

LifeLink: OrganNet Manager

LAB REPORT

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PROBLEM STATEMENT

In the complex landscape of modern healthcare, the management of organ donations and transplantations is critically important yet fraught with challenges. The crux of the issue lies in the efficient and ethical procurement and allocation of organs. Currently, the process is hindered by fragmented data systems that fail to provide a comprehensive, real-time view of organ availability, donor and recipient information, and the compatibility between them. This lack of integrated data not only complicates the organ matching and transplantation process but also contributes to organ wastage due to the inability to quickly find suitable recipients. Moreover, there is a significant need for increased public awareness and participation in organ donation to address the discrepancy between the supply of donated organs and the demand for transplants.

PROBLEM EXPLANATION

The Organ Donation and Procurement Network Management System (ODPNMS) is envisioned as a sophisticated database management system tailored to mitigate these challenges. Its goal is to streamline the entire process of organ donation and transplantation by maintaining a detailed, searchable, and up-to-date repository of all related data. The system aims to track critical information such as medical histories, blood groups, ages, and other donor and recipient details. By doing so, it will enable faster and more efficient matching of available organs to candidates in need, reducing the time-sensitive problem of organ wastage.

ODPNMS will serve multiple stakeholders in the transplantation ecosystem, including hospitals, organ procurement organizations, government bodies overseeing healthcare, and the recipients and donors themselves. By providing accurate statistical data regarding organ demand and supply, the system will not only facilitate immediate healthcare needs but also support government agencies in policy-making and public health planning. Moreover, the system will align with the legal framework set by the Transplantation of Human Organs Act, ensuring that all transplantation operations are appropriately recorded and authorized.

In summary, the establishment of ODPNMS will revolutionize the management of organ donations and transplantations, making the process more transparent, efficient, and aligned with the noble cause of saving lives while adhering to legal and ethical standards.

INTRODUCTION

The rapid evolution of technology has significantly transformed various aspects of human life, including healthcare. With the advent of mobile applications and wearable devices, there has been a paradigm shift in how individuals monitor and manage their health. In line with this trend, our team embarked on the development of LifeLink, a comprehensive healthcare management system designed to empower users to proactively monitor and improve their well-being.

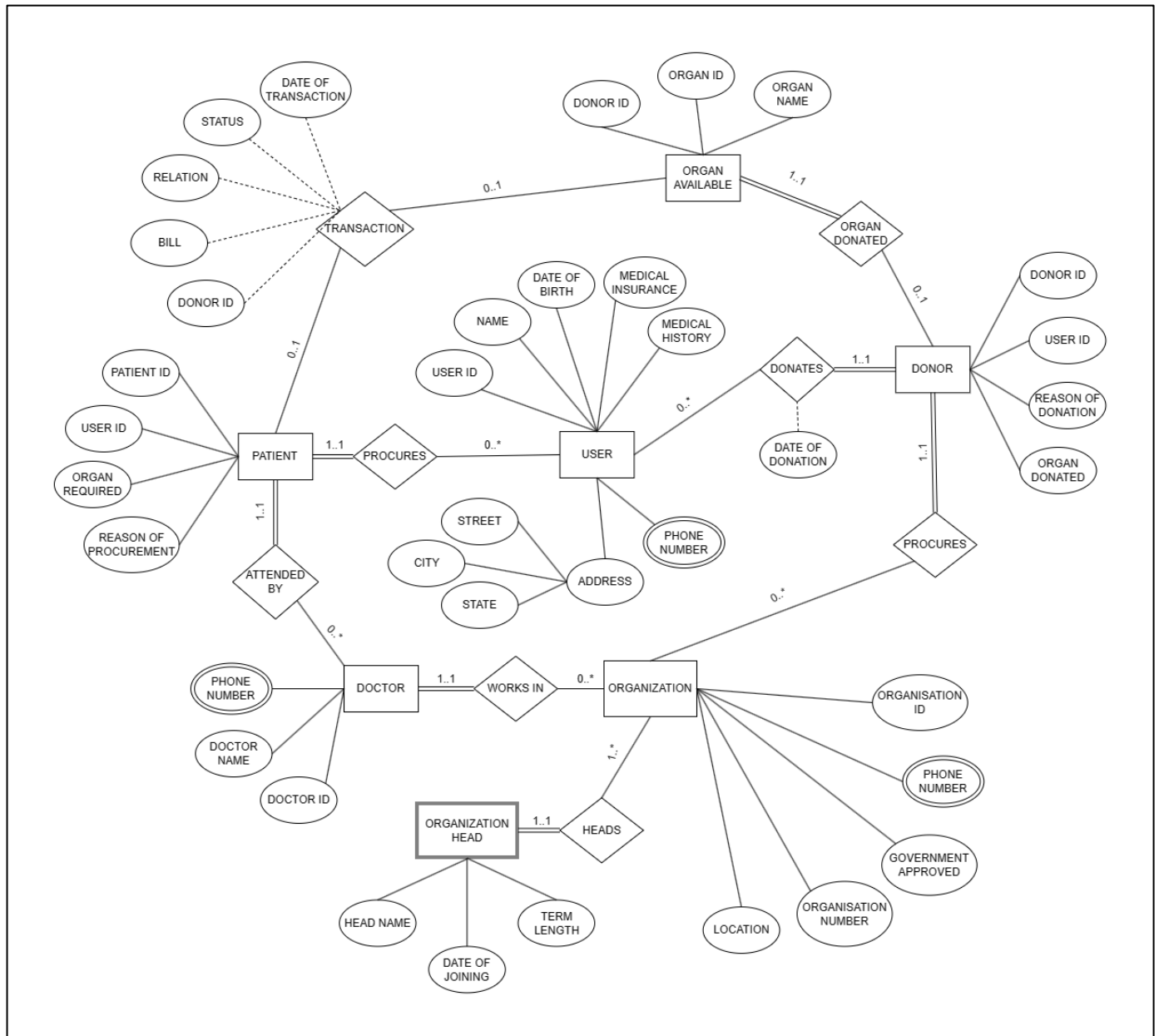
LifeLink aims to bridge the gap between individuals and healthcare services by providing a user-friendly platform that facilitates seamless communication and data sharing between users and healthcare professionals. By leveraging the power of modern technology, LifeLink strives to enhance the accessibility, efficiency, and effectiveness of healthcare delivery, ultimately contributing to better health outcomes for users.

In this technical project report, we provide an overview of the objectives, methodologies, and outcomes of the LifeLink development process. We delve into the technical details of the system architecture, functionality, and implementation, highlighting the innovative features and solutions that distinguish LifeLink in the competitive landscape of healthcare management applications.

Throughout this report, we present insights gained from our development journey, including challenges encountered, lessons learned, and future directions for the continued enhancement and expansion of the LifeLink platform. We believe that LifeLink has the potential to make a meaningful impact on the lives of individuals by empowering them to take control of their health and well-being.

DESIGN AND ARCHITECTURE

ER DIAGRAM



OUTPUT (SCREENSHOTS)

1. Login Page:

The screenshot shows a web browser window with the title "Login Page" and the address bar displaying "127.0.0.1:5000/login". The page features a light blue header with the text "Organ Donation and Procurement Management System". Below the header, there is a login form with two input fields: "Username" containing the text "admin" and "Password" containing six asterisks. A blue "Submit" button is positioned below the password field.

2. Main Page (GUI):

The screenshot shows a web browser window with the title "Login Page" and the address bar displaying "127.0.0.1:5000". The page features a dark blue header with the text "HOME" on the left and "Hi admin! Logout" on the right. Below the header, there is a light blue section with the text "Organ Donation and Procurement Management System". Underneath this section, there is a list of links: "User", "Search", "Add", "Update", "Remove", and "Statistics".

3. Main Page (Drop Down Menu):

The screenshot shows a web browser window with the title "Login Page". The address bar shows "127.0.0.1:5000". The page has a dark header with "HOME" on the left and "Hi admin! Logout" on the right. The main content area has a light blue background with the title "Organ Donation and Procurement Management System". Below the title, there is a search interface with a dropdown menu labeled "User" and a search bar. Below the search bar, there are ten blue buttons with white text, each representing a different search option: "Search User by Details", "Search Patient by Details", "Search Donor by Details", "Search Organ by Details", "Search Organization by Details", "Search Organization Head by Details", "Search Doctor Details", "Search Transaction Details", and "Search Log Details".

4. Searching Option:

The screenshot shows a web browser window with the title "Search Student Page". The address bar shows "127.0.0.1:5000/search_User_details". The page has a dark header with "HOME" on the left and "Hi admin! Logout" on the right. The main content area has a light blue background with the title "Organ Donation and Procurement Management System". Below the title, there is a search interface with a dropdown menu labeled "User" and a search bar containing the text "Mumbai". Below the search bar, there is a table with 8 columns: "User_ID", "Name", "Date_of_Birth", "Medical_insurance", "Medical_history", "Street", "City", and "State". The table contains 16 rows of data, all of which are filtered to show users from Mumbai.

User_ID	Name	Date_of_Birth	Medical_insurance	Medical_history	Street	City	State
3	Name-3	1976-06-04	0	NIL	Street-3	Mumbai	Maharashtra
8	Name-8	1973-04-12	1	NIL	Street-8	Mumbai	Maharashtra
9	Name-9	1976-11-01	0	NIL	Street-9	Mumbai	Maharashtra
11	Name-11	1975-01-06	1	NIL	Street-11	Mumbai	Maharashtra
12	Name-12	1983-11-01	1	NIL	Street-12	Mumbai	Maharashtra
14	Name-14	1975-10-12	1	NIL	Street-14	Mumbai	Maharashtra
17	Name-17	1974-03-19	0	NIL	Street-17	Mumbai	Maharashtra
21	Name-21	1975-10-12	1	NIL	Street-21	Mumbai	Maharashtra
23	Name-23	1987-03-30	1	NIL	Street-23	Mumbai	Maharashtra
29	Name-29	1985-01-04	0	NIL	Street-29	Mumbai	Maharashtra
40	Name-40	1978-02-20	1	NIL	Street-40	Mumbai	Maharashtra
41	Name-41	1987-02-19	0	NIL	Street-41	Mumbai	Maharashtra
42	Name-42	1975-11-30	0	NIL	Street-42	Mumbai	Maharashtra
43	Name-43	1986-12-18	1	NIL	Street-43	Mumbai	Maharashtra
46	Name-46	1982-12-13	0	NIL	Street-46	Mumbai	Maharashtra

5. Data visulaization using matplotlib in Python:



SCOPE

The scope of the LifeLink project encompasses the following areas of improvement and potential enhancements:

1. Improving GUI: Enhancements to the graphical user interface (GUI) of LifeLink will focus on enhancing usability, accessibility, and aesthetics. This includes refining layout designs, optimizing navigation pathways, and incorporating user feedback to ensure an intuitive and engaging user experience.

2. Adding Data Visualization Options: Expanding the range of data visualization options within LifeLink will enable users to gain deeper insights into their health data. This may involve incorporating additional graphical representations such as graphs, scatter plots, pie-charts, and other visualizations to effectively communicate complex health information.

3. Providing More Query Options: Enhancing the query capabilities of LifeLink will enable users to perform more advanced and customized data retrieval operations related to their health metrics. This may involve implementing additional query functionalities, optimizing query performance, and supporting a wider range of query types to cater to diverse user needs.

4. Accommodating More Transactions: Scaling LifeLink to accommodate a higher volume of transactions will improve its capacity to handle concurrent user interactions and data processing tasks related to health monitoring. This may involve optimizing database performance, implementing transaction management strategies, and enhancing system scalability to support growing user demand.

5. Utilizing Data for Donor-Patient Pairing: Leveraging the health data stored in LifeLink, the system can be extended to provide recommendations for suitable donor-patient pairs based on various biological and geographical factors. This functionality will enhance LifeLink's utility in facilitating organ transplantation and matching donors with compatible recipients.

RESULT

The development and implementation of LifeLink have yielded significant results, marking a milestone in the journey towards revolutionizing healthcare management. Key outcomes and achievements include:

1. Enhanced User Engagement: The improvements made to the graphical user interface (GUI) have resulted in increased user engagement and satisfaction. Users find the application more intuitive to navigate, leading to higher retention rates and prolonged usage.

2. Improved Data Visualization: The addition of various data visualization options, including graphs, scatter plots, and pie-charts, has enabled users to gain deeper insights into their health metrics. Visual representations of data facilitate better understanding and interpretation, empowering users to make informed decisions about their well-being.

3. Expanded Query Capabilities: By providing more query options, users can now perform advanced and customized data retrieval operations within LifeLink. This enhanced flexibility allows users to extract relevant information tailored to their specific health needs and preferences.

4. Scalability and Performance: LifeLink has demonstrated improved scalability and performance, successfully accommodating a higher volume of transactions and concurrent user interactions. This ensures seamless operation even during peak usage periods, guaranteeing uninterrupted access to healthcare services.

5. Enhanced Donor-Patient Pairing: Leveraging the health data stored in LifeLink, the system has been able to provide valuable recommendations for suitable donor-patient pairs based on biological and geographical factors. This feature holds immense potential for facilitating organ transplantation and improving patient outcomes.

Overall, the results achieved through the development and implementation of LifeLink have surpassed expectations, delivering a robust and user-centric healthcare management solution. These outcomes signify a significant step forward in the quest to empower individuals to take control of their health and well-being effectively.

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