

ORGANATION

SOFTWARE ENGINEERING PROJECT

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1: Background

The lack of available organs is often considered the greatest problem in transplantation today. Internet use is at an all-time high, creating an opportunity to increase public commitment to organ donation through the broad reach of Web and mobile applications. Implementing Internet interventions presents challenges, including preventing fraudulent respondents and ensuring intervention uptake.

2: Project Scope

‘Organisation’ is a Web-based Organ Donation application. In healthcare, organ transplantation has risen greatly in the last few years. Improvements in medical techniques and antirejection pharmacological therapies have made transplantation a powerful and valid way to treat diseases. The main purpose of the Organisation is to bridge the communication gap between the Donor and the Recipient and vice versa. It also raises awareness about donating organs and saving lives.

3: System Purpose

3.1: Users

1. Donor

This includes people who want to donate their organs to help save lives.

2. Recipient

This includes patients who need an organ transplants.

3. Administration

Responsible for account management and giving access to the concerned Database.

4. Medical Team

This includes a group of Medical personnel who evaluates in detail the social history, lifestyle and medical history of donors and recipients.

5. Policy Management Team

It includes lawyers responsible for taking family consent and legalizing the process. This Team will be responsible for paperwork.

6. Technical Team

This Team will be responsible for keeping the Orgonation App up to date, and it'll handle all the FAQs.

7. Coordination Team

Responsible for coordination and communication between the Donor, Recipients, Surgeons, and the Hospital. They will also be responsible for handling emergency cases and the waiting list of recipients.

3.2: Location

All users with smartphones and internet connectivity will be able to access the application. The patients in Pakistan will be the focus of this application, connecting people in big cities to people in small cities. The Application's Technical teams will also have access to it from any location and can gain restricted access to it using a certain password scheme.

3.3: Responsibilities

1. Ensure that users and client applications are identified, and their identities are properly verified.
2. Provides a chance for a needy recipient to get an organ without much hassle.
3. Encourages people to donate and save lives.
4. Ensures that users and client applications can only access data and services for which they have been properly authorized.
5. Gives an easy-to-use and attractive Graphical User Interface.
6. Grief Counseling is available for the patients.
7. Password protection for all users.
8. It will be available on all platforms (Linux, Windows, Apple, Android, etc.)

9. Ensure that confidential communications and data are kept private.
10. Constraints on the system can be added or removed (for example, by surgeons)
11. New recipients can register for the waiting list, and new organs can become suddenly available.

3.4: Need

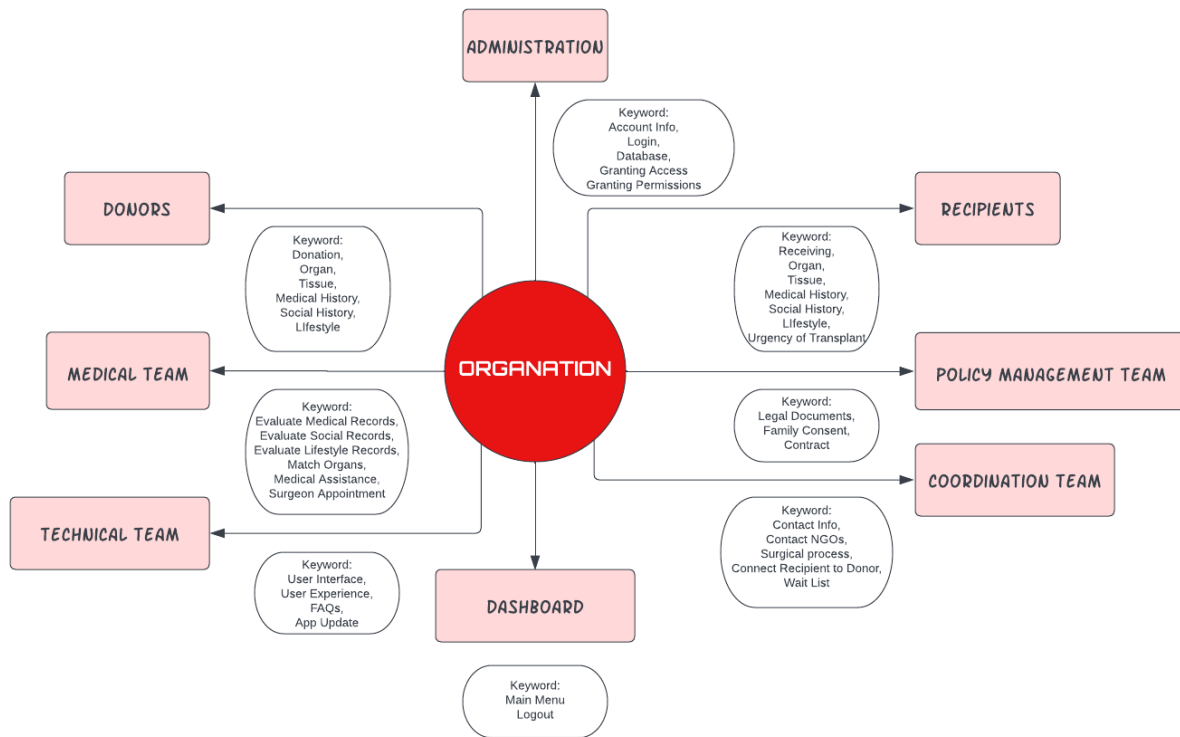
In healthcare, organ transplantation has risen greatly in the last few years. Improvements in medical techniques and pharmacological anti-reject therapies have made transplantation a powerful and valid way to treat diseases. Thanks to this and the relevance that mass media put on it, the number of donors is constantly increasing all over Pakistan. The process of assigning an organ from a particular donor to a particular recipient is very complex.

4: Functional Requirements

1. Registrations for two types of people, Donors and the other is recipients
2. Donation of an organ or a tissue.
3. Selecting the particular Organ that the Recipient requires.
4. Is the Donor deceased or alive?
5. Taking the Medical history of Donors and Recipients.
6. Take Social history from Donors and Recipients.
7. Determining all the minor details of the Lifestyle of Donors and Recipients.
8. Separate Module for an Online Support Group.
9. Therapy Sessions for the Depressed Patients.
10. Organ encyclopedia where they can get all the information about organ transplants.
11. Module for Blood donation, where the Donors get rewards/vouchers for donating blood.
12. All the Organ Transplant processes will be legally documented.
13. Details of all the records of the users shall be confidential.

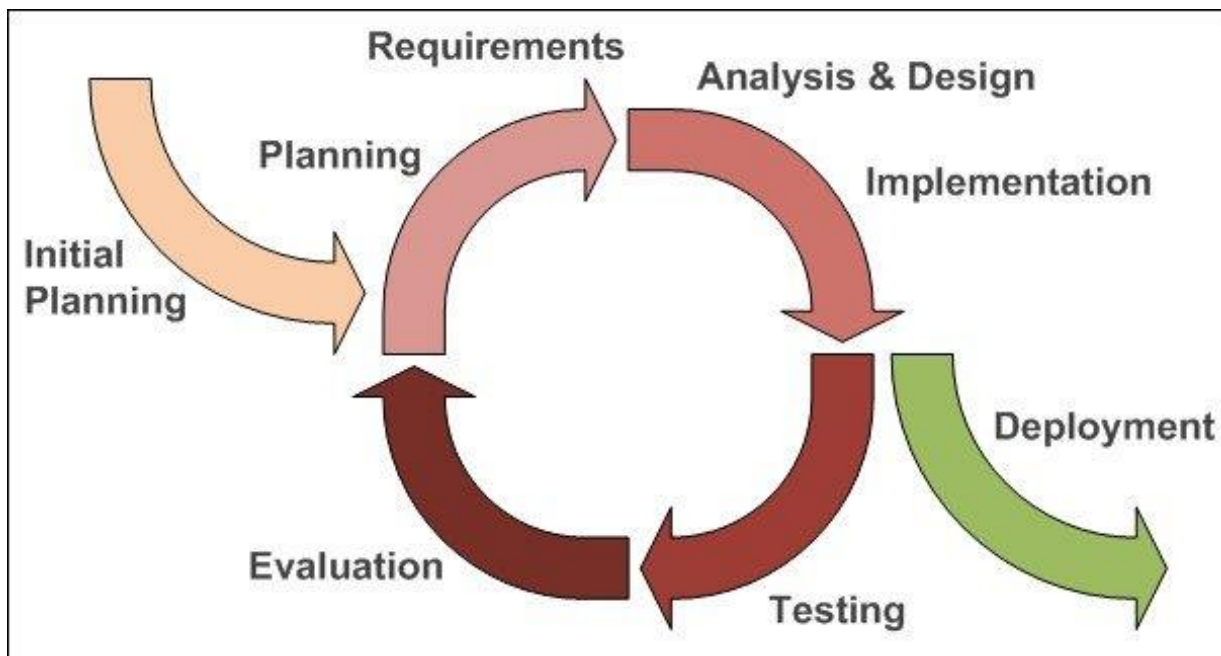
14. The user can contact their relevant disease professional.
15. A detailed explanation of the whole process of how Organ Donation and Receiving works.
16. The Coordination team will contact NGOs for Recipients who can't afford Organ Transplants.
17. Health charts will be tracked and maintained after the transplant.
18. Medical Assistance will be provided 24/7 for the safety of Patients.

5: Context Model

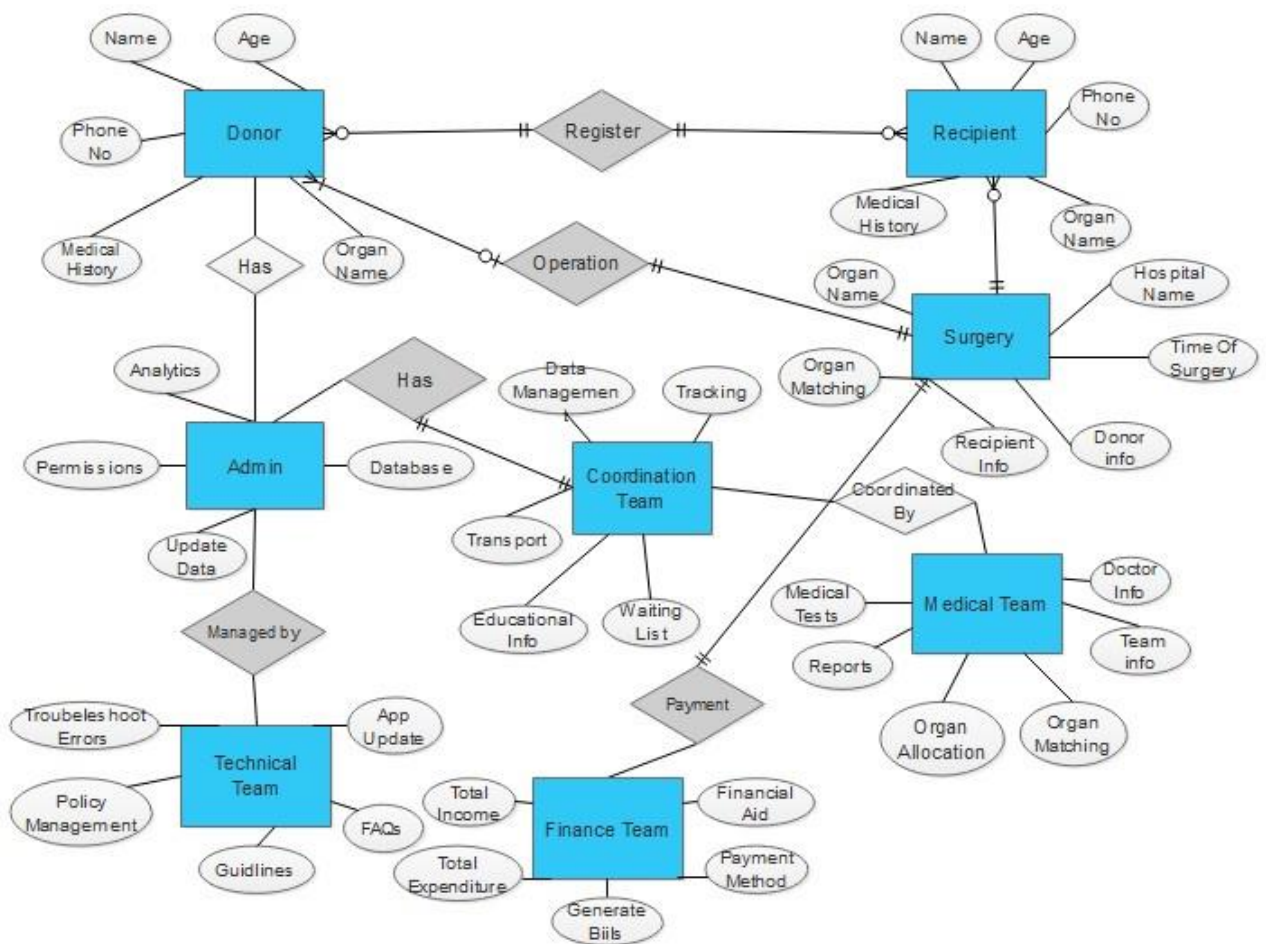


6: Process Model

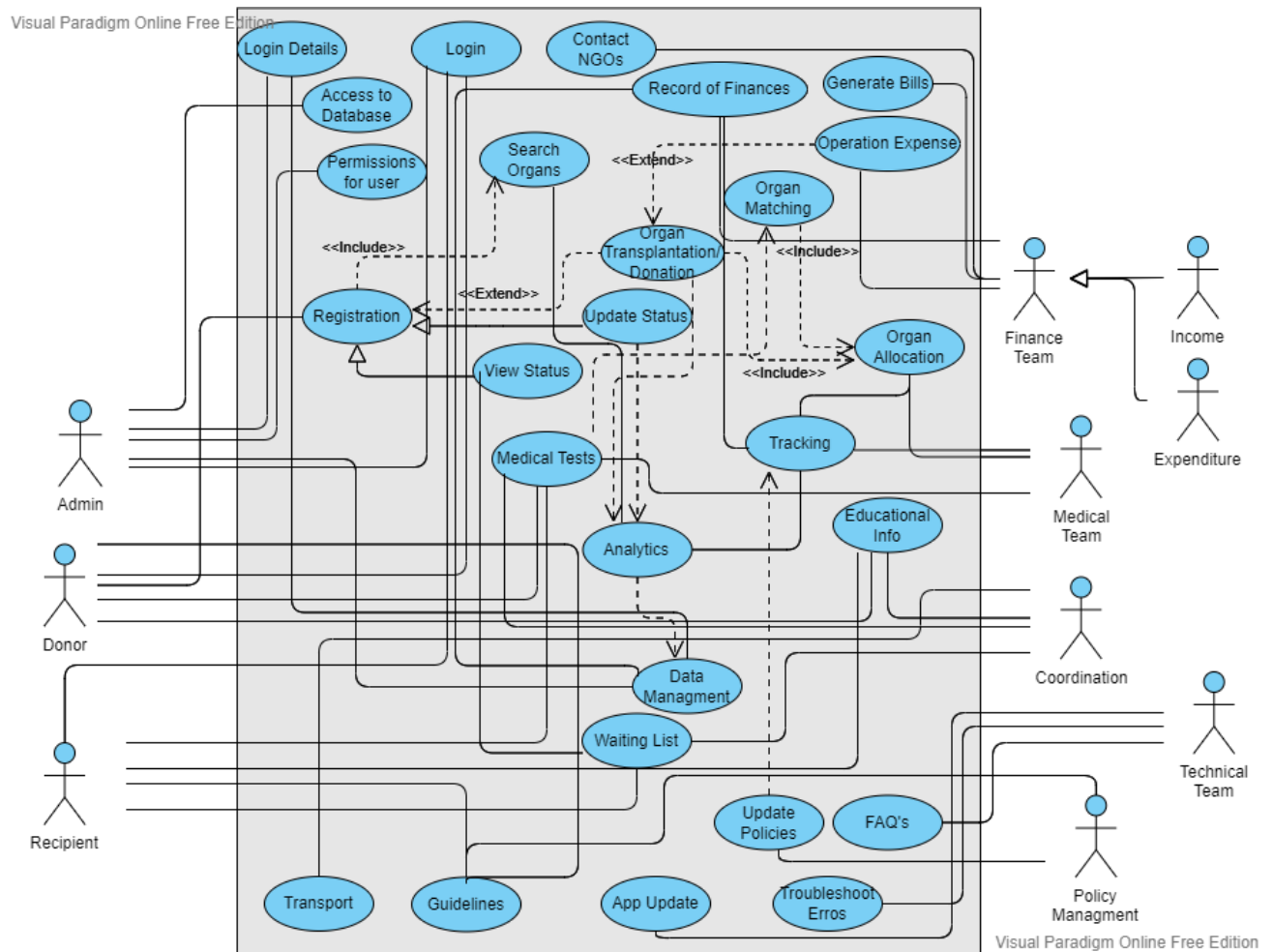
The app 'Organisation' is based on an incremental model based on agile development. Our application requires rapid changes and continuous patient and doctor communication. Hence, it is best if we implement Errors that are easily recognized. It is easier to test and debug. It is more flexible and straightforward to manage risk because it is handled during iteration. The Client gets the necessary functionality early.



7: ERD Diagram



8: Use Case Diagram



Registration

Registration	
Actors	Donor, Recipient
Description	<p>The system could allow individuals to register to become organ donors online or through a mobile app. The system would store information about the person's medical history and the organs they are willing to donate.</p> <p>The system could also allow individuals to register to become organ recipients, either online or through a mobile app. The system would store information about the person's medical history and the organs they are willing to receive.</p>
Data	Patient's personal information, treatment summary
Stimulus	User commands issued by Actors
Response	Confirmation that the Database has been updated
Comments	The Database must have appropriate patient information.

Search Organs

Search Organs	
Actors	Recipient
Description	A recipient can use the system to search for available organs based on criteria such as blood type, tissue type, and geographical location.
Data	Patient's interest in specific Organ
Stimulus	User command issued by Recipient
Response	Available organs will be displayed
Comments	The Available organs will be in front of the Recipient.

Organ Matching

Organ Matching	
Actors	Recipient
Description	When a person needs an organ transplant, they can be added to a waiting list. The system would use algorithms to match donors with recipients based on blood type, medical history, and proximity to the Recipient.
Data	Patient's information on a waiting list
Stimulus	User command issued by Recipient
Response	The Recipient's info will be saved in Data
Comments	The Recipient will be provided with an Organ when it is available.

Organ Allocation

Organ Allocation	
Actors	Recipient, Coordination
Description	The system could assist with allocating organs to recipients based on predetermined criteria with the help of coordination teams, such as the severity of the Recipient's illness and the likelihood of success for a transplant.
Data	Patient's information in a priority list
Stimulus	User command issued by Recipient
Response	The Recipient will be preferred for transplant if his condition is serious
Comments	The Recipient will be provided with an Organ as soon as possible.

Wait List

Wait List	
Actors	Coordination, Recipient
Description	The system can manage a waitlist of individuals needing organ transplants and prioritize them based on factors such as medical urgency.
Data	The patient's information is on a waiting list
Stimulus	User command issued by Recipient
Response	The Recipient will be added to the waiting list if the Organ is unavailable.
Comments	The Recipient will be added to the waiting list until Organ is not provided

Tracking

Tracking	
Actors	Medical Team, Donor, Coordination, Recipient
Description	The system could also track organ donation and transplantation statistics, such as the number of organs donated and transplanted, the success rates of transplant surgeries, and the average waiting time for recipients. This Data could be used to improve the organ donation and transplantation process.
Data	Whole data will be tracked with every detail
Stimulus	User commands issued by all Actors
Response	Every Update and change will be tracked and saved

Data Management

Data Management	
Actors	Donor, Coordination, Recipient
Description	The system could store and manage data related to organ donations and transplants, including donor and recipient medical records, test results, transplant activity, trends, outcomes, and other statistical Data.
Data	App Data will be saved in Database
Stimulus	User command issued by all changes and data information
Response	Every Update and change in data will be saved

Analytics

Analytics	
Actors	Medical Team, Coordination, Donor, Recipient
Description	This feature would generate reports and perform data analysis to help improve the efficiency and effectiveness of the organ donation system.
Data	Reports, Statistics and Data, will be saved in Database
Stimulus	User command issued by Reports and Statistics
Response	Every Update, Report and Statistic will be saved

Legal Guidelines

Legal Guidelines	
Actors	Policy Management, Coordination, Donor, Recipient
Description	This feature would generate reports and perform data analysis to help improve the efficiency and effectiveness of the organ donation system.
Data	Legal and Ethical guidelines will be saved
Stimulus	User command issued by Policy Management
Response	Every Update will be saved and analyzed whether it is according to legal terms or not

Technical Issues

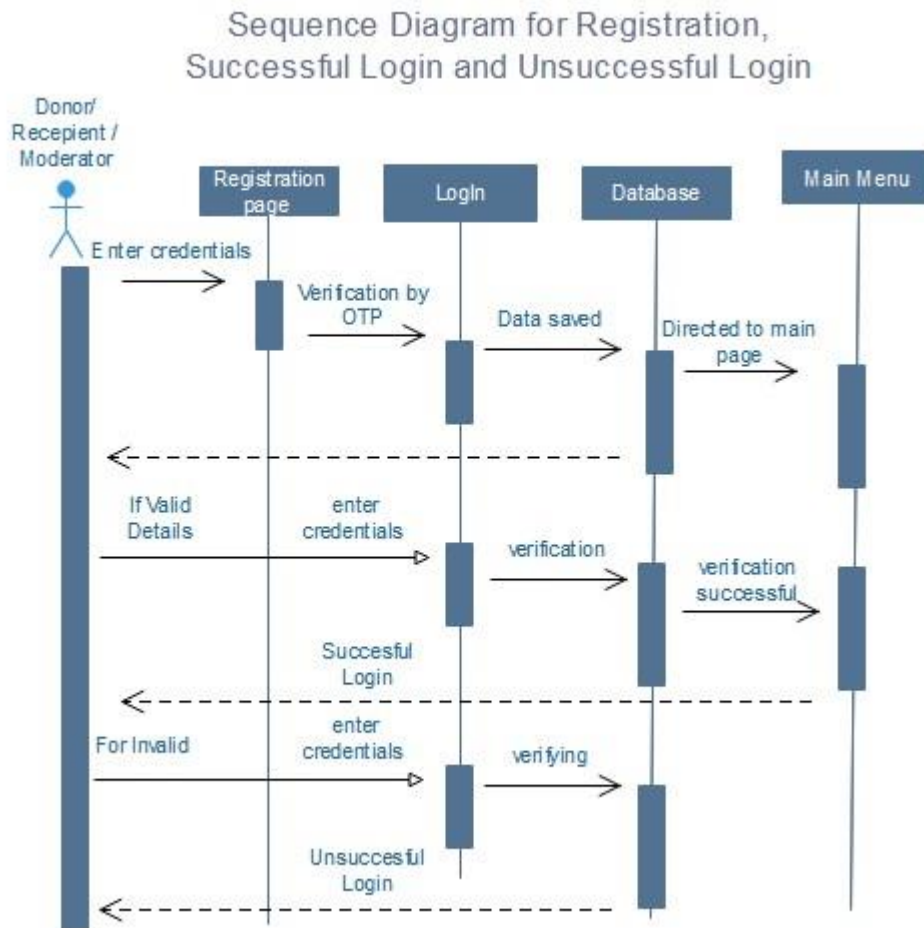
Technical Issues	
Actors	Technical Team
Description	It'll troubleshoot and fix technical issues with the app and implement and test new features and updates to the system.
Data	Troubleshoot problems technical issues will be handled
Stimulus	User commands issued by Technical issues
Response	Technical Team will retrieve every Technical

FAQs

FAQs	
Actors	Technical Team
Description	The coordination team can use the system to transport organs and recipients.
Data	Questions will be answered from Database
Stimulus	User commands issued by Questions by users
Response	Technical Team will answer FAQs

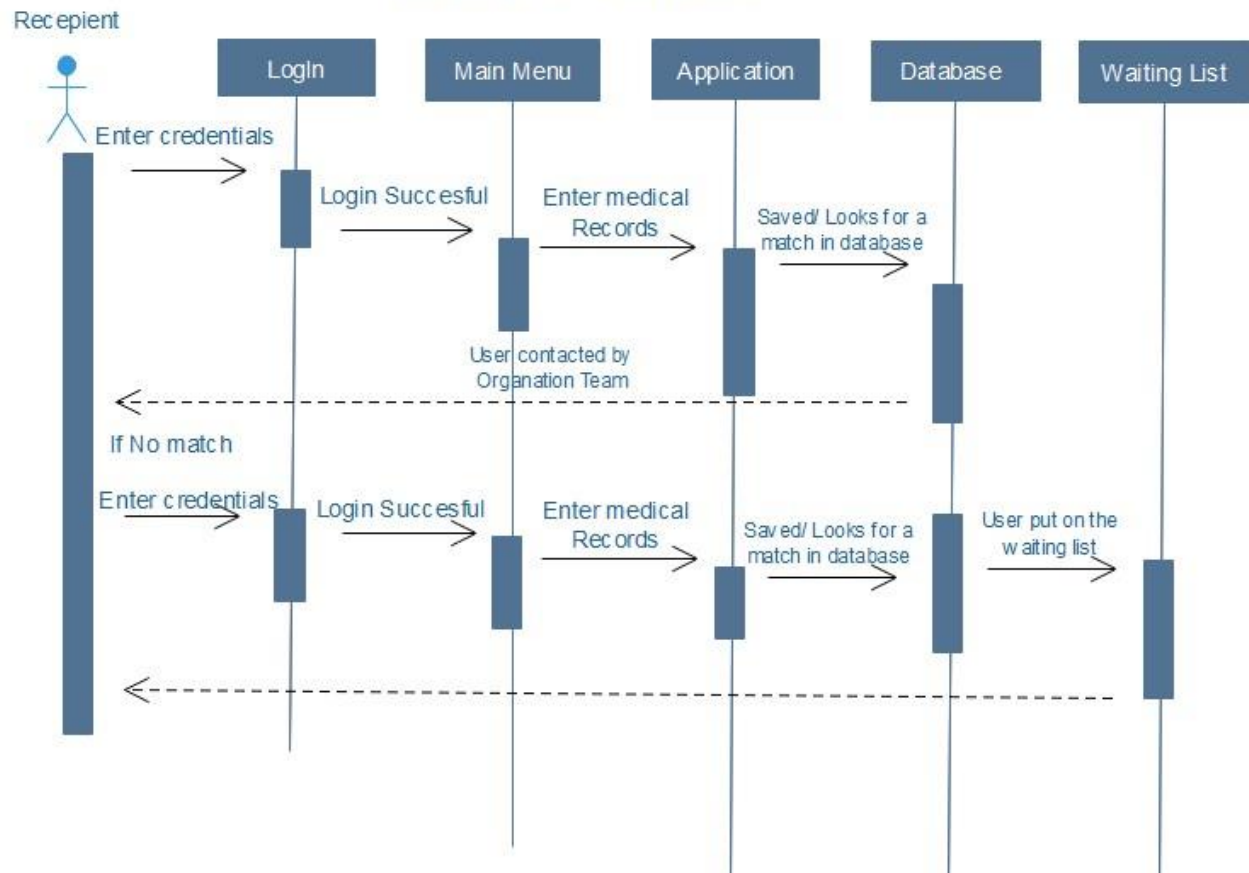
9: Sequence Diagram

Registration

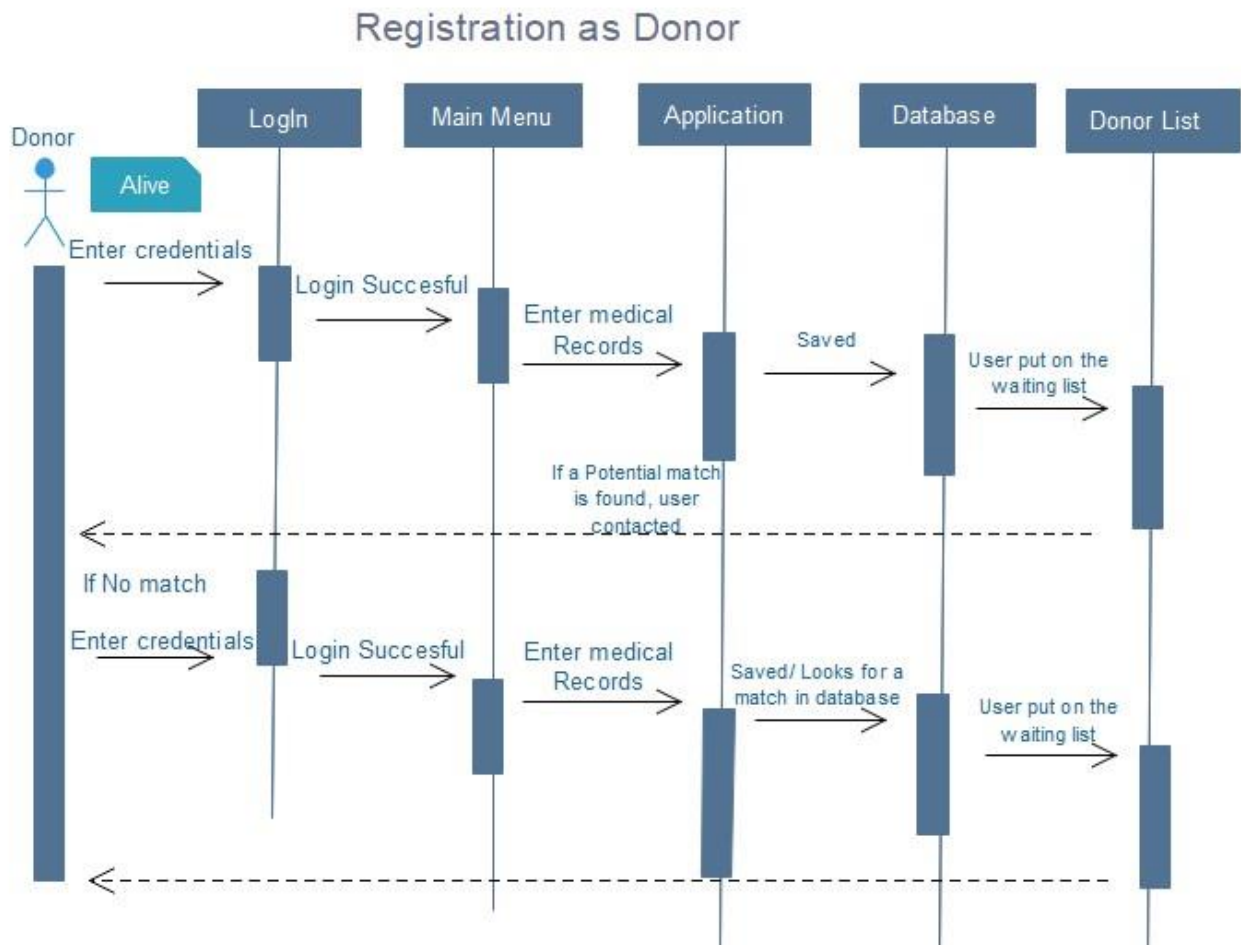


Applying as Recipient

Applying as Receipient

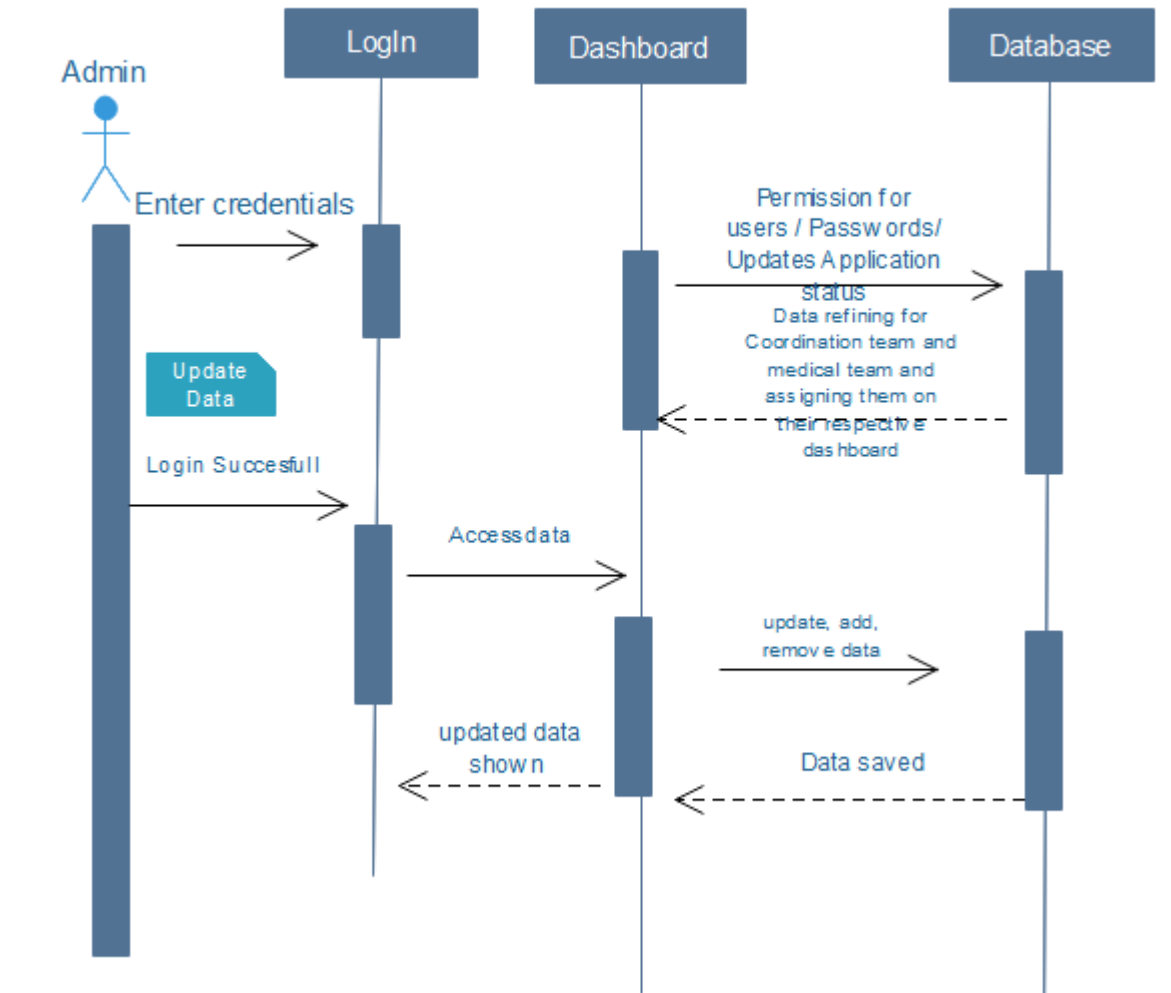


Registration as Donor



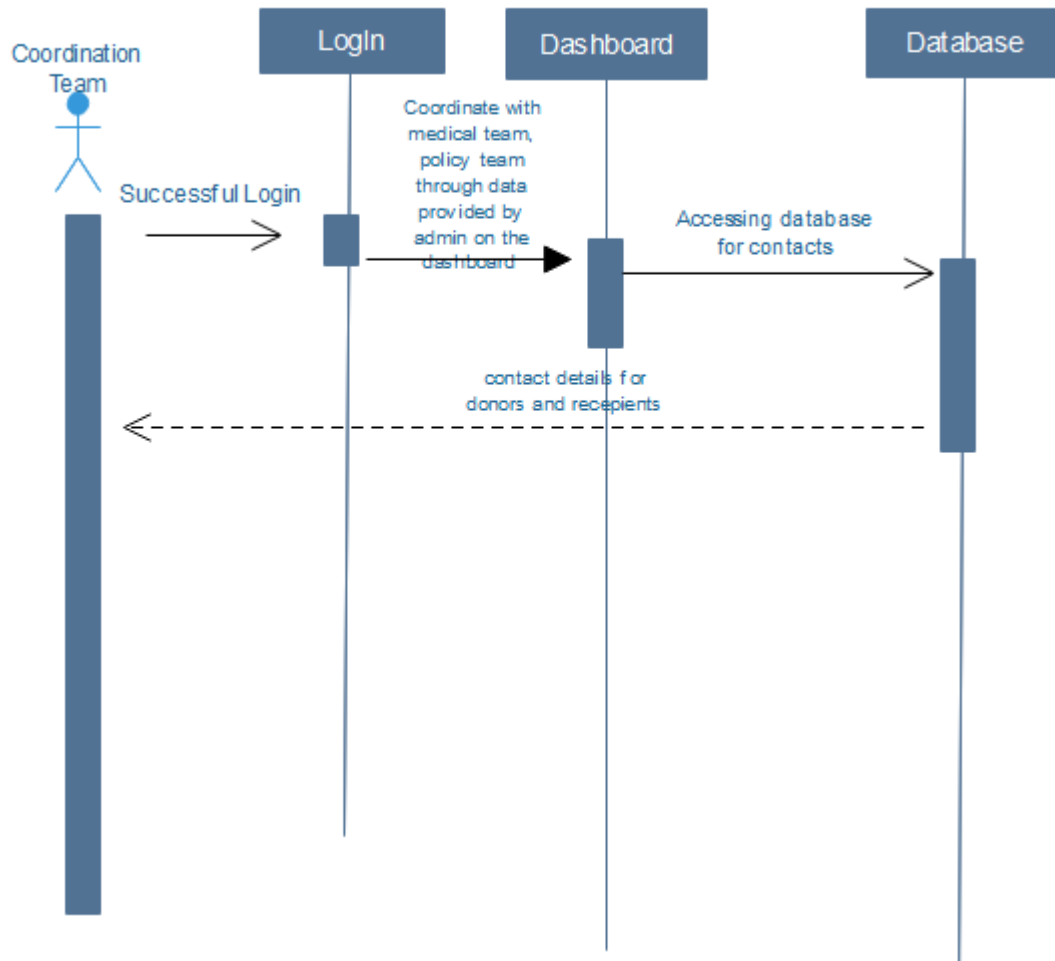
Admin Accessing Database

Admin Accessing Database

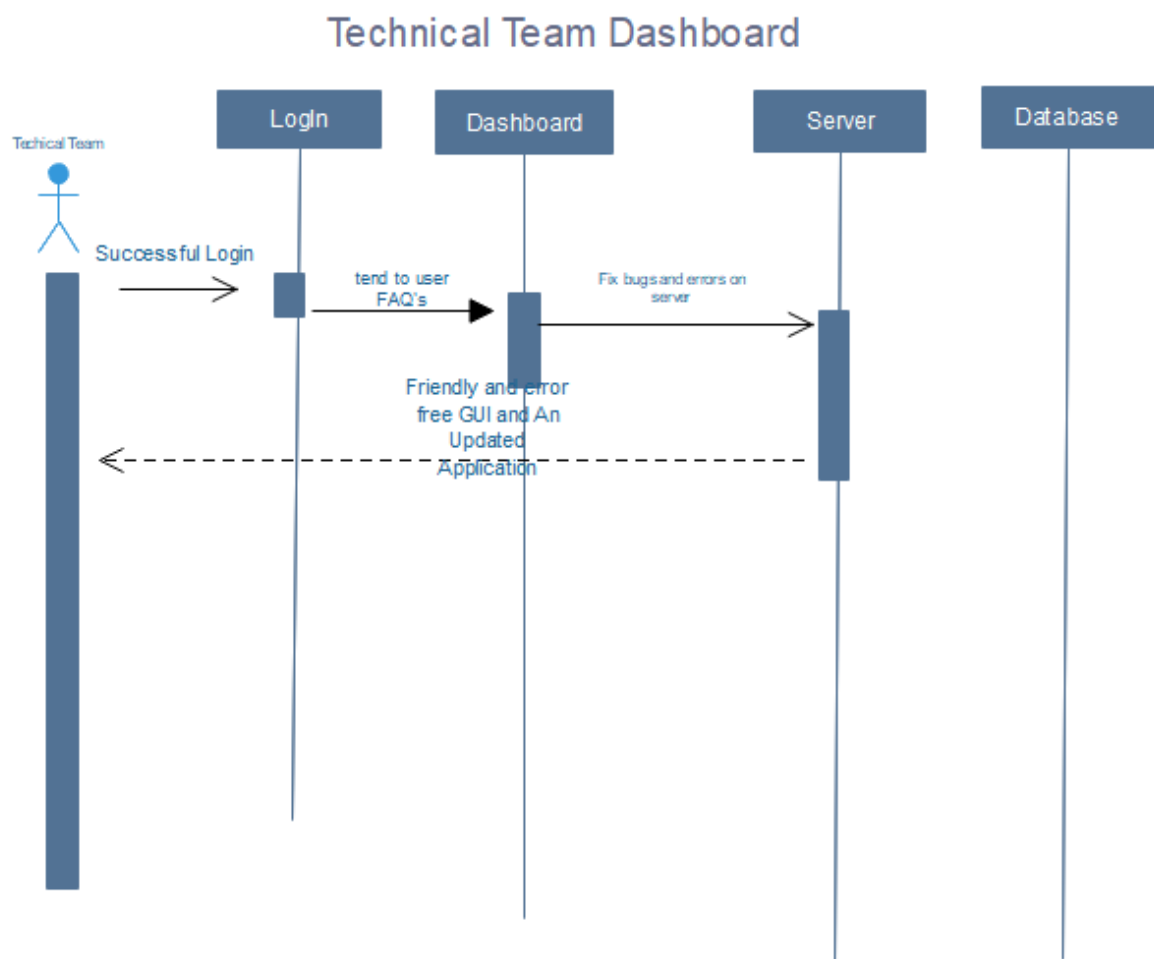


Coordination Team Dashboard

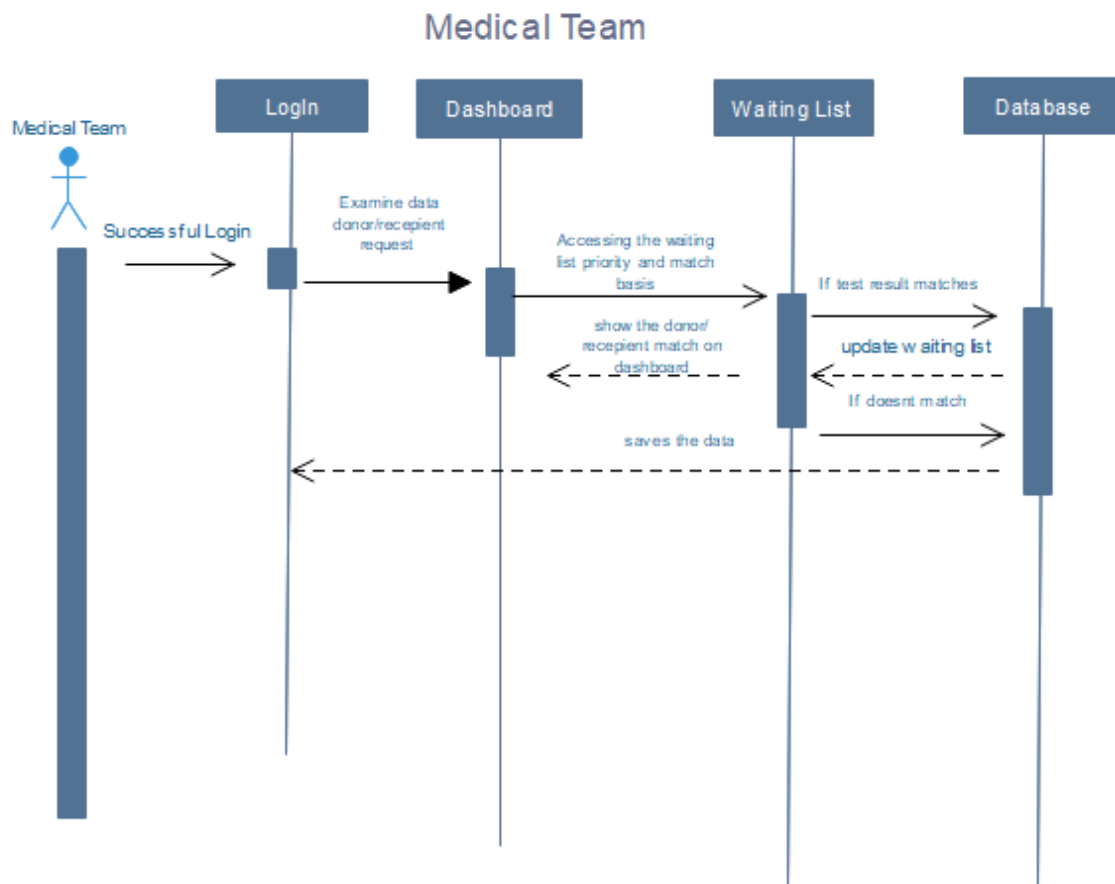
Coordination Team Dashboard



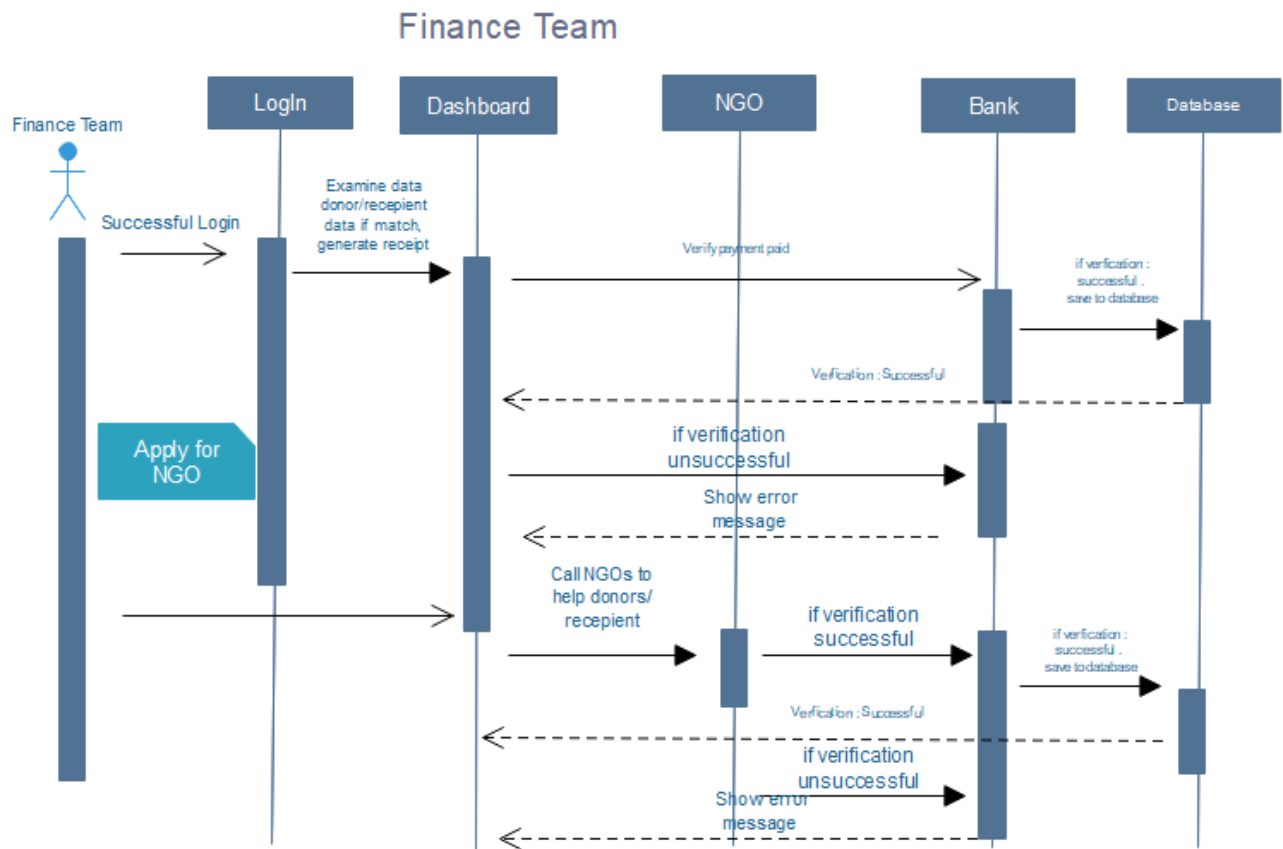
Technical Team Dashboard



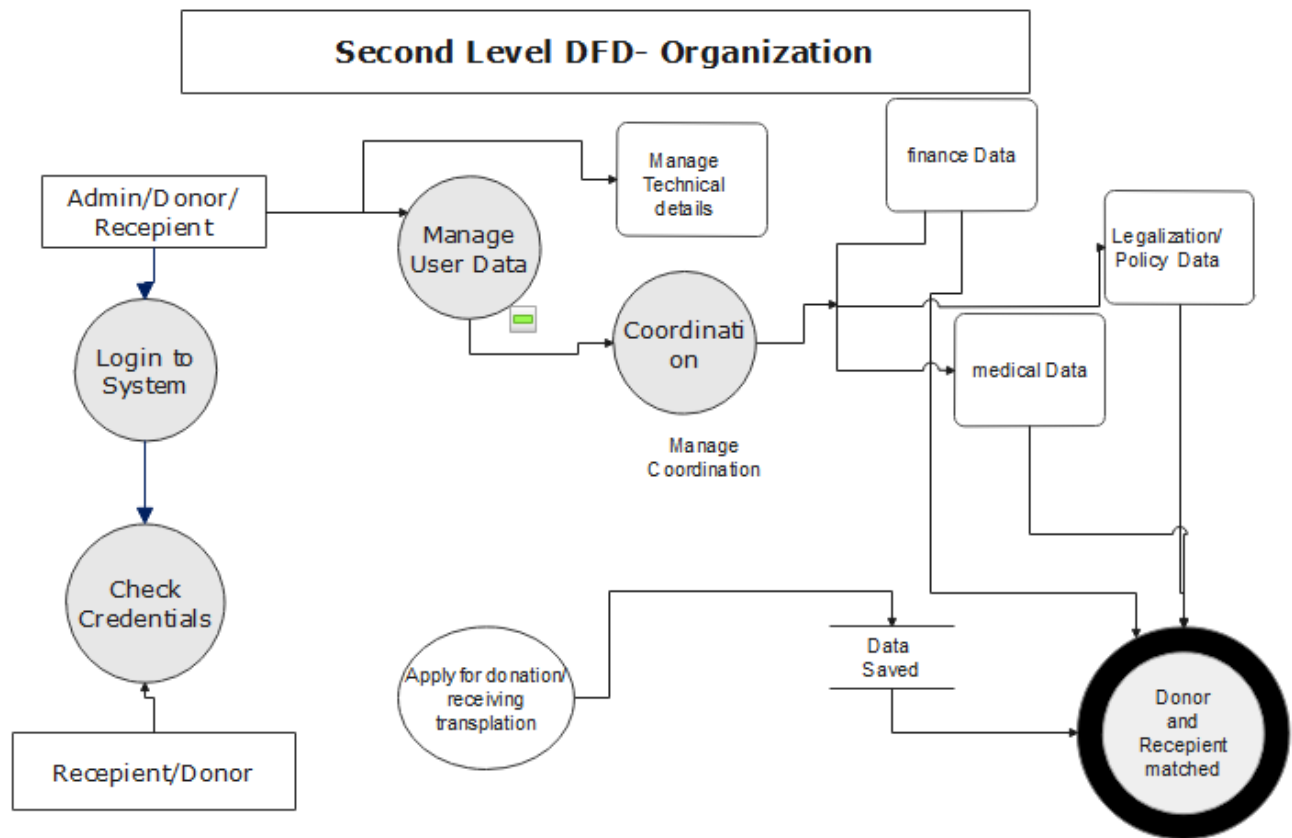
Medical Team



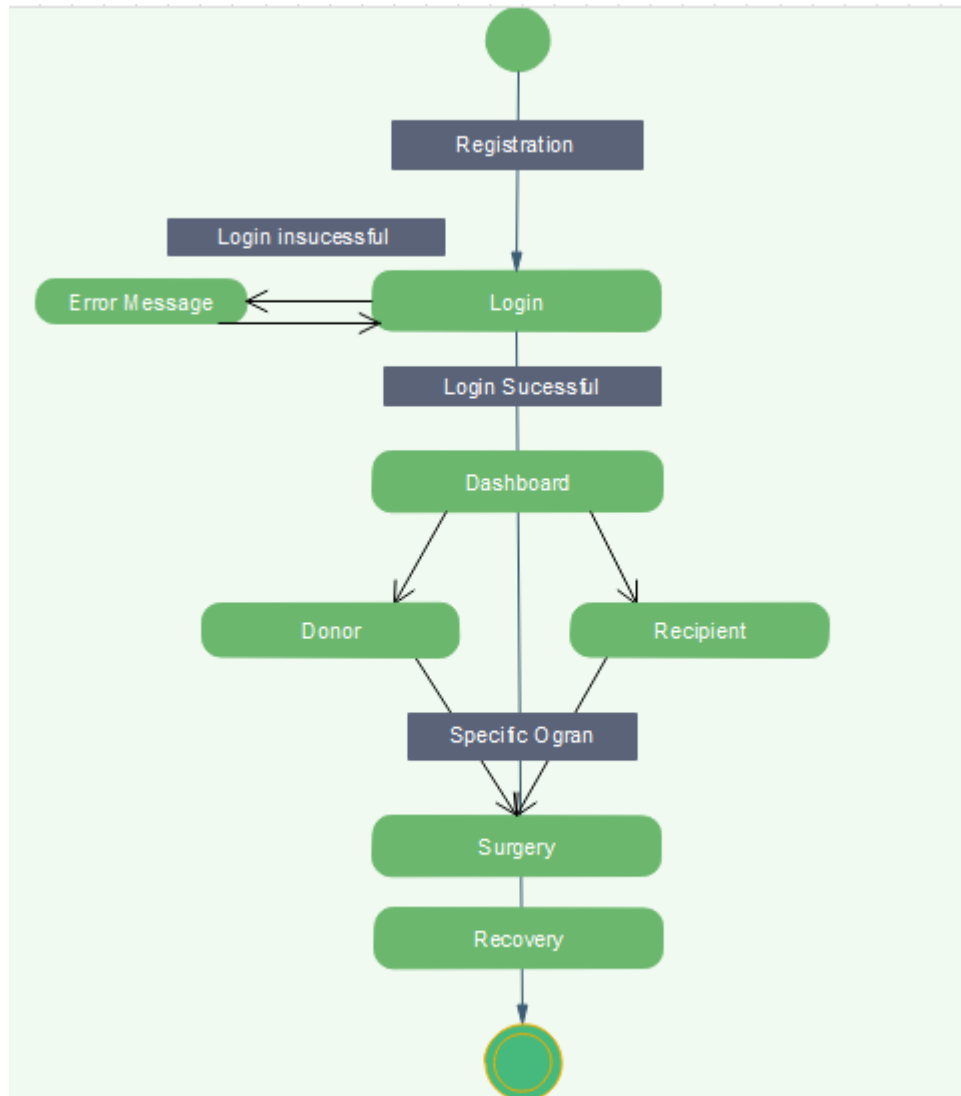
Finance Team



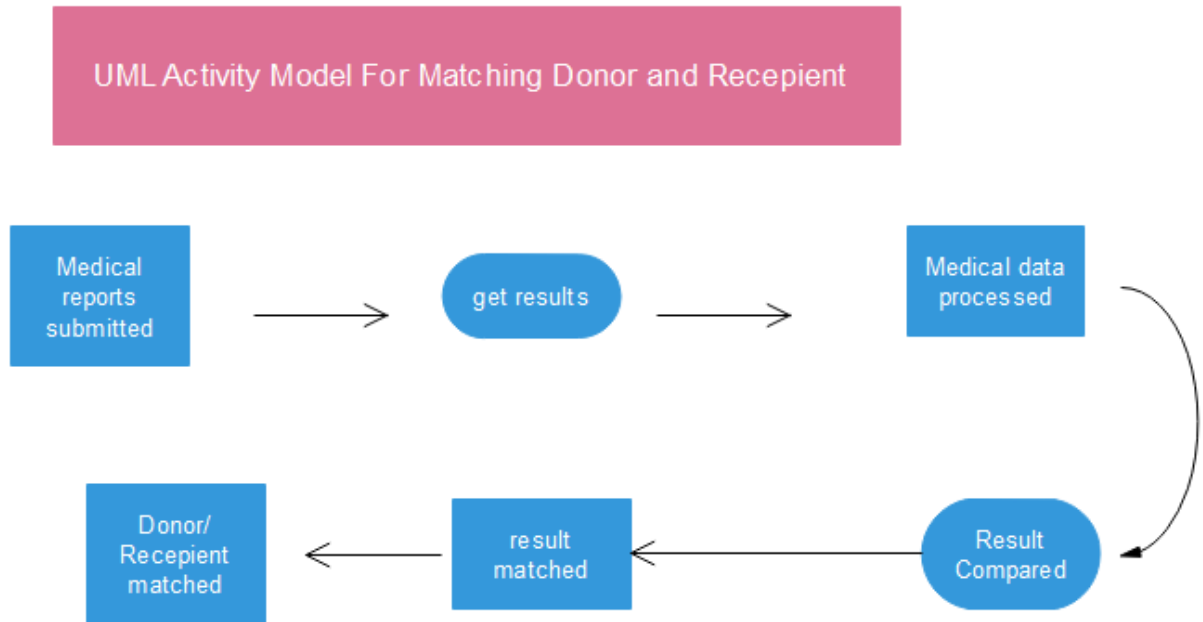
10: Data Flow Diagram



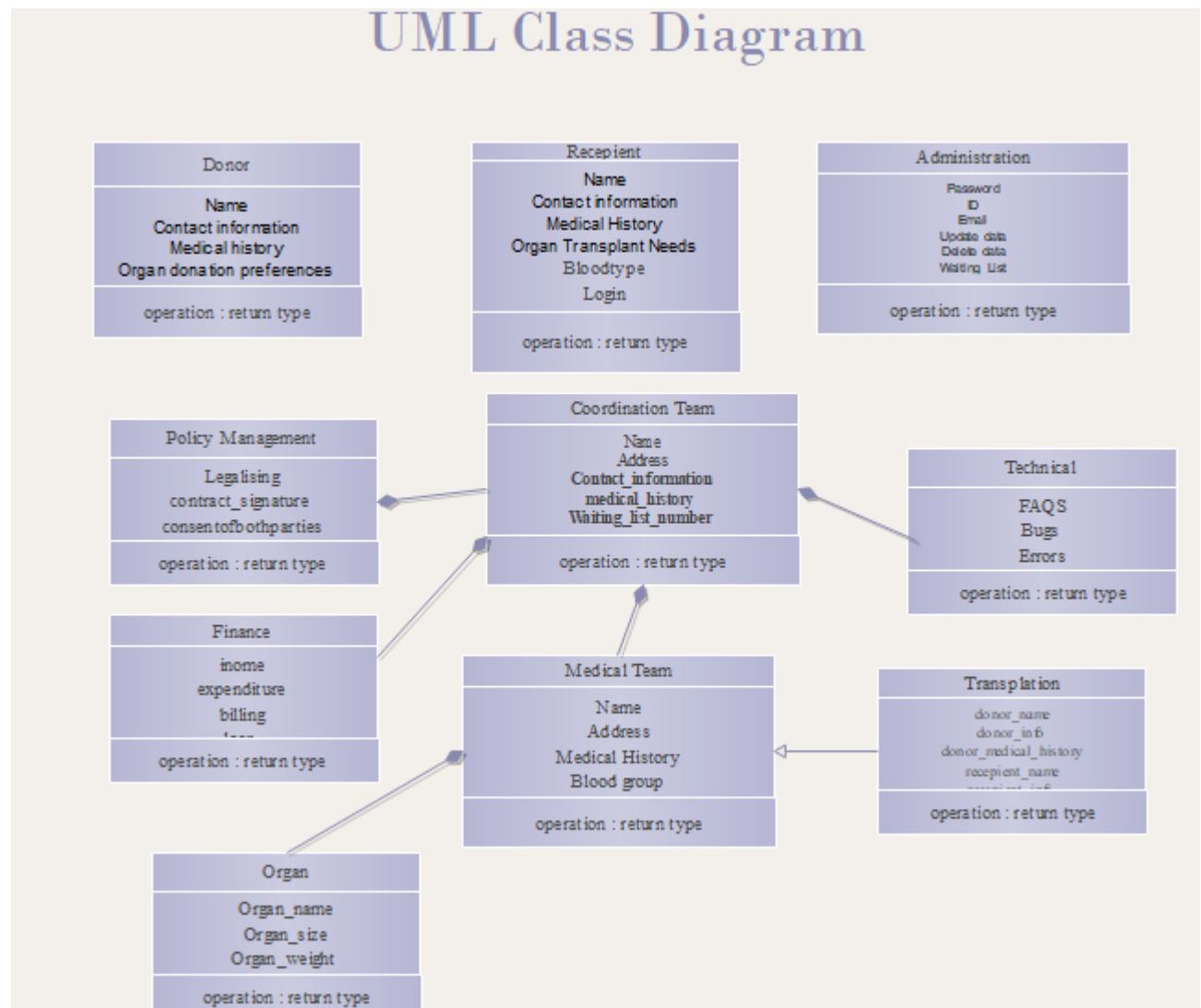
11: State Transition Diagram



12: Activity Diagram



13: Class Diagram



14: Future Scope

Organ transplantation is one of the miracles of modern medicine: it saves lives and improves the quality of patients' lives. The future of transplantation is one full of exciting possibilities. Organization Future goals include making the new options more accessible, which include face or hand transplants, protocols permitting the successful minimization or discontinuation of immunosuppressive medications, and the use of stem cells for organ regeneration. Other goals of the Organization will be to make the application user-friendly and connect donors and recipients on a larger scale. It will work on encouraging people to donate more and save lives. We can introduce features that will not only focus on one country but the whole world; that way, people from all around the globe can connect. There can be a separate server for hospitals.

15: Conclusion

In conclusion, the Organ Transplantation Application is a powerful tool that can help streamline organ donation and transplantation. It provides a secure and efficient way to manage the entire process, from donor registration to organ allocation. The application also provides a platform for medical professionals to communicate and collaborate on each patient's best course of action. The application is easy to use and provides a comprehensive set of features that make it a valuable resource for organ transplantation.