Department of Computer Science & Engineering
The University of Texas at Arlington

Project Charter
CSE 4316: Senior Design I
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Lifesavers
Donors

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Revision History

Revision	Date	Author(s)	Description
0.1	03.03.2021	ST, LA	document creation
0.2	03.07.2021	MK,BS,AB	complete draft

CONTENTS

List of Figures

1 Vision

Our vision is to provide a reliable platform where there will be a process between the organizations needing blood donations and the donors providing it, with correct precision of time, schedule, and management. Considering the lives of people who are in need of blood every day, our vision is to provide necessary service to the community by helping in the blood donation field. We thought; in todayâs generation, where almost entire activities in daily lives of people depend on networking which is especially supported by smart phones and other electrical devices, everyone will be comfortable because of the convenience provided by our product. There can be substantial problems that will affect the lives of many people. For example, a political outburst, global disease pandemic, severe weather etc can cause serious problems to those people who will be in desperate need of blood. In these situations, we envision to showcase our product with more aim that will maximize the assistance in a general community.

2 Mission

Our mission is to build a product: a convenient and reliable smartphone application which serves to help the organizations in need of blood for their patients and other uses. It will contain the database of the hospitals and organizations who are in need of blood for their patients as well as the users(donors) who are willing to donate blood. With our application, these organizations will be successful in notifying the donors if they need the blood. The donors can check the locations where the blood donations are taking place and schedule a time for it. The mission includes a strong and a dependable relationship among the health organizations and the people who are willing to donate blood. There cannot be a better option to rely on the web of the internet which makes it possible to connect all components like database, location service, information, search criteria, etc in one place. We will also make our application available at playstore for the users to download and use it. We expect full satisfaction by the users who use our application.

3 Success Criteria

The preliminary production of our application shall have the following success expectations :

- Maps of the health organizations, hospitals, and blood donation centers must be displayed on the application
- Donors should be able to see the correct location of health organizations, hospitals, and the blood donation centers.
- Hospitals can send requests to the donors if they are in need of blood.
- Donors will get a notification from the hospital whenever the request for donation is made.
- Donors can make appointments to the donation centers.
- Donors will get appointment confirmation and reminders.
- Donors can check the statistics like the number of times the donors donated their blood.

The long term success criteria of the application shall have following features.

- Hospitals must be able to update their data on the database.
- The application shall provide users with confidentiality agreement.

- The application will be available in app stores like Google Play Store.
- Successful rate of growth of users wanting to use the application.
- Can be able to make the lives of people more efficient by saving time and energy.
- Easy management by following simple protocol of the app.

4 Background

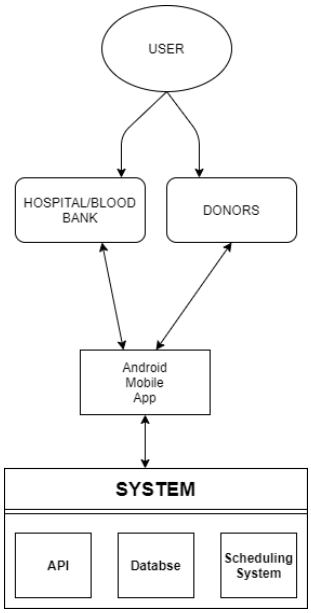
The statistics suggest that there are a lot of people who die everyday because of unsafe blood transfusion, not getting blood in time due to location and correct technology, and lack of proper planning and management of blood donation programs. This happens in a much higher percentage to underdeveloped countries than the developed ones. A WHO reports that, "Only about 40% of the blood collected each year is donated in developing countries, which are home to over 80% of the worldâs population." If developed countries have these situations, there is undoubtedly the worst situation in some rural parts of underdeveloped countries. This is a huge loss in the health sector, particularly because of not being able to save the lives of people.

5 Related Work

There are few smartphone applications that already provide the functionalities like searching for blood donation locations and getting appointments. We will try to look over those applications and develop our product by implementing existing features in them as well as some new features. One of the existing application is Blood Donor from American Red Cross which provides the services of scheduling and managing the appointments, tracking the user's blood journey, earning achievement badges and others. However, this app lacks some of the features that will make the blood donation process convenient. We will try to make our product unique with additional features because building a technological product always brings out competition in the market.

6 System Overview

The domain of the project is of healthcare. Hindrance in blood supply can have a huge impact in peopleâs lives. We decided to bridge the gap between the information received by a normal donor and the hospitals and blood banks that are in need of it. The overall application would be described as an interaction between the user and the system through a mobile app. With two types of login i.e. login as a donor and login as a hospital/blood bank, the mobile application would display two different interfaces depending on the user. A donor would be able to schedule an appointment and manage the appointments they have taken. The donor would be able to view the map showing the nearby locations of the hospitals and blood banks carrying out blood donation events. User login as a hospital/blood bank would allow them to make an emergency request for a particular blood group or announce a blood donation event and invite people. Both of the users would have a notification view, which gives them if they are requested to donate, or if someone has accepted their request to donate. The system layer would handle the user information and only allow view upon approval of their request. System handles different API to display the map, current location and nearby hospitals. The system allows the user to make a call or send a message through the application.



7 Roles & Responsibilities

The responsibility of brainstorming ideas, documentation, and its formatting is for all the group members of this project. Since, all group members have been involved in 1-2 academic projects following a solid software life cycle (agile development), working in a team shall not be a complication. Since all group members are either Computer Science major and Software Engineer major, all are flexible with their brainstorming skills, code development skills, and testing skills, i.e none are novice in this domain. Aawaj will work on domain modeling with assistance from Laura. Sayana will have responsibility for keeping track about the target deadlines, due dates, and keeping the vision and mission up to date. Manish and Bikash will develop ideas on each component that will be present in the project, make effort on understanding parts of coding and assign coding parts to all the team members. Everyone will have the responsibility to move forward and learn the essential things required for the project either online or from the books. And most importantly, it will be everyoneâs duty to speak up if they find any faults in their colleagueâs work.

8 Cost Proposal

The Computer Science Department provides a default $800 to all senior design projects. Since our application is a smartphone application and does not need any hardware appliances, we are thinking it will not be necessary for us to use any amount from that budget. However, if by any chance we decide to use a premium database or any software licences which require money, then we may need some amount from the budget.

8.1 Preliminary Budget

Expenses	Cost
Firebase Database	$25
Online application tool	0 to $100

Table 1 : Overview of project cost and expenses

8.2 Current & Pending Support

The CSE department is providing $800 for all the projects for now which is going to be more than enough. We donât think we need extra funds for our project as most of the tools are free on the internet.

9 Facilities & Equipment

Since this project is software based, there is no need for physical equipment or lab which makes it easy to access everything online for all the team members. All team members can have access to their projects online to collaborate without having them to meet every time to start the work.

10 Assumptions

The following are the assumption that are made regarding development of the application:

- Be able to use and implement the required tools that need to be used for the project.
- The ability to run the application in a different work environment by knowing its effects.
- The ability to determine the conditions that would be created through tests cases if the assumptions are violated.
- Access to all the required tools for the projects.
- Project cost and scope will remain the same throughout the cycle.

11 Constraints

Below are the constraints listed regarding the projects:

- Final prototype demonstration must be completed by May 1st, 2021
- The meetings for the projects are carried out virtually and in person if needed.
- The blood collected from the donors will be supplied only to the hospitals and organized as needed.
- Total development costs must not exceed $800
- All the information collected from the blood donors will be kept confidential and will be released only for emergency matters.

12 Risks

There can be multiple risks and challenges that can occur while building the application. The risks are listed below:

Risk description	**Probability**	**Loss (days)**	**Exposure (days)**
Delays on getting the blood donations from the users.	0.50	10	5
Delays on managing time and deadlines	0.22	18	4
Getting the blood groups as demanded might be challenging.	0.33	15	5
Testing the software functions	0.31	16	5
Use of new tools and its implementation	0.25	8	2

Table 1: Overview of highest exposure project risks

13 Documentation & Reporting

13.1 Major Documentation Deliverables

13.1.1 Project Charter

This document will be updated whenever there are any changes made during the project and also based on the feedback of the professor. The initial version of the charter will be revised and submitted on March 8th, 2021. The final version of the charter will be updated based on all the changes and feedback and will be delivered on August 12th, 2021.

13.1.2 System Requirements Specification

This document will include all the requirements needed to successfully complete this project. Any changes in the feature or any of the requirements will be updated and maintained bi-weekly or during the sprint if necessary. The initial version of this document will be submitted on April 9th, 2021 and the final version will be submitted on August 12th, 2021.

13.1.3 Architectural Design Specification

This document will cover the architectural design layout of the project including the class structure and UX/UI diagrams. The changes will be made based on the feedback by the professor/customer regarding the design of the application. The initial version and the final version of this document will be delivered on April 28th, 2021 and August 12th, 2021 respectively.

13.1.4 Detailed Design Specification

The Detailed Design Specification will be updated and maintained as needed on a regular basis considering the design of the application. The initial and final version of this document will be delivered in the month of August.

13.2 Recurring Sprint Items

The following items will be documented and maintained during each individual sprint. As above, remove this paragraph from your draft, but leave the heading.

13.2.1 Product Backlog

Based on the level of importance and complexity, items will be added to the product backlog after the discussion among team members. Prioritized items will be worked on first and given more time depending on the complexity. We plan to use Asana to maintain the product backlogs according to their priority between team members and stakeholders.

13.2.2 Sprint Planning

There will be a total of roughly 4 sprints and each sprint will be based on the product backlog details and previous sprints considering what needs to be done.

13.2.3 Sprint Goal

We will set up a platform for customers to provide feedback and our group will discuss and decide the goal for each sprint.

13.2.4 Sprint Backlog

Sprint backlog will be similar to product backlog and the whole group will be responsible to decide what goes in sprint backlog. The sprints will be based on what tasks are left to do for the completion of the sprint and then it will be ordered based on the priority.

13.2.5 Task Breakdown

Work will be divided equally among all the team members based on their strengths and weaknesses. Also, each member will be responsible for completing their own individual part on time and let the other members know if any obstacle occurs during the time period. The tasks will be organized and distributed using Asana and the time spent on a task by each member will be recorded there. All the team members can see each otherâs progress and where we stand regarding our project completion timeframe at that specific time. The final deliverable will be reviewed by the team before submitting.

13.2.6 Sprint Burn Down Charts

The team leader for that specific sprint will be responsible for generating the sprint burn down charts. While working on the project, each team member will report the amount of time worked for the project and the burn down chart will be generated based on that. Below is the format for our sprint burn down chart.

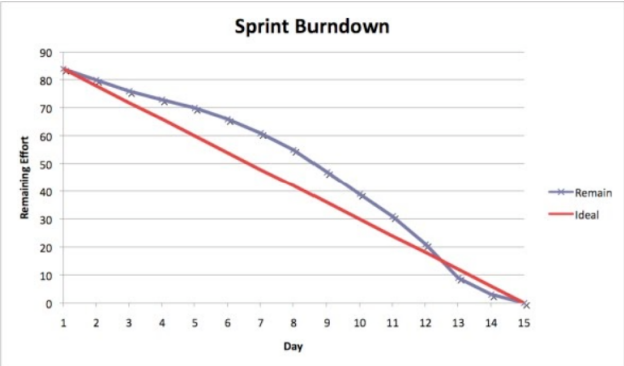


Figure 1: Example sprint burn down chart

13.2.7 Sprint Retrospective

At the end of every sprint, sprint retrospective will be done. All the team members will discuss what needs to be done for future sprints based on the feedback received from each other.

13.2.8 Individual Status Reports

Each team member will report bi-weekly about the task that they are working on, list/percentage of task completed, and the amount of time spent for the project. Also, the total time spent in the meeting will be divided and added on each memberâs time. Based on those, the sprint burn down charts will be generated.

13.2.9 Engineering Notebooks

The engineering notebook will be updated every week by each team member. Every member will complete at least a page for a week-long interval.

13.3 Closeout Materials

The following materials, in addition to major documentation deliverables, will be provided to the customer upon project closeout. Remove this paragraph from your draft, but leave the heading.

13.3.1 System Prototype

After the coding portions are distributed among all the team members, each member will build a small scale prototype just to make sure it works fine. For example, a version of login functionality in the appli-

cation just to begin, implementing API, uploading data into the database, After everything is confirmed, all components will be rendered among each other to build the final application.

13.3.2 Project Poster

The project poster will include the name of the project, names of all the team members, and summary of the project. The final dimensions have not been decided yet. The poster will be delivered on or before May 7,2021.

13.3.3 Web Page

Web page will be developed to provide a detailed description of the application. It will include the images of the app, downloadable versions, and copyrights. The web page will be updated frequently. It will also include a project demo video and links to the documentation.

13.3.4 Demo Video

The detailed instruction on using the application will be shown in a short demo video. It will show how to register and use various various features included in the application. The video will be 5-8 minutes long.

13.3.5 Source Code

The source code of the project will be maintained in the private repository in GitHub and will not be available to the public.

13.3.6 Source Code Documentation

All the code files of the project will be thoroughly documented. Doxygen will be used for the source code documentation.

13.3.7 Hardware Schematics

An Android application is being developed in this project, so the hardware components would not be used in this project.

13.3.8 CAD files

The application that is being developed in this project is purely software based and requires no CAD files.

13.3.9 Installation Scripts

Scripts will be provided to install the application in different devices.

13.3.10 User Manual

A video tutorial will be provided to guide users to install and use the application. There will be no hard copy of the user manual for our project, a digital user manual will be provided instead.

REFERENCES

"Blood Donor App." The Red Cross Blood Donor App *Red Cross Blood Services*. , www.redcrossblood.org/blood-donor-app.html.

"Create Sprint Burn Down Chart." Salesforce Developers Forums, 2017,developer.salesforce.com/forums/?id=9060G000000MPu8QAG.