**CSE 471(SEC-03)**

**Title of the Project: BLOOD BANK MANAGEMENT SYSTEM**

**Course Name: System Analysis and Design**

**Group Number: 03**

**Group Name: Team Thanos**

**Submitted by:**

|  |  |
| --- | --- |
| **Name** | **ID** |
| **ASHRAFUL JANNAT** | **15101102** |
| **MD. AOSAFUL ALAM** | **16101061** |
| **NAZMUS SAKIB AKASH** | **16101208** |
| **SHAHAN JAMIL BHUIYAN** | **16101091** |

**BLOOD BANK MANAGEMENT SYSTEM**

**INTRODUCTION:**

Approximately 6000 babies with different types of thalassemia are born in Bangladesh each year. Thalassemia is a common problem in Bangladesh. According to World Health Organization (WHO) about 4.8 million people in Bangladesh are now carrying the gene of this silent killer disease, which is four per cent of the total population of the country. Moreover, every day we find many advertises searching of bloods and even more reports about lives being lost due to not finding the suitable blood type for the patients. These scenarios indicate the necessity of a centralized digital blood management system which would mitigate the problems that have been mentioned. Following this, we have decided to organize a system named “Blood Bank Management System” which will help people to find blood easily when necessary.

**MOTIVATION:**

In our country, the blood bank management system is very analog. There are only few online blood bank who provides online blood services but the system is not reachable to everywhere. That is why we are creating a system which will provide not only blood also create a community with blood banks, healthcare and common people. “GIVE BLOOD” will be dedicated to connecting people who need life-saving blood with generous volunteers who give. We will provide a stable supply of blood and blood components to healthcare facilities throughout the country.

Planning

**Mission:** Saving lives by providing blood without delay and brand-building

Partnerships with the community, other blood bank, and health care facilities.

**Vision:** To be the best online blood bank in Bangladesh.

**Values:** Respect, Integrity, Service,Excellence.

**FEASIBILITY ANALYSIS:**

A feasibility study is an analysis of how successfully a project can be completed, accounting for factors that affect it such as economic, technological, legal and scheduling factors. It can be divided into 3 parts, technical, economic and organizational.

**TECHNICAL FEASIBILITY:**

For the technical feasibility, we will be examining the details of how the old system works in the present situation and the issues the user faces with the old system. After that we are going to going to expedite the existing technologies that we have in our arsenal. We will see if our technologies are good enough for the proposed system or if we have to upgrade our technologies. Even the number of people working behind the system will be shown along with their expenses and also the cost of new technologies will be showed. Overall we will be showing the probability of this venture being successfully completed and why it is worth investing in.

**POSSIBLE RISK:**

Our proposed system’s name is Blood Bank Management System. The basic feature this system provides is the users going to search blood group and also look for the donors who are available in that moment. Hospitals, other healthcare units can also search for donors. Now for some reason if this idea is misunderstood by the people who will do the front end and the back end of the system then it will directly affect the basic function of the system. So, to tackle this problem every people working behind the system needs to have clear idea about the system and what the system will deliver to its user. To solve this problem, the people of public relations working for the system need to increase their interaction with the people who will ultimately be using the system. They will eventually get the information related to what a user prefers in a system and what will be the easiest way to use the system. After that the public relations department can convey all those messages to the technical stuffs so that they can create the system as much user friendly as they can.

**EXISTING TECHNOLOGY:**

Now, we have to consider what kind of technologies we have at our disposal and what technologies we need in order to create the system. The hardware and software technologies we need are given along with the price.

**Existing Hardware**

|  |  |
| --- | --- |
| **Material** | **Quantity** |
| Desktop | 10 |
| Laptop | 20 |

**Table 01: List of existing hardware**

**Hardware**

|  |  |  |  |
| --- | --- | --- | --- |
| **Material** | **Brand** | **Quantity** | **Cost (in Tk)** |
| Desktop | ASUS D83M1 INTEL Core i7 7th Gen 8GB DDR4 1TB Brand PC | 10 | 449000 |
| Laptop | Asus K555LN Core i7 5th Gen. 5500U (2.40GHz,8GB,1TB) 15.6 Inch Nvidia GT840 2GB Black Metal Notebook | 20 | 62100 |
| Internet | EXORD Ltd | Monthly payment | 6000 (per month) |
| External  Hard Drive | **[TOSHIBA](https://ryanscomputers.com/storage/external-hdd/all-brands/dell-1tb-usb-3-0-black-external-hdd.html)** [1TB USB 3.0 Black External HDD](https://ryanscomputers.com/storage/external-hdd/all-brands/dell-1tb-usb-3-0-black-external-hdd.html) | 2 | 12800 |
| Server | Web Host BD | Yearly payment | 5000 (per year) |

**Table 02: List of newly bought hardware**

**Software**

|  |  |
| --- | --- |
| **Software needed** | **Functions** |
| HTML | It gives a structure to a website and shows what user want to see |
| CSS | It is used to decorate the website |
| Programming languages | Such as Java, JavaScript,PHP are used to establish communication with the database |
| Database | Such as MYSQL, Oracle, SQL server are used to create the database where data will be stored |

**Table 03: List of software needed**

These are the estimated hardware and software needed for know to kick start developing the system.

**LABOR**

There will be different analyst along with the project manager. Along with that, there will be programmers who will work both on the front end and back end of the system. There will also be a department called public relations department which will communicate with the people to know about their expectations of this system.This department will be included in the business analyst post. The number of people working in those posts along with their monthly salary is given below.

|  |  |  |
| --- | --- | --- |
| **Post** | **Monthly salary** | **Number of people** |
| Project manager | 55000-60000 | 1 |
| System analyst | 40000-45000 | 2-3 |
| Business analyst | 30000-35000 | 2-3 |
| Infrastructure analyst | 35000-40000 | 1-2 |
| Change management analyst | 25000-30000 | 1-2 |
| Programmers | 40000-45000 | 3-4 |
| Janitors | 10000-12000 | 1-2 |

**ECONOMIC FEASIBILITY:**

Economic feasibility analysis is the most commonly used method for determining the efficiency of a new project. It is also known as cost analysis. It helps in identifying profit against investment expected from a project. Cost and time are the most essential factors involved in this field of study. For our project, we already estimated some of the costs and benefits in advance to have a clear idea about how the project is going to run in the long term.

**Possible Costs**

Every system has to endure some initial costs to build. For our system, we figured out few of the costs that we have to go through. There are some development costs for our system such as we need to train the people who are going to work under us. If they are not properly trained or guided, the system will require more time to build and thus will endure more costs. Then there is the office space cost. We have to hire space for our project so that everyone can work in harmony and one can easily communicate with others for work purpose. The equipment costs have been there already in the technical feasibility part where costs of all the hardware, software, laptops and computer are shown clearly.

So far we calculated this costs that we must have to go through to build our system but there can be even more costs than this as well.

**TOTAL DEVELOPMENT COSTS (TK)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
| 492780 | 53000 | 53000 | 53000 | 53000 |

**TOTAL OPERATIONAL COSTS (TK)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
| 4620000 | 4620000 | 4620000 | 4620000 | 4620000 |

**Possible Benefits**

Now we move to the benefits section of our project. The benefits that we are going to have from this project are simple. Firstly, we will be looking to gather some sponsors for our project. We hope to get as many sponsors as possible. The sponsors have to pay a good amount of money on a yearly basis. As far as the planning is proceeding we are willing to charge each sponsor 8 lakh taka per year. And in return we will post there banner and ads on our website. There will be a count for how many requests are made for blood and donor from hospital or clinic from our website and from that count we will charge the hospital or clinic 10% on every response. This amount has to be paid by the hospital or clinic on a monthly basis. As we stated other online blood bank can join with our system. So we will charge 10% from them also.

**BENEFITS (TK)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
| 4800000 | 4800000 | 4800000 | 4800000 | 4800000 |

**TOTAL ALL BENEFITS (TK)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | TOTAL |
| 4800000 | 9600000 | 14400000 | 19200000 | 24000000 | 24000000 |

**Net Present Value**

Net Present Value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting to analyze the profitability of a projected investment or project.

**PRESENT VALUE OF TOTAL COSTS (TK)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
| 5112780 | 4673000 | 4673000 | 4673000 | 4673000 |

**PRESENT VALUE OF ALL COSTS (TK)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | TOTAL |
| 5112780 | 9785780 | 14458780 | 19131780 | 23804780 | 23804780 |

**Return on Investment (ROI)**

Return on Investment (ROI) is the ratio between the net profit and cost of investment resulting from an investment of some resource. A high ROI means the investment's gains compare favorably to its cost. As a performance measure, ROI is used to evaluate the efficiency of an investment or to compare the efficiencies of several different investments. In purely economic terms, it is one way of relating profits to capital invested.

**TOTAL BENEFITS – COSTS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
| (312780) | 127000 | 127000 | 127000 | 127000 |

**Table 12: Total benefits-costs**

**CUMULATIVE NPV (TK)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | TOTAL |
| (312780) | (185780) | (58780) | 68220 | 195220 | 195220 |

Now, we are willing to find the Return on Investment for our project.

**RETURN ON INVESTMENT = 195220 / 23804780 = 0.82%**

So from the calculations it can be easily state seen that the return on investment value is very close to 0.82% which indicates that our return will be 0.82 times of our investment on the project.

**BREAK EVEN ANALYSIS**

Break-even analysis is used to determine the point at which revenue received equals the costs associated with receiving the revenue. Break-even analysis calculates what is known as a margin of safety, the amount that revenues exceed the break-even point. This is the amount that revenues can fall while still staying above the break-even point. Break-even analysis is a supply-side analysis; it only analyzes the costs of the sales. It does not analyze how demand may be affected at different price levels.

**BREAK EVEN POINT = 2 + (127000-68220) / 127000 = 2.46 YEARS**

We can see from the calculations that the Break Even Point is just 0.375 year which is approximately 2years and 6 months. The break-even point is small which means the project is highly profitable. This is mainly because of the total money we are receiving from the sponsors as well as the hospitals. There are many hospitals and clinics in Dhaka city, so if they just give 10% of their appointment fees to us since the appointment is made through our websites we can easily earn a huge amount of money easily. And this is one of the reasons why the break-even point value is small.

**ORGANIZATIONAL FEASIBILITY**

Organizational feasibility determines a system whether is user friendly or not. We will create a system which will fulfill the conformability of all type of user. Blood Bank Management system will be feasible to the user who need blood urgently and do not trust the local blood bank because of their dishonesty .It will also help donors as common people to communicate and find them in a more organized way. It will also save their time to get popularity. We will be providing search facility so that user can find donor according to blood group.

**Analysis:**

The goal of online blood bank management system is to ensure all the acceptors and donors to find what they actually want in their need of blood. In our country the blood bank management is manual. That is why we will make an online blood bank management system which will help all the users, donors, hospitals and other healthcare facilities. Every project or management system needs some requirements to run or build it. Requirements gathering is the process of generating a list of requirements (functional, system, technical, etc.) from the various stakeholders (customers, users, vendors, IT staff, etc.) that will be used in the system.

“Requirements gathering” can be categorized in some parts which are given below

1. Functional Requirements

2. Non-functional Requirements

3. Hardwire Requirements

4. Software Requirements

5. Performance Requirements

**FUNCTIONAL REQUIREMENTS:**

The Functional Requirements Specification documents the operations and activities that a system must be able to perform. A functional requirement, in a system, is a declaration of the intended function of a system and its components. Based on functional requirements, a developer determines the behavior (output) that a system is expected to exhibit in the case of a certain input. A system design is an early form of a functional requirement. So the functional requirements of blood bank management system is given below.

**1. Login of Admin:** Log into the official blood bank website. System is shown the all features of the system. Click the “Login of administrator”. The system will be asking for the user name & the password. Admin provides the username & the password and then system does authentication. Main application relevant to admin is displayed. If the authorization fails a message will be given to admins that the provided password is wrong.

**2. Change the password:** When admin will choose the change password option the system will show current password, new password, re enter the password to confirm it. After the admin gives all the input the system will start authentication process and store the new password in the database. If this fails a message will be shown that “the current password is wrong” and tell the admin to re-enter the password.

**3. Register the donor by himself:** When someone wants to be a donor he/she must have to click the registration button. After that system will display a registration form and the donor must fill up the form. After that system will do authentication. If everything is filled up then it will show a message that donor registration is completed and store all the details in the system database. If donor doesn’t provide all things a message will be shown and ask again to give all the details that a system needs.

**4. Register the donor by admin:** Admin can also do the registration of a donor by giving all the inputs after verifying it.

**5. Donor:** After the entry in the website a donor can click the donor login button. There they have to provide username, passwords. After verifying it by the system donor can change password, username, contact details, personal details by himself/herself. If anything goes wrong the system will show a message to donor.

**6. Users & hospitals:** Common user can enter the website and they can click the blood group they want. After that the system will show donor with the respective blood and the details of the donor. In the website there will be given the contact information of donor, other blood banks which will help hospital and other healthcare facilities.

**7. Withdraw registration details by donor**

**8. Withdraw registration details by admin**

**9. Connection of other blood banks:** If any blood bank want to connect with our website they have to send a mail to the admin or the authorities with their details. After verifying it the authority will contact with them.

**Non Functional Requirements:**

In system engineering and **requirements** engineering, a **non**-**functional requirement** (NFR) is a **requirement** that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors

There are some key points in Non Functional Requirements.

## **Security:** Security means controlling the user access and safety of users data. We have to keep their addresses and contact numbers private. We are also providing secure communication channel for the data.

**Concurrency and Capacity**: Our system is going to be able to handle multiple computations executing simultaneously, and potentially interacting with each other. There should be minimum, average and maximum number of concurrent users. It also indicating how much data we can store.

**Reliability:** Users have to trust the system, even after using it for a long time. Our Blood Bank Management System is also optimistic in this section. In our system data transferred in a reliable way and using trustfull protocols. It also indicates notifying about the system transactions and processing

**Maintainability:** We need regularly preventive and corrective maintenance. Maintenance might signify scalability to grow and improve the system features and functionalities. Then the system will run well.

**Usability:** A Project success depends on end users satisfaction and acceptance. We gave importance here from the beginning. Taking the user experience requirements into account from the project conception is a win bet, and it will especially save a lot of time at the project release as the user won’t ask for changes or even worst misunderstandings

**Documentation**: Last but not least, our project require a minimum of documentation at different levels. In many cases the users might even need training on it, so keeping good documentation practices and standards will do this task spread along the project development; but as well this must be establish since the project planning to include this task in the list.

**HARDWIRE REQUIREMENTS:**

As it is an online based blood bank management system it requires some hardwire performances. The minimum hardware requirements are,

1. Intel Core i7 7TH generation

2. 8gb DDR4 RAM

3. 1TB hard drive

4. Internet

5. External hard drive

**SOFTWARE REQUIREMENTS:**

1. Operating system: Window 7 & higher

2. HTML

3. CSS

4. Language: Javascript, PHP

5. Database: MYSQL server

**PERFORMANCE REQUIREMENTS:**

The system should run smoothly in any device. The response time for occurs a change will be no more than 4 seconds. The response time for access the database will be no more than 5 seconds. Performance is generally perceived as a time expectation. This is one of the most important considerations especially when the project is in the architecturing phase. Choosing the right technology is crucial at this point.

**-----------------------------Diagrams-------------------------------**

**System Description:**

This system is designed for blood donors and users. It gives detail idea where users get the informations. Online Blood Bank management system is to provide services for the people who are in need of blood by getting help from the donors who are interested in donating blood for the people. Basically there are some main modules in the system. These are

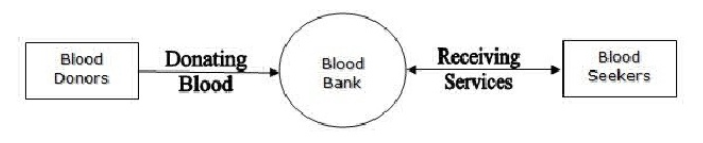
1.**ADMIN**- Admin can manage both donors acceptors. He can add or remove any user from the system. Each member donor and acceptor is given a user id and password, which identifies him uniquely. Admin can change donor details, delete donor or change the password.

2.**DONORS**-From this module user can create their account, when user create his account the user get a user id and password which identifies him uniquely. From this module user can search donor for blood and can also refer his friend to become a donor. Donor can also get information like when he donated blood or when he will be able to donate blood.

3.**DONOR REGISTRATION**-Donor must fill up the registration form by giving total details such as name, city, sex, mobile phone, email,age, blood group.

4.**ACCEPTORS**-This module helps user to find blood group. Then user click on find a blood group system ask him to enter blogroup he want to search. After entering the blood group, system search for the availability of the blood group and give him the list of the donor who has the same blood group.

5..**LIFE SAVING CONTACTS**- They are the contacting persons whom will be assigned by us. If anyone doesn’t find a donor he/she can contact with these persons. They will help them out to find a donor.

****

**TIMELINE:**

We will take at most 3 month to complete the prototype and then we will launch it in the market. After that we will be taking reviews from the users for approximately 6 months and after that we will work again for another 3 month to complete all the updates and bring the 2nd version of the system. The same process of taking reviews from the users and updating the system will be carried on.