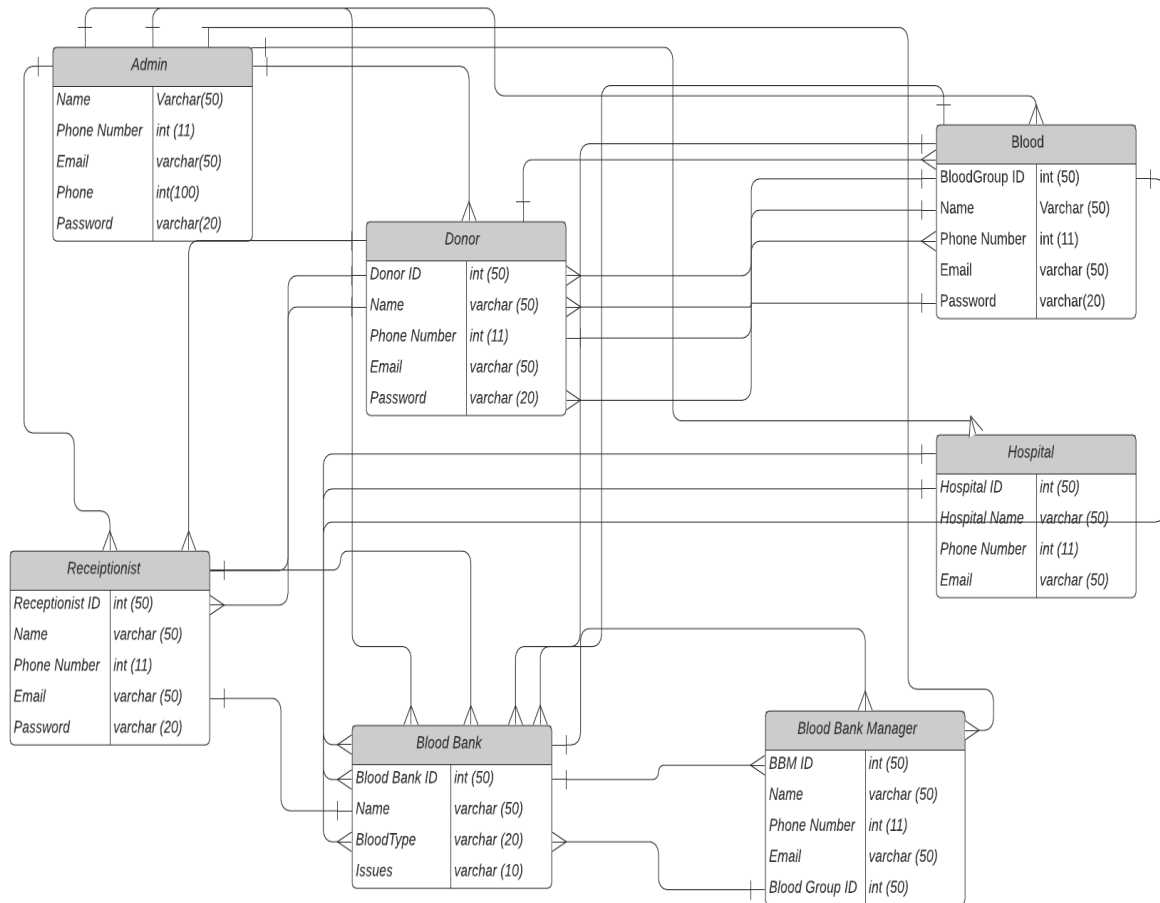
Client server architecture is one kind of distributed system architecture. Distributed systems are where the system or software runs on a loosely integrated group of cooperating processors linked by a network. It means a set of separate devices that are capable of autonomous operation, linked by a network. Client server architecture is the application that is modelled as a set of services that are provided by servers and a set of clients that use these services. In this network where many clients (remote processors) request and receive service from a centralized server. Client devices provide an interface to allow the user to request services of the server and to display the results the server returns. Servers wait for requests to arrive from clients and then respond to them.



**Figure 5.1:** Client Server Architecture

In Nagad Blood, the web application will have access to the server (provided that it is connected to the internet). When a user creates an account or do registration, it sends a request to the server and updates the server. When user(s) confirm the emails and password the device sends a request to the server for ensuring the verification, saved the data to the database. For having the centralization of control is the main reason to choose the client server architecture approach. Another reason is that this architecture is easily scalable, with an increase in the number of clients, capacity of server can be increased as well.

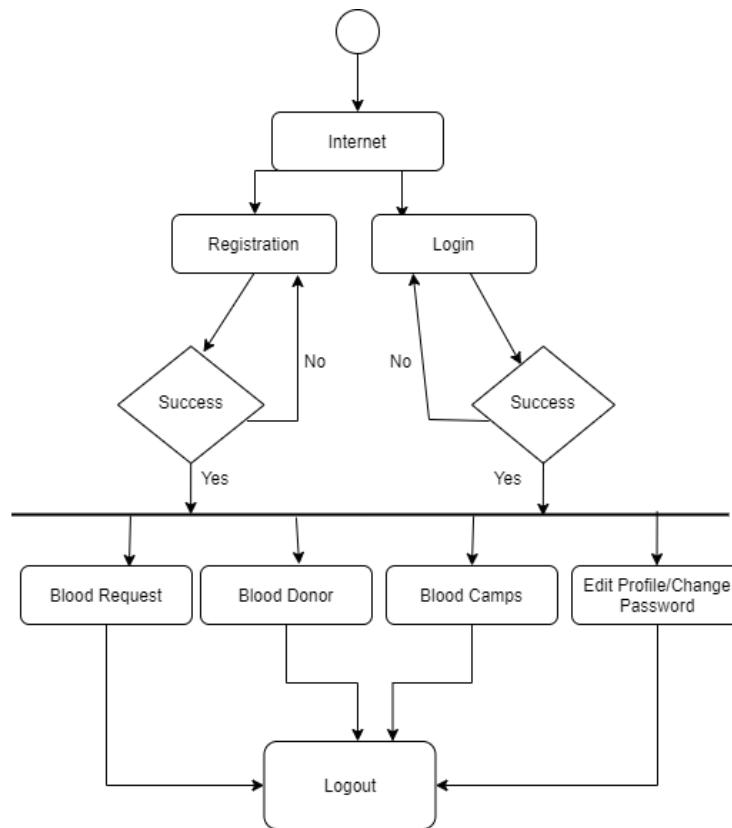
### 5.3.3 Entity Relationship Diagram (ERD)



**Figure 5.2:** Entity Relationship Diagram of “Nagad Blood”

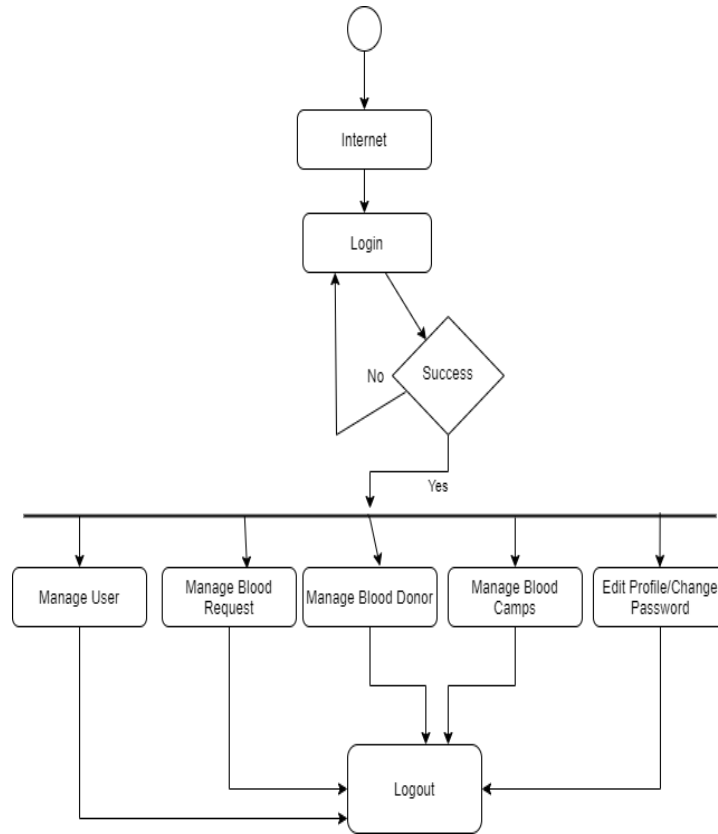
### 5.3.4 Activity Diagram

#### Activity Diagram of User



**Figure 5.3:** User Activity Diagram of Nagad Blood

### Activity Diagram of Admin

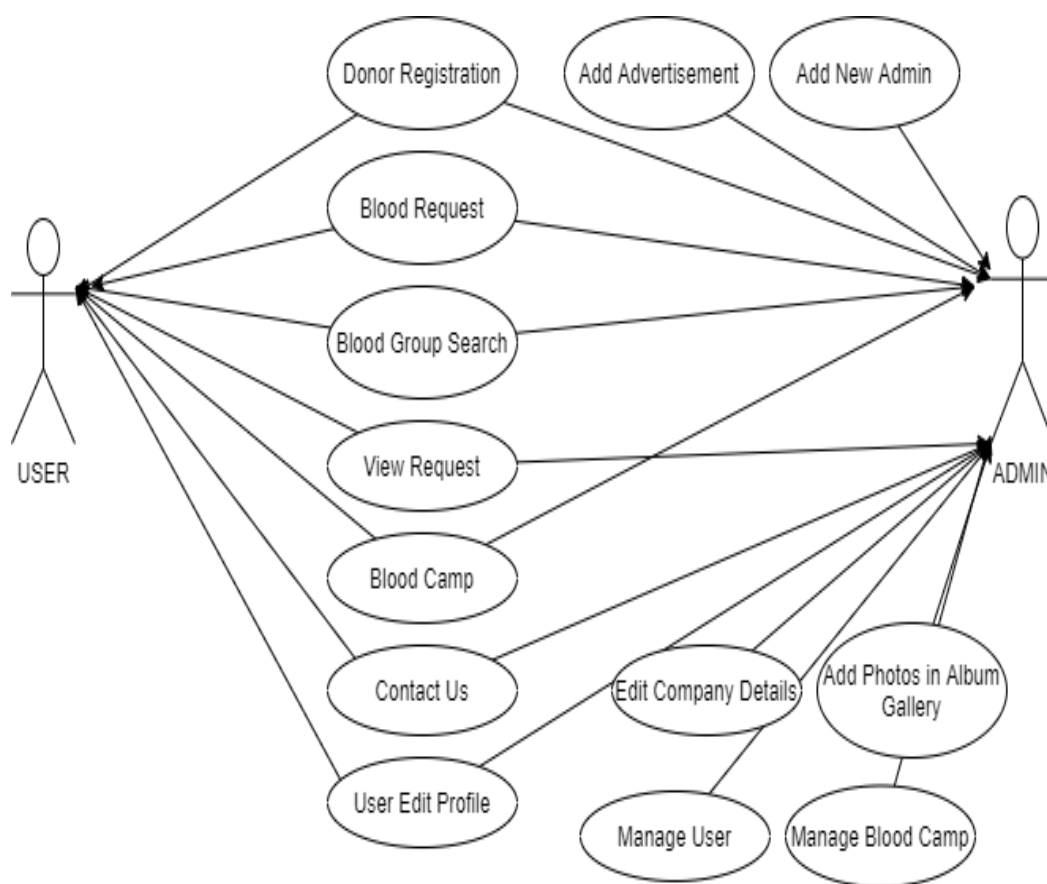


**Figure 5.4:** Admin Activity Diagram of Nagad Blood



### 5.3.4 Use Case Diagram

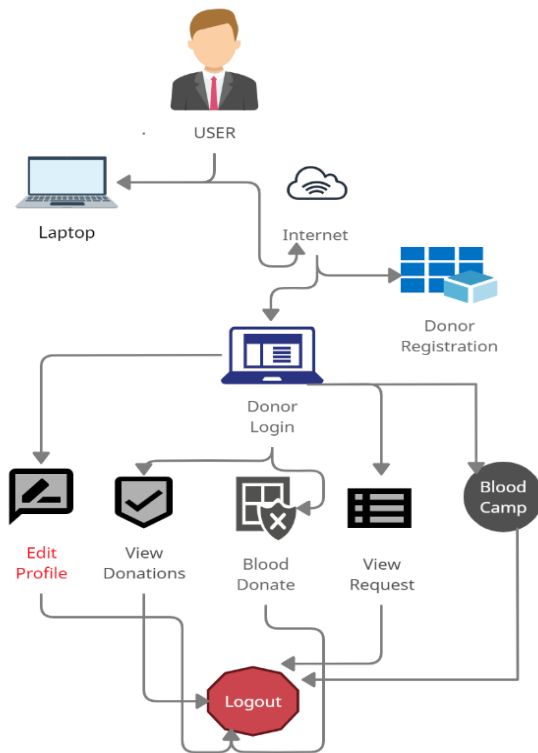
A use case diagram is a dynamic or behavior diagram in UML. Use case diagrams model the functionality of a system using actors and use cases. Use cases are a set of actions, services, and functions that the system needs to perform. The "actors" are people or entities operating under defined roles within the system.



**Figure 5.5:** Use Case Diagram of Nagad Blood

### 5.3.5 Rich Picture

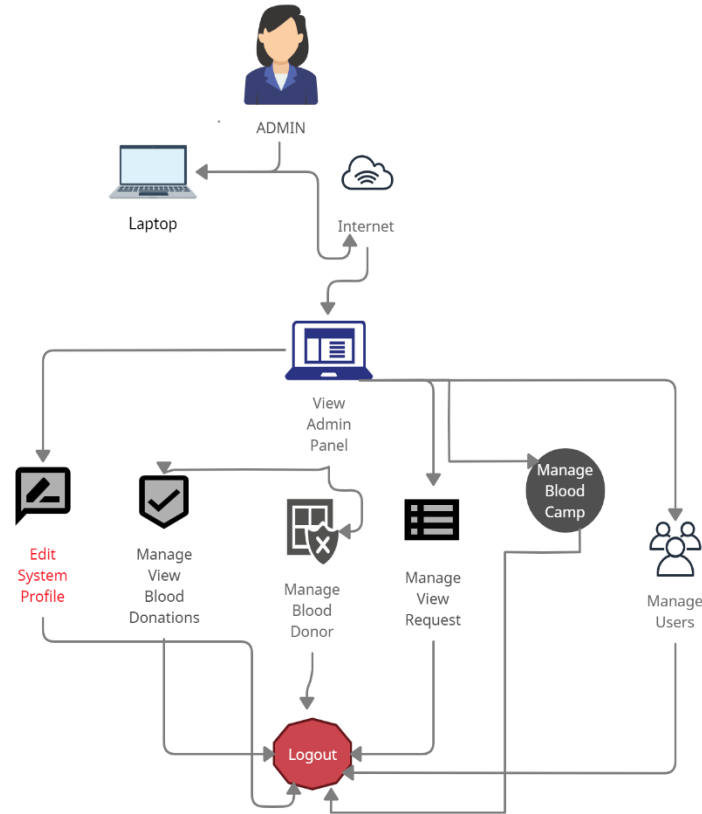
#### Nagad Blood System User Rich Picture



**Figure 5.6:** User Rich Picture for “Nagad Blood”

The Rich Picture illustrates how the web application works. The process begins with User turning on the application on their device while being connected to the internet. Then the User decides how which option they want to select. User will get Donor Registration where he/she can create and register with the system as a Donor. After then User will Login to the system where he/she can Edit Profile, View Donations, Blood Donate, View Request, Blood Camp menu. For Donating Blood and be a Blood Donor user will select Blood Donor menu. To see the request list of people who need blood can select the View Request menu. If Donor donates before or to view list how many times the donor donates blood, User will select View Donations. User can edit his/her own Profile, Change picture, Change email, change password and etc.

## Nagad Blood System Admin Rich Picture



**Figure 5.7:** Admin Rich Picture for “Nagad Blood”

The Rich Picture illustrates how the Nagad Blood application works. The process begins with Admin turning on the application on their device while being connected to the internet. Then the Admin decides how and which option they want to select. Admin will get Admin Panel where he/she can select from the Admin Links provided on the system. Basically, Admin can manage Users (add, delete, update), can manage Blood Camps (add, delete, update), can manage Edit Profile (add, delete, update), can manage View Blood Donations (add, delete, update), can manage Blood Donor (add, delete, update), can manage View Request (add, delete, update).

## 5.3.6 Requirements

The software requirements are descriptions of features and functionalities of the target system. Requirements convey the expectations of users from the software product. The requirements can be obvious or hidden, known or unknown, expected or unexpected from the client's point of view.

Requirements can be divided into two types; functional and non-functional requirements.

## 5.3.7 Functional Requirements

A functional requirement is a function or feature that must be included in an information system in order to satisfy the business need and be acceptable to the users. A functional requirement defines what an application and its components are and what these components are supposed to accomplish. The following functional requirements were gathered with our decided requirements gathering methods. The inputs, processes and output are discussed below:

<b>Function:</b> Must be compatible with all types of Windows, Android and iOS devices		
<b>Input:</b> N/A	<b>Process:</b> Application must be developed in a common development environment	<b>Output:</b> Application can be accessible from all sorts of devices
<b>Precondition:</b> User must have a working Windows, Android or IOS web and mobile device with internet Connection		
<b>Post-condition:</b> Everyone can use this application		

**Table 5.3:** Functional Requirement 1: Compatibility

<b>Function:</b> Create Donor Registration		
<b>Input:</b> User registration details	<b>Process:</b> User registration data stored in Database	<b>Output:</b> Navigate to Donor Registration
<b>Precondition:</b> The application in Donor Registration user device must be connected to the internet.		
<b>Post-condition:</b> After Donor Registration user will get a success message.		

**Table 5.4:** Functional Requirement 2: Create Donor Registration

<b>Function:</b> Send Request		
<b>Input:</b> User send request details	<b>Process:</b> User send request data stored in Database	<b>Output:</b> Request Created and will be navigated to Send Request Screen
<b>Precondition:</b> User in Send Request Screen the device must be connected to the internet		
<b>Post condition:</b> User will get a success message and will be navigated to Send Request Screen		

**Table 5.5:** Functional Requirement 3: Send Request

<b>Function:</b> Donor Login		
<b>Input:</b> User Email and Password	<b>Process:</b> Call API to the server on the database from provided data given	<b>Output:</b> Navigate to Donor Profile
<b>Precondition:</b> User in Donor Login Screen and device must be connected to the internet		
<b>Post condition:</b> User will get a success message and will navigate to Donor Profile.		

**Table 5.6:** Functional Requirement 4: Donor Login

<b>Function:</b> Contact Us		
<b>Input:</b> Name, Email, Phone Number	<b>Process:</b> Send and stored data on the server	<b>Output:</b> User successfully contact
<b>Precondition:</b> Contact us device must be connected to the internet		
<b>Post condition:</b> User will get a success message		

**Table 5.7:** Functional Requirement 5: Contact Us

<b>Function:</b> Blood Camp		
<b>Input:</b> Navigate to Blood Camp Screen and Blood Camp Gallery	<b>Process:</b> Call API to server to view Blood Camps and view the images of Picture Gallery	<b>Output:</b> Blood Camps photos and news can be seen.
<b>Precondition:</b> User in Health screen and device must be connected to the internet		
<b>Post condition:</b> User will be Navigated to selected Health Screen		

**Table 5.8:** Functional Requirement 6: Blood Camp

<b>Function:</b> Admin Login		
<b>Input:</b> Username and Password	<b>Process:</b> Call API to server to fetch the data created	<b>Output:</b> View Admin Panel
<b>Precondition:</b> Admin on Admin Login Screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to Admin Panel		

**Table 5.9:** Functional Requirement 7: Admin Login

<b>Function:</b> Admin Links		
<b>Input:</b> Admin can select from the links	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Precondition:</b> Admin in Admin Links Screen and device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to selected Admin Links		

**Table 5.10:** Functional Requirement 8: Admin Links

<b>Function:</b> User Menu from Admin Link		
<b>Input:</b> Not Applicable	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Precondition:</b> User Menu from Admin Link Screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to selected User Menu of Admin Link		

**Table 5.11:** Functional Requirement 9: User Menu from Admin Link

<b>Function:</b> Blood Donor Menu from Admin Link		
<b>Input:</b> Not Applicable	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Pre condition:</b> Blood Donor Menu from Admin Link Screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to Blood Donor Menu of Admin Link		

**Table 5.12:** Functional Requirement 10: Blood Donor Menu from Admin Link

<b>Function:</b> Blood Group Menu from Admin Link		
<b>Input:</b> Not Applicable	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Precondition:</b> Blood Group Menu from Admin Link Screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to selected Blood Group Menu of Admin Link		

**Table 5.13:** Functional Requirement 11: Blood Group Menu from Admin Link

<b>Function:</b> Camp Menu from Admin Link		
<b>Input:</b> Not Applicable	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Precondition:</b> Camp Menu from Admin Link screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to Camp Menu of Admin Link		

**Table 5.14:** Functional Requirement 12: Camp Menu from Admin Link

<b>Function:</b> Advertisement Menu from Admin Link		
<b>Input:</b> Not Applicable	<b>Process:</b> Admin views and modifies and delete	<b>Output:</b> Successfully changed
<b>Precondition:</b> Advertisement Menu from Admin Link Screen device must be connected to the internet		
<b>Post condition:</b> Admin will be Navigated to Advertisement Menu of Admin Link		

**Table 5.15:** Functional Requirement 13: Advertisement Menu from Admin Link



### 5.3.8 Non-Functional Requirements

Another type of requirement is non-functional requirements. A nonfunctional requirement is a description of the features, characteristics, and attributes of the system as well as any constraints that may limit the boundaries of the proposed solution. Non-functional requirements are briefly described below:

- **Performance:** Represents the performance of the system which is required to exhibit and to meet the needs of users. Performance describes the acceptable throughput rate and acceptable response time. This application should provide a smooth experience for the user and also should have no input lag as long as the device has a certain minimum hardware specification.
- **Information:** Represents the information that is pertinent to the users in terms of content, timeliness, accuracy and format. Information is about the necessary inputs and outputs and how it will be managed, types of the required data to be stored, how currently the information will be saved into the system, how the interfaces of external systems will work, etc.
- **Security & Control:** Security and administrations are always a concern for any system. All information on the server side and client side is secured. Only the application administrators and developers have access to core code of the application to be able to directly manipulate any sort of information. In this project, HTML, CSS, PHP, JavaScript have been used for backend technology, which have various layers of security, where security requirements for this system have been taken care of. Control requirements represent the environment in which the system must operate, as well as the type and degree of security that must be provided. Access to the system or information must be controlled with the privacy requirements.
- **Efficiency:** Represents the system's ability to produce outputs with minimal waste. We have tried to eliminate duplicate steps in the processes and to use the resources in an efficient way. Keeping our code non repetitive by using reusable code and components is how we achieved efficiency.

- **Service:** represent needs in order to make the system reliable, flexible and expandable.

It is deals with:

- Who will use the system and where they are located?
  - How many types of users will be in this system?
  - The appropriate human factors.
  - What training materials will be included in the system
  - Reliability/availability requirements
  - How the system will be distributed
  - What types documentation is required
- 
- **Extensibility and Maintainability Requirements:** There is one standard User interface designed for the look and feel of the web application of Nagad Blood. The application can be expanded to accommodate many further modules without making any changes to any existing modules. The application is created in such a way that the developers can easily maintain both the server and client sides.

## 5.4 Product Feature

Here in this section, Nagad Blood web application's features are mentioned. How the application looks like and how it works and many more regarding the application phase.

### 5.4.1 Input and Output

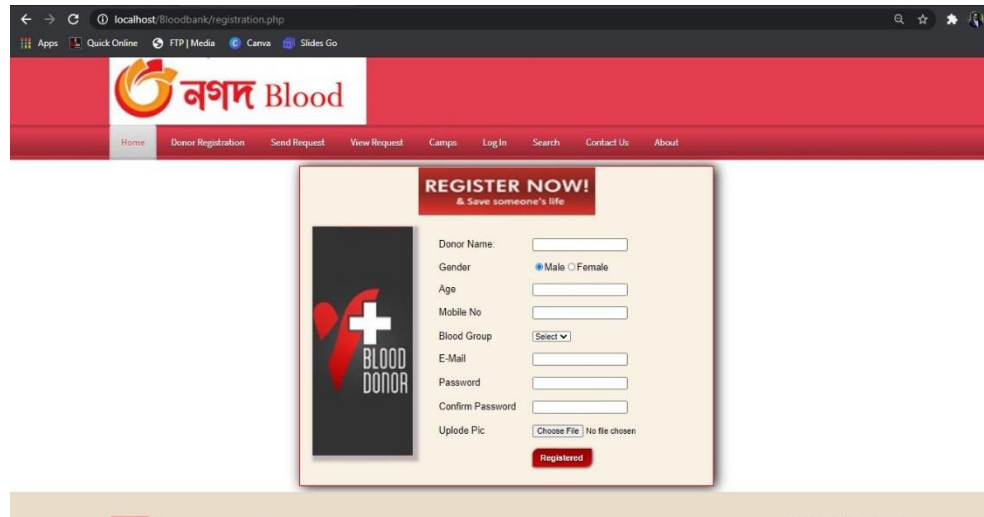
This chapter contains screenshots of the web application so it can be seen about how the actual application looks like:

- **Home Screen:** The home screen of Nagad Blood. User will get this screen. The details of the web application. Some pictures are highlighted with a slideshow of Blood camps.



**Figure 5.8: Home Screen of Nagad Blood.**

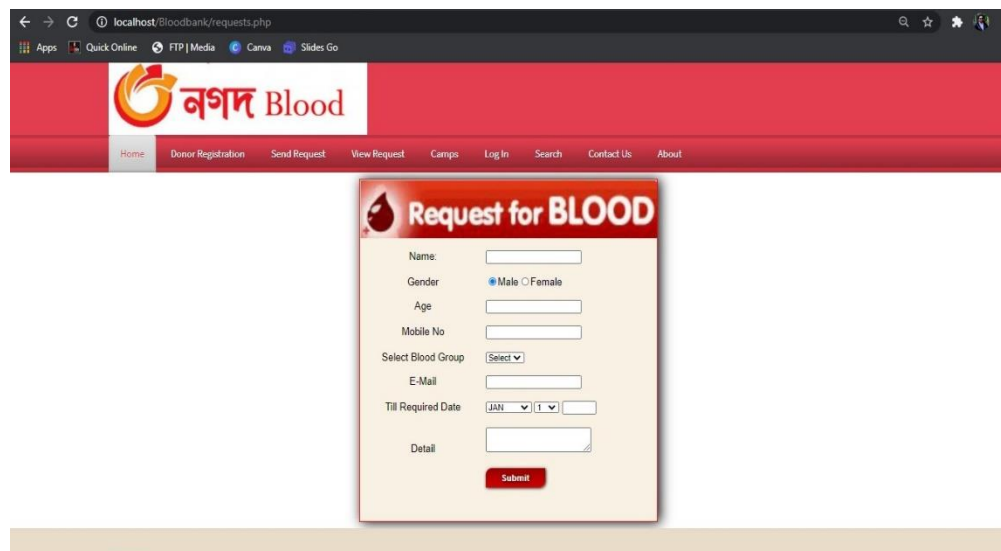
- **Donor Registration Screen:** In Donor registration screen, the User will be able to Register for becoming a Blood Donor. For becoming Blood Donor, user need to add the details mentioned on the Donor Registration.



The screenshot shows a web browser window with the URL `localhost/Bloodbank/registration.php`. The page features a red header with the "Nagad Blood" logo and a navigation menu. The main content area is a light beige box titled "REGISTER NOW! & Save someone's life". It contains a registration form with the following fields: Donor Name (text input), Gender (radio buttons for Male and Female, with Male selected), Age (text input), Mobile No (text input), Blood Group (dropdown menu), E-Mail (text input), Password (text input), Confirm Password (text input), and Upload Pic (button for "Choose File" and "No file chosen"). A red "Registered" button is at the bottom right of the form. On the left side of the form, there is a graphic with a red cross and the text "BLOOD DONOR".

Figure 5.9: Donor Registration Screen.

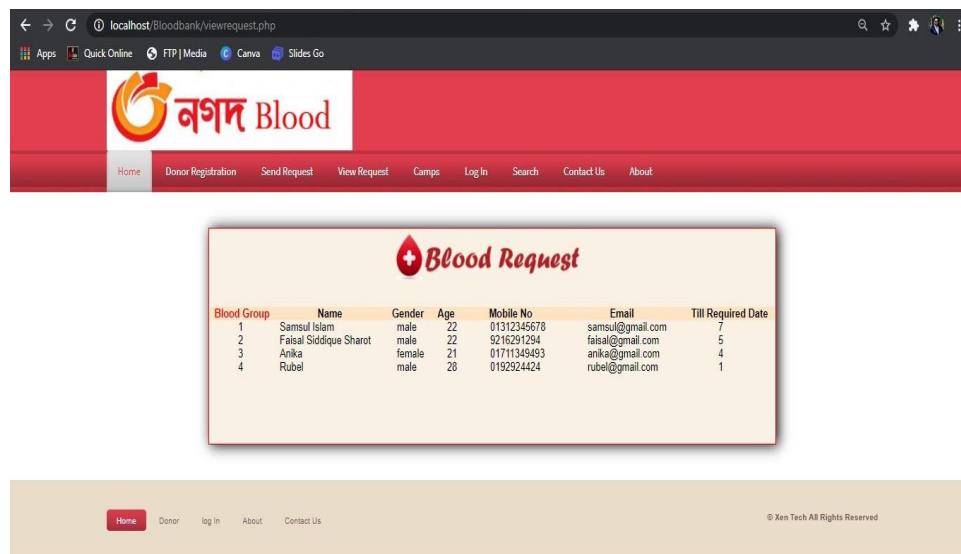
- **Blood Request Screen:** The User need to fill up the form for request Blood for his/her need. And then he/she can find check the for desired Blood group from Nagad Blood Management System.



The screenshot shows a web browser window with the URL `localhost/Bloodbank/requests.php`. The page features a red header with the "Nagad Blood" logo and a navigation menu. The main content area is a light beige box titled "Request for BLOOD". It contains a request form with the following fields: Name (text input), Gender (radio buttons for Male and Female, with Male selected), Age (text input), Mobile No (text input), Select Blood Group (dropdown menu), E-Mail (text input), Till Required Date (calendar picker showing JAN 1), and Detail (text input). A red "Submit" button is at the bottom right of the form.

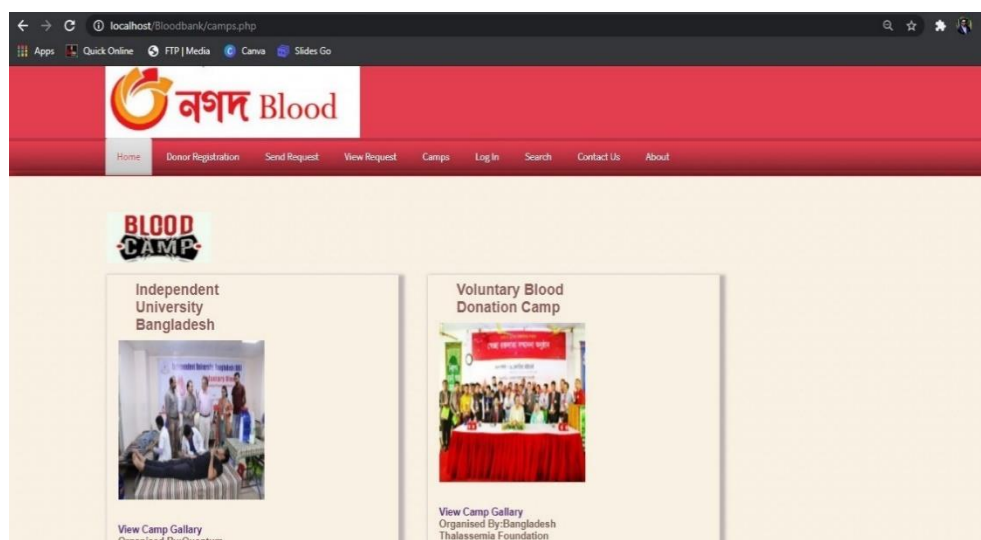
Figure 5.10: Blood Request Screen.

- **View Request Screen:** Here User will be able to view the list of Blood Request. Or if he/she request for Blood user can find and check his/her name and information.



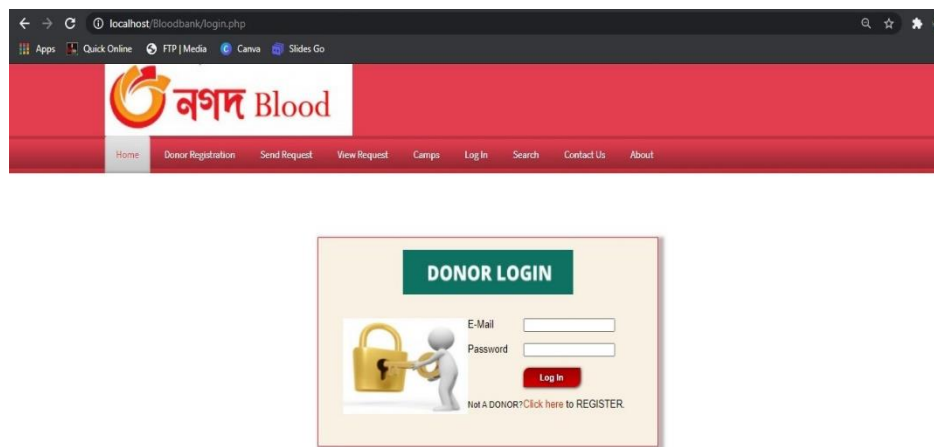
**Figure 5.11:** View Request Screen.

- **Blood Camp:** Users will find the Blood Camps done before and can the join running Blood Camp Programs. User can also view photos of Blood Camp from Photo Gallery.



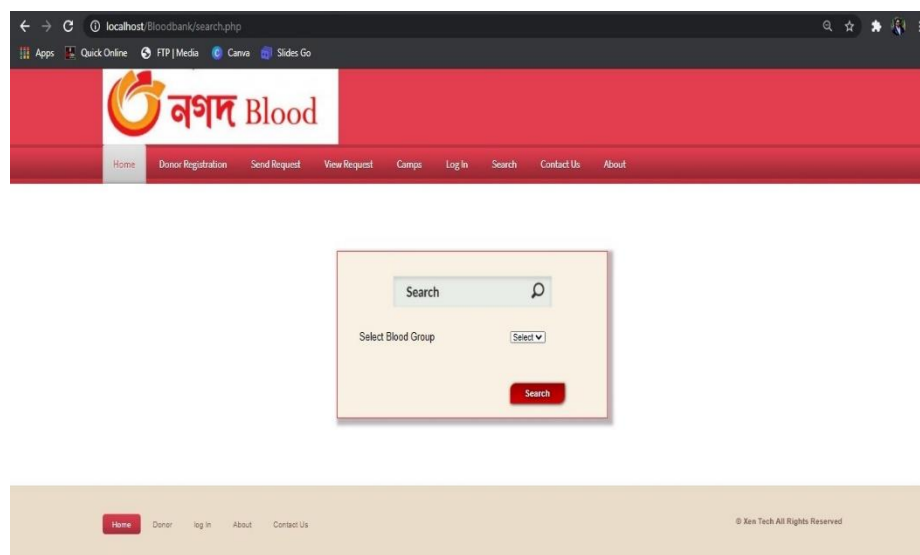
**Figure 5.12:** Screen View of Blood Camp.

- **Blood Donor Login:** After Donor Registration, Blood Donor will login from here by his/her desired email and password. Wrong email or Password will not get the access to login.



**Figure 5.13:** Screen View of Blood Donor Login.

- **Search Screen:** User will be able to Search Blood Group for his/her need.



**Figure 5.14:** Search Screen View.

- **About Screen:** User can check and read the news letter and get new updates of Nagad Blood.



Figure 5.15: Screen View of About.

- **Administration:** Only Admin of “Nagad Blood” have the access to use it. Admin will give his User Name and Password for the access.

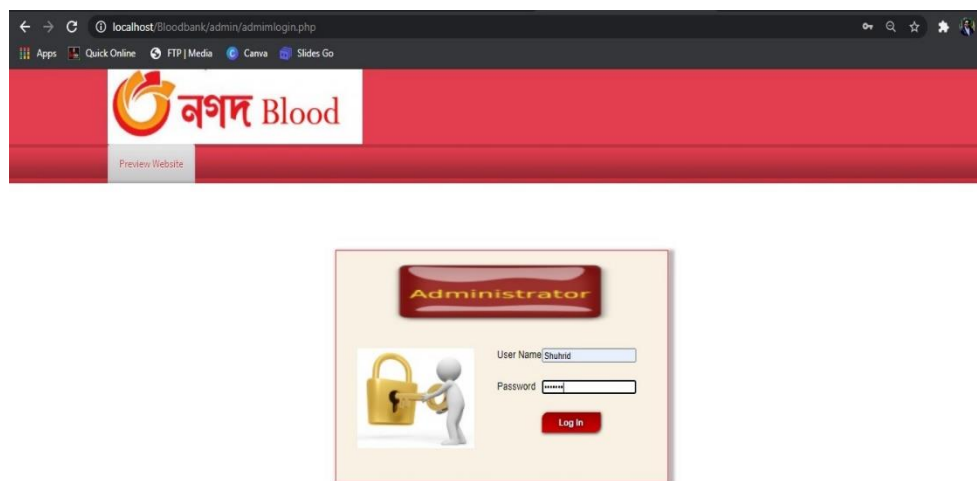
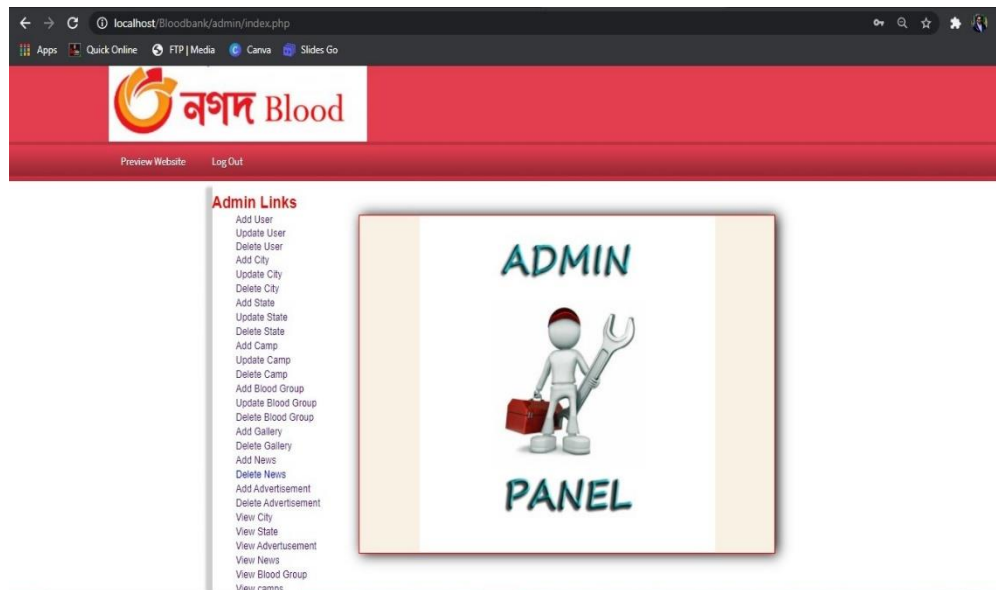


Figure 5.16: Administration Screen View.

- **Admin Panel:** After Admin login, Admin will have the access of all the Admin Links added beside. Admin can select from the links what he/she needs to do or update information of Nagad Blood. Admin can “Add User”, “Update User”, “Delete User”, “Add City”, “Update City”, “Delete City”, “Add State”, “Update State”, “Delete State”, “Add Camp”, “Update Camp”, “Delete Camp”, “Add Blood Group”, “Update Blood Group”, “Delete Blood Group”, “Add Gallery”, “Delete Gallery”, “Add Advertisement”, “Delete Advertisement”, “View City”, “View State”, “View Advertisement”, “View Blood Camp”, “View Camp”.



**Figure 5.17:** Screen View of Admin Panel.



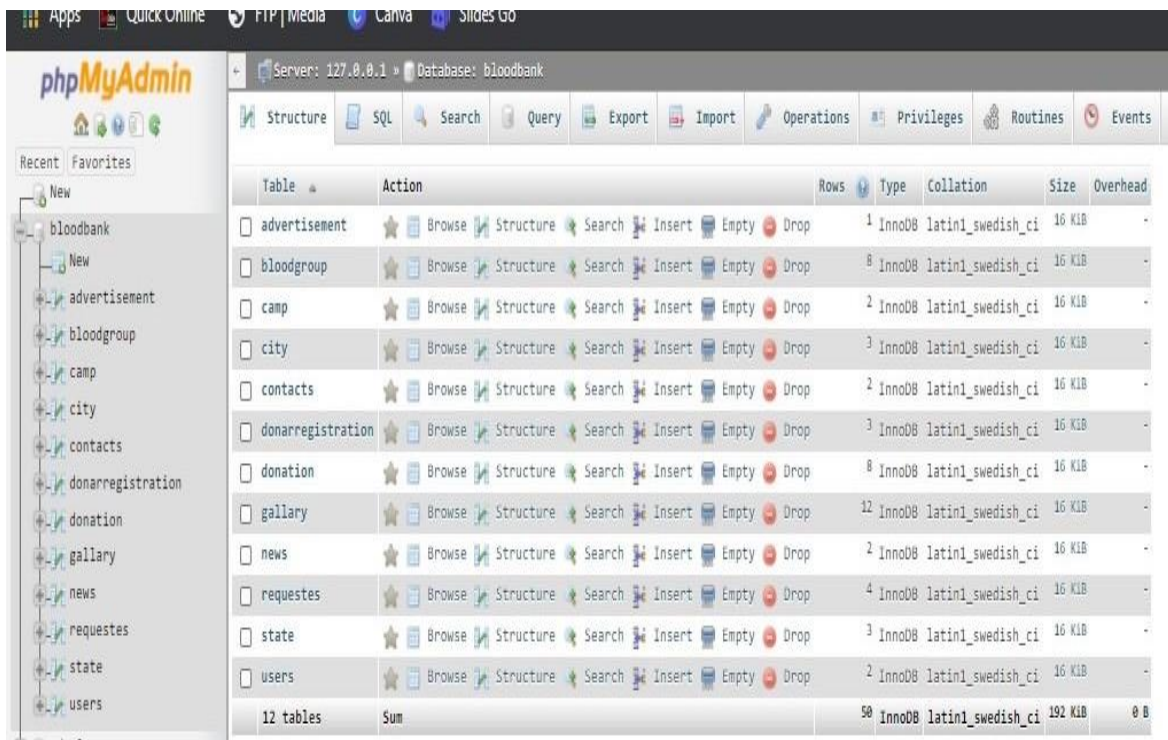
## 5.5 Implementation

To develop this Nagad Blood Management System, HTML5, CSS3, JavaScript used for frontend design. PHP is used for developing backend and MySql is used for Database.

Bootstrap 4 make the website more responsive.

### 5.5.1 PHP My Admin

PHP My Admin is one of the most popular applications for MySQL database management. ... Through this software, you can create, alter, drop, delete, import and export MySQL database tables. You can run MySQL queries, optimize, repair and check tables, change collation and execute other database management commands.



**Figure 5.18:** PHP My Admin Database of Nagad Blood



# **Chapter 6: Results and Analysis**

Testing is a procedure to check whether the actual software product matches probable requirements and to make sure that the software product is flawless. The purpose of software testing is to detect errors, breaks or missing requirements in comparison to actual requirements.

Task	Description	Conditions	Success Rate	Error Rate	Shortcomings	Working/ Not Working
Donor Registration	User need to fill up the form for Donor Registration and create account	User needs to have PC, Laptops, Smartphones with internet connectivity. User must need a unique email address for creating account.	100/100			Working
Send Request	User need to fill up the form for requesting for Bloods	User needs to have PC, Laptops, Smartphones with internet connectivity. User must need a unique email address for creating account.	100/100			Working
View Request	User can be able to see the requests list and his/her name listed as well	User needs to have PC, Laptops, Smartphones with internet connectivity. User must need a unique email address for creating account.	100/100			Working
Camps	User can view Blood Camps and Blood campaigns	User needs to have PC, Laptops, Smartphones with internet	100/100			Working

	and view the picture gallery	connectivity.				
Login	User will join by his/her email and password	User needs to have PC, Laptops, Smartphones with internet connectivity. User must login with the registered email & that need to be a unique one definitely.	100/100			Working
Search	User can Search Blood by selecting Blood Groups	User needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working
Contact Us	User can direct message for any query	User needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working

**Table 6.1:** Result of User

Task	Description	Conditions	Success Rate	Error Rate	Shortcomings	Working/ Not Working
Admin Login	Admin will be able to see and connect with the system database.	Admin needs to have PC, Laptops, Smartphones with internet connectivity. Admin must need a unique email address for creating account.	100/100			Working
Admin	Admin can see, update, add, delete anything	Admin needs to have PC, Laptops, Smartphones	100/100			Working

Panel	from the all the Admin Links menu	with internet connectivity.				
Blood Donor	Admin can see, update, add, delete Blood Donors	Admin needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working
Blood Group	Admin can see, update, add, delete Blood Groups	Admin needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working
New Admin Creating	Admin can create new admin or another and remove an admin too.	Admin needs to have PC, Laptops, Smartphones with internet connectivity. Admin need to login.	100/100			Working
User	Admin can see, update, add, delete Users	Admin needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working
Blood Camps	Admin can see, update, add, delete Blood Camps and also picture gallery	Admin needs to have PC, Laptops, Smartphones with internet connectivity.	100/100			Working

**Table 6.2:** Result of Admin



# **Chapter 7: Engineering problem analysis**

## 7.1 Sustainability of the Project

Sustainability of the product refers to its ability to be maintained and updated. In the modern world, every application being released needs to be maintained and continuously updated for its user base.

A product can be sustainable in three main categories:

- **Community Sustainability:** It means how much and how actively the users will support the project. Support comes in many forms such as downloading and installing the application, using the application, subscribing to paid services, giving rating and feedback, referring to other people, etc.

After the release of “Nagad Blood” in the application market, it is believed that it will have a strong user base since it is a unique idea of donating blood, become a donor and searching blood group in a new way without facing hassle. As the user base grows so will the community and hence it can be said that it is Sustainable in terms of Community.

- **Financial Sustainability:** This refers to how the application’s running cost will be maintained after it has been released and whether it will generate enough revenue as acceptable profit. An application’s running cost includes - server cost, database storage cost, third party Api cost, etc.

When “Nagad Blood” will get a full-fledged release into the application market, it will have advertisements to generate revenue and also a paid monthly subscription will be offered to the users to remove all advertisements from the application for a month. This method of revenue generation is believed to be able to cover the costs to be able to keep the application running after release. Thus, the project can be determined as Financially Sustainable.

- **Organizational Sustainability:** It relates to how the organization will continue to operate after the release of the application. After the release of an application, usually the organization maintains the application via its current team, an extended team or by a fresh new team. Also, organizations update their project by adding newer features to it and organization may pivot to other projects, expand the teams, create new teams, etc.

“Nagad Blood” has many more future planned features to be worked on and released. Since it is a unique application Nagad Bangladesh for Blood Bank Management, the project will be maintained and updated after its release as well. Taking core features from “Nagad Blood” and adding more ideas and features to it, another new project may also be planned and worked on. In conclusion, it can be said that the project is Organizationally Sustainable for the country.

## 7.2 Social and Environmental Effects and Analysis

Laptops and Smartphones are popular among people for the applications they offer to users. These gadgets make communications with people quite easier. People enjoy a lot of benefits in various forms of their daily work. Some advantages of these gadgets provide better means of communication, learning options to users, great exposure to the latest things, ways to personality development, simple ways to access applications, ideas to succeed in business, platforms to grow their applications and more.

The aim of “Nagad Blood” in the world of digital technologies is to simply for the people’s need to save life. While making them smart and active with the application of blood bank, people will be more secured and safe for donating blood, collecting blood and donate blood.

### **Social Effect:**

Nagad People aims to keep people healthier and fit. People have the right to be free from hassle and tension. Removing the barriers of an unsafe environment can help people fulfil their potential as individuals and as contributors to work, communities and economies. Promoting safety, secured blood donor in our workplaces and our extended supply chain. The aim is to implement policies and processes that people trust, with an emphasis on addressing the harmful social and cultural norms and behaviors that can leave people at risk. This is a moral obligation, and we know it’s essential if our business is to maintain the trust and reputation we aspire to. By using Nagad Blood application user can easily collect blood, donate blood, join in blood camps without any hesitation.

### **Environmental effect:**

Health care is the most significant contributor to environmental impacts. Using “Nagad Doctor” regularly will make people more active and confident. People while on active become more eager to do donate blood. Medical advantages of giving blood incorporate great wellbeing and decreased danger of malignant growth and hemochromatosis. It helps in lessening the danger of harm to liver and pancreas. Giving blood may help in improving cardiovascular wellbeing and diminishing stoutness. Giving blood has benefits for your enthusiastic and actual wellbeing. As indicated by a report by the Mental Health Foundation, helping other people can: diminish pressure. improve your enthusiastic prosperity. Although this is not the main goal of the application “Nagad Blood” but this buildup of subconscious behavior is believed to be a good thing and hence it results in having a positive impact on their environment and it will be definitely.



## 7.3 Ethics and Ethical issues

In the world of smartphones with so much data collection, hacking, cybercrime, etc, there are rules and ethics that need to be followed when working on creating and releasing an application. The developers of this application Nagad Blood believed that the application does not breach any code of conduct of application release and development since they all have been taken into serious concern. Some of them are:

- **Collecting only relevant User data:** The Nagad Blood Web application does collect user data, but those are strictly stored & maintained and used only relevant for this application. The only data that is being collected are the user's steps and distance covered for a certain period and their unique device identified code; other than these no other data is neither collected nor stored.
- **Not Sharing or Selling any User data:** Even though the data collected may not be of any privacy concern for most users, the game does not let any service, any application or any third party have access to the data collected.
- **Data Storage Security:** Only the lead developer and the owner of "Nagad Blood" have access to the server and the database. Since they are hosted in the cloud and can only be accessed via lead developer's and the owner's login credentials, the data stored can be deemed as safe and secure.
- **No use of Profanity:** The project has been developed with no slangs, swear words, offensive language, etc. The language and tone in the application is clean, clear and to the point.
- **No Discrimination Policy:** Other than concerns for age, "Nagad Blood" does not discriminate of any kind based on race, sexuality, gender, religious beliefs, color, language, political or other opinion, national or social origin, property, birth or other status.
- **Proper use of third-party Services and API:** "Nagad Blood" does not violate any rules of the third-party services or the APIs that have been used in its development.
- **Clear Promotion:** "Nagad Blood" only intends for Human's health and Blood banking conveniently. Other than what has been mentioned, "Nagad Blood" has no intention of promoting anything or anybody else.
- **Clean Advertisement:** The advertisements that will be running in "Nagad Blood" will only be the ones that are clean and clear which will have no negative impact on its users. Advertisements that will be filtered and will never be run on "Nagad Blood" are the ones that contain violence, nudity, blood and gore, injury, disturbance, etc.



# **Chapter 8: Future Work and Conclusion**

## 8.1 Challenges Faced

During my internship program, I have faced lots of challenges while working on this Project.

The main ones are:

- **Understanding the Requirement:** It was quite difficult to understand what was really required; often I would do things that were not asked to be done and miss out on the actual requirement. It was recurring at the beginning but as time went on and I started to have better understanding the problem was minimized.
- **Adapting to New Technologies:** Since this was the first time, I have ever worked on a web application in an office environment I had to learn and adapt to new technologies of the company. Although acquiring the skill set was possible it became hard to apply them in real life situations.
- **Keeping up to Speed:** After learning new technologies and putting them to use was a slow process for me initially as it was the first time, I have ever used it with an office environment. Hence, it was quite difficult to meet weekly deadlines and this slowed down the overall pace at which the application was developing.
- **Identifying and Fixing Bugs:** Often, there were bugs which were very hard to find, and even after they have been found it became a big problem to fix it. There were bugs that were so difficult to deal with that it would take a whole week to fix it.

## 8.2 Conclusion

During Internship I worked on a web application called “Nagad Blood”. In this application Xen Tech looked after online process of blood banking and it is the main target and priority. This application is really important for people to collect and donate blood safely and security. Just using this application user can access and get many features of blood bank at his/her need in one hand only.

Working in Xen Tech as an intern has been an amazing experience. I have learned a lot about developing different kinds of applications and also about development styles. Working with cutting-edge technology like Php, HTML, CSS, Flutter, Vue.Js, Node.js and Express.js is among the major takeaways from the Internship Program. Through this program I have been

exposed to a developer's working life. Throughout my internship, I could understand more about the definition of a software engineer and programmer and this helped prepare myself to become a more responsible and innovative developer in future. During my project, I cooperated with my mentors and seniors to solve the challenges faced. Moreover, the project indirectly helped me to learn independently, discipline myself, be patient, take initiative and the ability to solve problems. Besides, my communication skills have also strengthened as I had to give regular updates and was engaged in many pair programming sessions. As I had to face many problems, solving them developed my programming skills which made me more sharp in my skills of web application. This internship opportunity has paved the way to look into the development environment and marketplace. I would like to once again appreciate everyone who has made my life as an intern such a great experience.

## 8.3 Future Work

This project, “Nagad Blood” is still in its development phase and there many more planned features that are to be added in the near future. Some of them are:

- Create ‘999’ option for calling direct nearest Police Station.
- Create Hospital profile list and connect with Hospitals.
- Creating mobile application of Nagad Blood.
- Share application links to invite others to join.
- Sign up and Sign in feature via face detection or barcode.
- Log in via other services such as Google or Facebook, LinkedIn, Instagram.
- Get notifications and connection of other social media such as LinkedIn, Instagram, Twitter.
- Animations, Logos, Icons and Advertisements.
- Develop for iOS and Android, Linux, Mac, Google Fuchsia, Windows.
- Show user statistics.

## Logo of Nagad Doctor



**Figure 8.1:** Logo of Nagad Blood

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