## Defining database Entities and attributes.

The User entity represents individuals such as emergency responders, healthcare personnel, and citizens. Each user has a unique userId which identifies them, their also have attributes such as name, role which describes the user’s role such as responder, paramedic and contactInfo such as phone number or email. The users are associated with specific locations represented by a locationId, which is a foreign key which links to the Location entity.

The Alerts entity holds information about various disaster notifications, where each alert is uniquely identified using an alertId attribute and includes attributes such as alertType which describes the alert such as flood or fire, alertDetails which is the details information about the alert such as any guidance or instruction to the public, timestamp which holds the date and time of the alert issue and the locationId which references the Location entity.

The Resources entity tracks emergency resources such as the equipment and personnel, each resource has a unique resourceId key which acts as the primary identifier within the entity schema, it also contains the resourceType attribute such as ambulances and firetrucks, the status attribute which outlines the current status of the resource in question and the locationId which describes the current location of the resource linking it to the Location entity.

There’s also a BloodDrive entity which manages information about local blood-drives where each blood drive is uniquely identified by a driveId and includes attributes such as the location of the blood drive which is represented using locationId which references the location entity, it also has a timestamp which details when the blood drive is scheduled.

There is a Location entity holds the geographical information on the relevant locations to the system, where each location is uniquely identified using a locationId and includes a locationName which has the name of the location and the GPS coordinates represented by the coordinates attribute.

The CommunicationLog entity logs the communication between the users and the resource handlers during emergencies, each log entry is uniquely identified using a logId and includes a userId that references the user involved, as well as alertId to reference the alert related to the communication, the message attribute to store the content of the communication and timestamp to record the time and the date of the communication.

## The Normalization Forms.

### First Normalization Form.

Each attribute contains only atomic values such as in users (name, role, contactInfo) and each row has a unique Identifier(userId which is the Primary Key for Users entity, alertId as the Primary Key for the alert entity, resourceId for resources entity, driveId forBlooddrives entity and locationId for Locations entity), for communicationLogs entity userId, alertUd, meassage and Timestamp attributes are uniquely identified by logId key.

### Second Normalization Form.

In the second normalization form all the non-key attributes are fully dependent on the key attribute such as in Locations entity both locationName and coordiantes are fully dependent on locationID key attribute.

### Third Normalization Form.

After the second normalization form all the non-key attributes are fully dependent on the key attributes and in the third normalization form we remove transitive dependencies such that no non key attribute depends on another non-key attribute such that all attributes are dependent solely on userId, alertId, resourceId, driveId, locationId and logId respectively.

## Database Entity Relationship Diagram.

