StatefulSets in Kubernetes

Stateful and Stateless Application

- Stateful applications: These applications require persistent data storage, meaning they store and rely on specific data that needs to be preserved across restarts or replicas. For example, a database application.
- Stateless applications: These applications do not require persistent data storage and can function without relying on specific data. For example, a web server.

Problems with Deploying Stateful Applications as a Deployment:

- When we deploy multiple replicas of a stateful application (like a database) using a Deployment, it can become tricky if different web apps randomly read from or write to any of the database replicas.
- This can cause confusion because the data might not be the same in all the replicas, and it becomes hard to keep everything in sync.

What is a StatefulSet?

- A StatefulSet is a Kubernetes resource specifically designed for managing stateful applications.
- StatefulSets ensure that each replica is deployed and scaled in a specific order.
- Each pod created by a StatefulSet has a unique hostname, network identity, and stable storage.
- Example: If you have a StatefulSet named "database," the pods will be named "database-0," "database-1," etc.