**Background information/ Problem Statement**

In today’s traffic world, ambulance plays a major role when an accident occurs on the road network or an emergency occurs and the need arises to save valuable human life. Transportation of a patient to an emergency hospital seems quite simple but in actuality, it is quite difficult and gets more difficult during peak hours.

In our Ambulance Booking System, web based, people can easily book an ambulance from any place over the internet.

There are three major modules namely **User, Ambulance, and Hospital.** Users can *register* and *log in* using credentials. Users can *edit* their profile and *change* their password in an emergency. Any Upcoming Ambulance Booking details if anyone wants to Book an Ambulance or if there is an Emergency.

For booking an ambulance users have to select ***ambulance size, pick-up*** ***point & hospital, and date & time***. In an emergency will automatically book the nearest ambulance & hospital. Users will get a list of All the bookings of Ambulances. The front-end involves **(Html, CSS, and JavaScript) or (PHP)** and the back-end involves **(Python/Java)**. The framework used is **Django** and the database is **MySQL**.

**Working of the Project**

# In this system, there are four entities *User*, *Ambulance ,Ambulance driver* and *Hospital*. The user must register and log in using a username and password. After logging in, the user can Book Ambulance, Book Hospital, View Nearby Hospitals, View Previous Booked Ambulances and Hospitals, and it can also change its password.

# When the user books an ambulance and hospital, a booking request is sent to the respective representatives of the ambulance and hospital. In view, Nearby Hospitals the user can view the nearest hospitals in their location. The ambulance driver has to register and then login in using a username and password.

# After logging in, the driver can view booking requests, nearby hospitals and their previous bookings i.e., previously accepted requests. In Booking requests, it can either accept or decline the user requests. The hospital has to register and log in using a username and password. After login in the hospital representative can view the booking request and either accept or decline the user request.

**Advantages**

* This is a user-friendly web application.
* **Accessibility:** Users can access the system from any device with an internet connection, making it convenient and accessible.
* **Real-time Updates:** The system can provide real-time updates on ambulance availability, location, and estimated arrival times.
* It will help to book an ambulance easily.
* **Reduced Response Time:** By streamlining the booking process and dispatching ambulances efficiently, the system can reduce response times to the patients.

**System Description**

The system comprises 3 major modules with their sub-modules as follows:

**1. USER:**

* **Registration**: The user can sign up using their personal details.
* **Login**: The user can log in using credentials.
* **Password management**: User have an option to change and reset their password.
* **Book** **Ambulance**: Users can book an ambulance by providing their current location, hospital location, and timings.
* **Book** **Hospital**: The user can book Hospital.
* **View** **Previous** **Booked** **Ambulance**: The user can view the previously booked ambulance.
* **View** **Nearby** **Hospitals**: Users can view nearby hospitals using a map view or a list view.

**2. AMBULANCE:**

* **Registration**: Ambulance drivers can sign up by providing their personal details and ambulance registration number.
* **Login**: Ambulance Driver can login in using their credentials.
* **Password management**: Ambulance drivers can change or reset their password.
* **View** **Booking** **Request**: The ambulance driver can view the incoming booking request in real time.
* **View** **Nearby** **Hospitals**: Ambulance drivers can access information on nearby hospitals.
* **Previous** **Bookings**: Ambulance driver can review their past booking history for references and records.

**3. HOSPITAL:**

* **Registration**: Hospital staff can register by providing their personal details.
* **Login**: The hospital staff can log in using credentials.
* **Password management**: User can change or reset their password.
* **View** **Booking** **Request**: The user can view the booking request.

**Project Life Cycle**

# We will use the agile system development life cycle.

# The Agile model is an iterative and incremental approach used in the system development life cycle to create a flexible and adaptive system. Agile will focus on continuous improvement and collaboration. The Agile process involves breaking down the project into smaller, manageable segments known as sprints, typically lasting 2-4 weeks.

# The Agile System Development Life Cycle (SDLC)

# Stages

1. **Project initiation**

Establishing the project vision, define goals and justify the return on imvestements.This includes the ambulance booking services and expected benefits.

**2.Planning**

**Release planning**: Defining major releases e.g user registration and ambulance booking.

**Backlog creation**: List of all features and tasks e.g user registration, booking and tracking.

**Prioritization**: Prioritizing backlog items based on value and dependencies.

**3.Development**

Execute short , time boxed iterations usually 2-4 weeks focusing on developing specific features.

**4.Production**

Deploy and monitor the product , ensuring continuous delivery.

**5.Retirement**

Plan and execute the process of safely shutting down the system, including data migration .

**System Requirements**

1. **Hardware Requirement**
2. **Laptop or PC**

* Windows 7 or higher
* CoreI3 processor system or higher
* 4 GB RAM or higher
* 256 GB ROM or higher

1. **Software Requirement**

* XAMPP Server
* VS code
* Python/Java IDEs

**Limitation/Disadvantages**

* **Dependency on Internet Connectivity:** The system's effectiveness relies on a stable internet connection, which can be a challenge in areas with poor connectivity.
* **Technical Issues:** Technical issues or system failures can disrupt service and lead to ambulance delays.
* **Cybersecurity Risks:** The system is vulnerable to cyberattacks, which can compromise sensitive patient data.
* **User Training:** Users may need training to effectively use the system, especially older adults , the disabled or those with limited tech skills.
* ***Application*** –

This web-based application aims to revolutionize ambulance services by providing a user-friendly platform for booking ambulances efficiently.

**\*\*\*\*Other additional features we can add:**

1. **Real-time Tracking:**
   * Implement a GPS tracking system to monitor the ambulance's location in real-time.
   * Display the ambulance's progress on a map for the user to visualize.
2. **Emergency Alerts:**
   * Allow users to send emergency alerts with their location to a designated authority or the nearest hospital
3. **Medical History Integration:**
   * Allow users to input their medical history, allergies, and emergency contacts.
   * Share this information with the ambulance crew to provide better care when issues arises.
4. **Payment Integration:**
   * Implement a payment gateway for online payments of ambulance and other fees.
   * Offer different payment options (credit card, debit card, digital wallets and mpesa).