Software Requirement Specifications

For

“SaveLife”

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Chapter 1

Introduction

1.1 Purpose

One of the biggest breakthroughs of medical science in the twenty-first century is organ transplantation. It is a therapy that can save a person's life. Organ transplantation has given persons with organ failure a better quality of life, allowing them to live a normal or near-normal life. Improved technology, a better knowledge of rejection, the discovery of newer immunosuppressive medicines, and advancements in medical treatment have all contributed to the progress in organ transplantation over time. However, the biggest problem of organ transplantation is the shortage of donated organs. Following are the data tables of the USA showing the number of patients on waiting list for transplantation, the number of transplants performed by organ in the year 2020 and percentage of people that are waiting for different organs in September 2021.

Organ	Needed	Received
Kidney	91,099	22,817
Liver	11,886	8,906
Heart	1,707	3,658
Lung	3,521	2,539
Other*	281	1,115

Figure 1: Patients on the Waiting List vs. Transplants Performed by Organ (2020)

Organ	Percentage
Kidney	83%
Liver	10%
Pancreas	1%
Heart	3%
Lung	1%
Other*	2%

Figure 2: Organs People Are Waiting For (September 2021)

From the following data table, it is quite clear that the demand for organs is much greater than the number of donated organs. So, we thought about this problem and came up with an idea of building a software named “SaveLife”. The purpose of this app is to find donors for the patients who are in need of organs for transplantation and arrange a formal meeting between them so that they can reach their decision.

1.2 Intended Audience

This document is for anyone involved with creation, development and management of this software. In other words, anyone involved with the development and management can access this document.

1.3 Intended Use

This document can be used to get an overall idea about the software. Intended audience can access this document to learn about the purpose or goal, functional & non-functional requirements, risk definition, user classes, user needs, assumptions, operating environment, constraints of the software. In simple words, this document gives an overview of what, why and how we are going to develop.

1.4 Product Scope

The main objective or goal of this product is to provide organ to the patients of organ failure. This product will give the patient an opportunity to live again and the donor an opportunity to earn money in exchange for their donation. If all the requirements of transplantation of a certain patient matches with any donor listed in the database of our product, we will notify both the parties and arrange a formal meeting in person. The patient and donor can discuss in the meeting and finalize their decision. After confirming from both parties, our business goal is to take a certain percentage of the amount that both parties agreed upon. The percentage will differ considering the financial condition & the donated organ of the donor. Our priority is to ensure that the donor gets a fair share of the money. However, 15% is the maximum percentage which will be charged. There will be a “payment” feature in our product through which our share of the money can be paid. Our product will also have features like “fund rising” (to raise funds for the poor patients), “Transplant Centers” (information about the doctors and hospitals where the transplantation takes place), “after life donation” (Organs donated by dead persons with their consent and No money will be charged for these donations) and “Volunteering” (volunteer in raising funds and other necessary works) etc. As the demand for organs is much greater than the amount of donations, A black market of organs is created on its own which also involves crimes. Our product might act as an alternate legal market of organs which will eventually force these black organ markets to vanish.

1.5 Risk Definitions

We are creating a software which may act as a legal market for organs. Donators will donate their organs in exchange of money or someone might donate their organs after death which will be free from money exchange. However, according to the organ transplant act of developed countries, it is illegal and a crime to buy or sell organs. So, our software has a risk of not getting

government approval for legally doing the business. In that case, we will only be able to operate features like “fund raising”, “after life donation”, “Transplant Centers” & “volunteering” and our business goal will turn to a complete failure.

Chapter 2

Overall Description

2.1 User Classes and Characteristics

2.1.1 User Classes

- Patient Class
- Donor Class
- Volunteer Class

2.1.2 Characteristics

- User can identify himself as patient, donor or volunteer while registering
- User can find or donate organs
- User can see the details of transplant centers
- User can volunteer for raising funds and other relevant works

- Users can search for organs donated by people after their death.
- Users can pay our share of money through the payment option.
- User can request for an organ which is not available in the current database
- User can chat live with one of our representatives

2.2 User Needs

- Register
- Login/Logout
- Search
- Live chatting
- Fund raising
- Volunteering
- Payment
- After Life donation
- Request for Organ Donation
- Transplant Centers

2.3 Operating Environment

Operating Environment for our software is listed below:

Operating System: Our software is a web-based app. Therefore, any operating system which allows web browsing can run the app.

Programming Language: Python, CSS, HTML

Database: MySQL

Framework: Django

2.4 Constraints

1. All the information of users will be stored in database

2. The system will be available 24 hours a day

3. Users must put their correct username & password to login in order to use the services of the system.

4. The system can be accessed from any device that supports web browsing

5. The system will work on our existing technical infrastructure. New technology might be introduced in the future.

2.5 Assumptions

1. Users are familiar with basic terminologies like “Login / Logout”, “Search”, “Volunteering”, “After-death Donation” etc.

2. User has a good command over English

3. User knows how to browse in web and can operate web application

4. User has internet access and a device that supports web browsing

Chapter 3

Requirements

3.1 Functional Requirements

1. As a user I want to register myself as a donor or patient or volunteer so that I can create an account and login to the system.

Confirmation/Acceptance:

- Users must provide a valid email address.
- Users must verify his/her email address
- Users must choose a strong password (At Least one uppercase letter, one symbol & one number, minimum length of the password is 8 characters)
- Users must identify him/herself as donor, patient or volunteer.
- Users must provide all the relevant information while registering.

2. As a user I want to login so that I can have access to the system.

Confirmation/Acceptance:

- Users must give the correct username and password for the first time.
- Users can save their password on the website for further login.
- Users will see a “Wrong credentials, Please try again” message for providing incorrect username or password. Maximum five unsuccessful tries are allowed to login by users.
- Users must verify their account in case of inactivity for a long period of time (6 months or more) or login request from a different location.

- Users will see different interface and informations as per their role (Patient /donor /volunteer)

3. As a user I want to search for specific organs so that I can be aware of the availability of that organ.

Confirmation/Acceptance:

- Users will be able to see the required details of the donor.
- Users will see a "No results Found" message if the search keyword does not match with any records of the database.

4. As a user I want to chat live so that I can get my required information from one of the representatives.

Confirmation/Acceptance:

- Users will be able to see a chat box.
- Users can write their message in that chatbox.
- Users will see an instant automated reply after sending a message.
- Users will get a reply from our representative within 30 minutes.

5. As a user I want to pay through the system so that I can complete the payment in a secured and hasslefree way.

Confirmation/Acceptance:

- Users will be able to pay through bank transfer, mobile banking, Visa and Credit card or Cash.
- Users must provide Visa or Credit card details (card payment), bank account details (bank transfer), mobile banking details (mobile banking) or address (if cash).
- Users must provide correct OTP code (mobile banking) or security code (card payment) for a successful payment.
- Users must provide a patient ID to donate money for the needy ones.

- Users will see “Invalid OTP” or “Invalid security code” or “Invalid card information” message for providing wrong information.

6. As a user I want to raise funds so that I can bear the expenses of my treatment.

   Confirmation/Acceptance:

   - Users can make a fundraising request.
   - Users must provide valid documents containing treatment expense records.
   - Users must provide bank account details and bank statements.

7. As a user I want to volunteer so that I can collect donation money for needy patients and help in other relevant works.

   Confirmation/Acceptance:

   - Users can see available volunteering activities.
   - Users will be notified for volunteering activities near their location.
   - Users can accept requests for volunteering activities.

8. As a user I want to see the details of transplantation centers so that I can choose where to do my transplantation.

   Confirmation/Acceptance:

   - Users will be able to see the information of the hospitals where transplants take place.
   - Users can see the doctors profiles who perform the transplantation.
   - Users can see the estimated treatment cost depending on the organ.

9. As a user I want to donate my certain organs after my death so that I can help patients of organ failure.

   Confirmation/Acceptance:

   - Users must provide relevant information about their donation (which organ or any specific patient they want to donate).
   - Users must provide a consent form while being alive.
   - Users must provide their medical records and medical certificate of good health.

- Users can provide a written agreement mentioning that no money will be exchanged for their donated organs.

10. As a user I want to request for an organ so that I can get an organ which is not available right now.

    Confirmation/Acceptance:

    - Users can make a request for an unavailable organ.
    - Users will get notified when their requested organ becomes available again.

3.2 Non-Functional Requirements

3.2.1 Performance Requirements

The following must be clearly specified in order to assess the performance of a system:

1. **Response Time:** The application should always load in less than 0.1second.
2. **Workload:** The system should be able to handle 80,000 users.
3. **Platform:** Support for a Variety of Devices.

3.2.2 Safety Requirements

All data of the main database will be stored in a secondary database as backup. If server failure or any other catastrophic failure causes damage to the main database , all the data can be recovered from the backup.

3.2.3 Security Requirements

Our software will ensure the maximum privacy of users' data. It will also take care of other security options such as Authentication, Authorization, Error management, Session management etc.

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