

### ***UML State Diagram:***

The UML State Diagram represents the lifecycle of an alert within a healthcare monitoring system. It uses simple, clear states that are easy to understand and reflect the typical flow of alerts from creation to resolution. We started by choosing four main states for the alert: Generated, Sent, Acknowledged, and Resolved. These states were chosen because they represent key phrases in the alert management process:

- **Generated:** This is the initial state when an alert is first created based on specific criteria being met, such as abnormal patient data.
- **Sent:** Once generated, the alert is sent out to the medical staff's monitor. This ensures that the relevant personnel are informed and can take necessary actions if needed.
- **Acknowledged:** This state is critical as it confirms that the alert has been seen and acknowledged by a staff member, which prevents repeated notifications and ensures that the staff is aware of an issue and could potentially act on it.
- **Resolved:** The final state, indicating that the alert has been addressed, either because the situation was resolved or the alert was manually cleared by the staff.

The transitions between these states are labelled to show the actions triggering the changes, like "send alert", "acknowledge receipt", and "resolve alert". This approach helps to visualise the flow and understand how each action impacts the alert status.

### ***UML Sequence Diagram:***

The UML Sequence Diagram is focused on the interactions between different components of the alert system, specifically detailing how an alert is generated, communicated, and resolved. The participants in this diagram include the AlertGenerator, DataStorage, Alert, and Medical Staff. Each participant also has their own lifeline.

- **AlertGenerator:** This is the component responsible for monitoring patient data and initiating alerts. It queries DataStorage to confirm data trends before generating an alert.
- **DataStorage:** Acts as a repository that the AlertGenerator consults to confirm if the observed data points represent a significant trend.
- **Alert:** Represents the alert itself that gets created and sent out to the medical staff.
- **Medical Staff:** Receives the alert, acknowledges it, and ultimately resolves it.

We used arrows to depict the flow of actions and interactions, such as "query data trends", "generate alert", and "send notification". Each arrow is clearly labelled to explain the action it represents, making it easy to follow the sequence of events from data detection to alert resolution. The activation boxes show when each participant is actively processing or involved in an action, enhancing the clarity of the operational flow. This diagram gives a step-by-step view of the alert handling process.