

BLOOD DONATION SYSTEM (BDS)

GROUP P07 – SSE CLASS OF 2022

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INTRODUCTION

The Blood Donation System (BDS) serves as a web site and mobile application where various NGOs and Hospitals are expected to input their data and send updates as to whether a blood donation is required, while donors would utilize this application to be notified when their services are needed in the surrounding area.

MOTIVATION

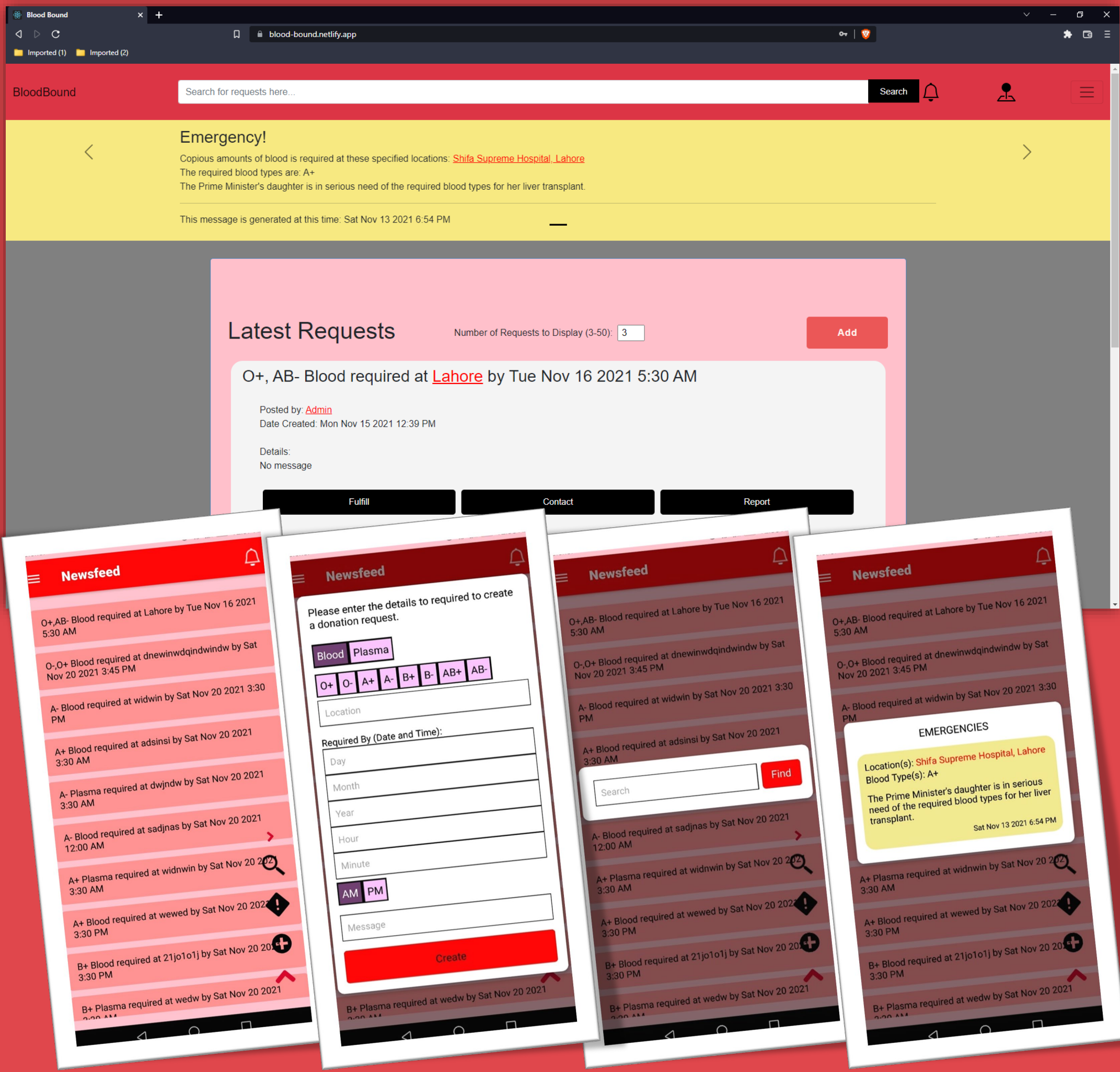
The main goal of this project was to provide a secure platform where donors, and those in need of blood and plasma, can easily connect with each other. There have been various similar projects that have tried to provide the same service, but they usually are either focused on specific communities or are not as secure and do not adhere to keeping users safe. Thus, a minimal, and swift, service can be easily provided while keeping data privacy and security in mind.

METHODOLOGY – MIXTURE OF AGILE AND WATERFALL

BDS targets a crucial matter, i.e., of lives being saved, and handles sensitive data whose security and privacy is important to the working of the system and the safety of the user. As such, BDS must be largely free of bugs and must ensure data safety before deployment. Ensuring these goals comes from the rigidity and the emphasis on heavy research and documentation of technologies before programming. This comes with the Waterfall methodology. Also, we have already extensively documented requirements and have foreseen those changes to them will be highly infrequent and have already laid down a bare structure of how the software and code is to be organized. As such, the greatest advantage of the Agile process was moot for us.

FUTURE WORK

- We would like to purchase a proper domain and move the frontend to another, more scalable, service than Netlify for better performance and security.
- The map related features (e.g., finding nearby donors) can be expanded and made more secure by whitelisting only hospitals and NGO related clinics so malicious actors cannot attack through social engineering.
- Some of the features can possibly be streamlined in the UI revamp.



HOW DOES IT WORK?

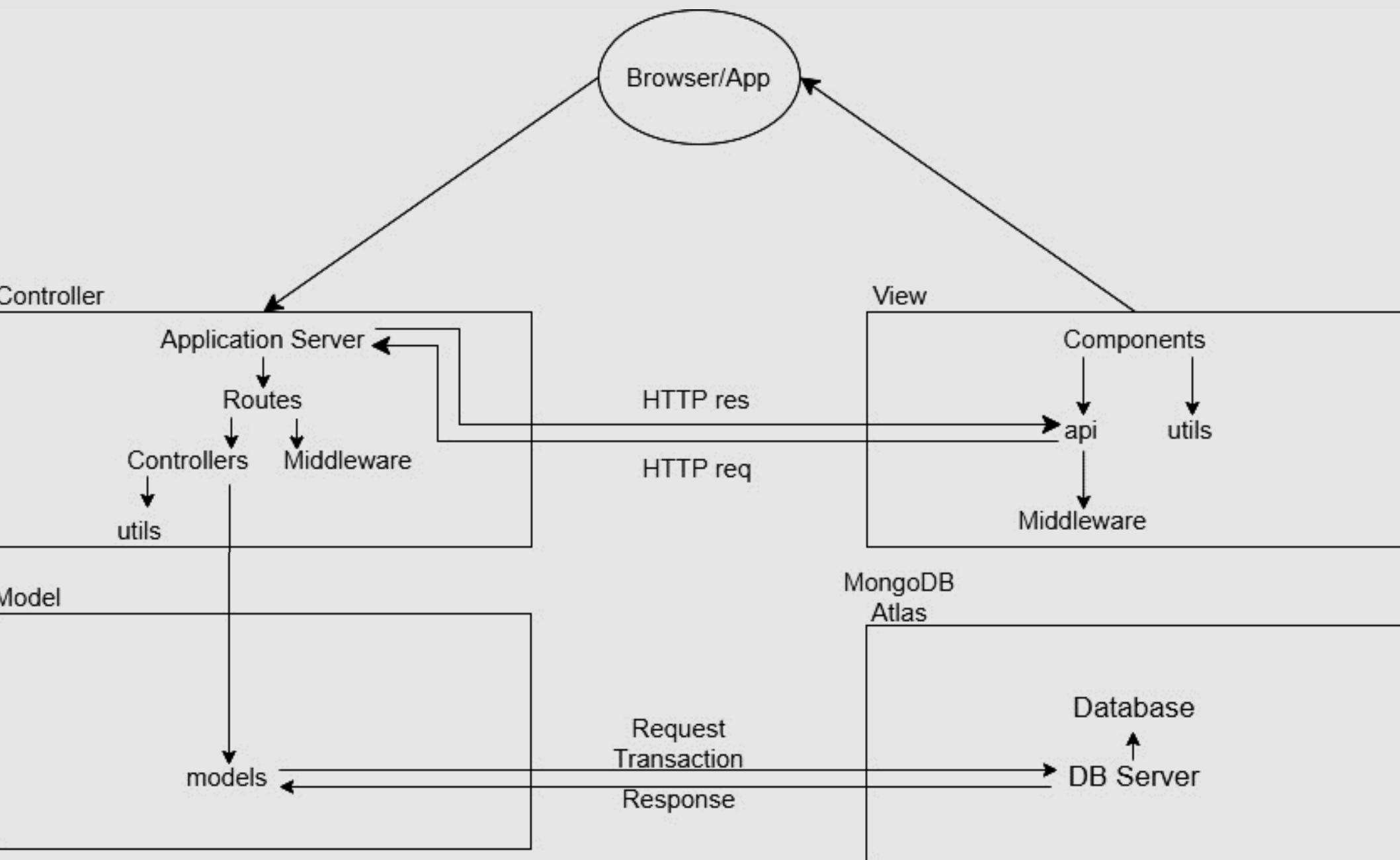
The objectives of this project include producing an authorization of the partnered NGOs and Hospitals, a frequently updated Newsfeed in which requests can be made for a donation by any user, along with a notification system from which donors will be notified if blood is needed. NGOs and Hospitals would regularly check the donor list, donors' eligibility to donate, and would track previous donors and examine if they meet the requirements to give blood again. The donor would also be granted the ability to register independently, without any NGO or Hospital assistance. The same applies to blood requesters.

WHAT'S UNDER THE HOOD?



SYSTEM ARCHITECTURE

- BDS is meant to function as a Donor database and active response service, so in the wider context of applications systems, it can be considered under the category of a web-based information service and system. As such, we mapped each layer onto its own server, following the MVC architecture:
- A web server to handle all user communications, with the user interface implemented as a web browser.
 - An application server for housing the application logic as well as authentication functionalities in the second and third layers.
 - A database server that handles all our transaction management.



HIGH LEVEL SYSTEM FEATURES

Actor	Description
Admin	Administrative access and edit rights to everything related to the website and application. The Admin is responsible for manually verifying NGO Workers and Medical Institution Workers.
NGO Worker	Is responsible for the creation of restricted access accounts for donors registered with their NGO. Will also be responsible for adding relevant donor and location data.
Medical Institution Worker	Is responsible for the creation of restricted access accounts for donors. Will also be responsible for adding relevant donor and location data. Also expected to add donation requests for patients in their associated hospitals.
Blood Donor	The person or institution that wants to give blood. The account is restricted access; largely only for communication with Blood Requesters and using assigned features. As an individual, the individual person's details will be the latest, otherwise, the institution's information will be used instead. A Blood Donor can either make their account by themselves or through an NGO Worker/Medical Institution worker.
Blood Requester	Largely the same as a Blood Donor but they can only make accounts by themselves.
Customer Support Worker	Is responsible for handling support requests and addressing complaints made by any of the other actors minus the Admin.