Web Technology (KCS-602)
Unit 4
Enterprise Java Bean

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EJB

- EJB is an acronym for *enterprise java bean*. It is a specification provided by Sun Microsystems to develop secured, robust and scalable distributed applications.

- To run EJB application, you need an *application server* (EJB Container) such as Jboss, Glassfish, Weblogic, Websphere etc

- EJB application is deployed on the server, so it is called server side component also.

- EJB is like COM (*Component Object Model*) provided by Microsoft. But, it is different from Java Bean, RMI and Web Services.

It performs:

- life cycle management,

- security,

- transaction management, and

- object pooling.

When use Enterprise Java Bean?

1. **Application needs Remote Access**. In other words, it is distributed.

2. **Application needs to be scalable**. EJB applications supports load balancing, clustering and fail-over.

3. **Application needs encapsulated business logic**. EJB application is separated from presentation and persistent layer.

Types of Enterprise Java Bean

There are 3 types of enterprise bean in java.

Session Bean

Session bean contains business logic that can be invoked by local, remote or webservice client.

Message Driven Bean

Like Session Bean, it contains the business logic but it is invoked by passing message.

Entity Bean

It encapsulates the state that can be persisted in the database. It is deprecated. Now, it is replaced with JPA (Java Persistent API).

Session Bean

Session bean encapsulates business logic only, it can be invoked by local, remote and webservice client.

It can be used for calculations, database access etc.

The life cycle of session bean is maintained by the application server (EJB Container).

Types of Session Bean

There are 3 types of session bean.

1) **Stateless Session Bean**: It doesn't maintain state of a client between multiple method calls.

2) **Stateful Session Bean**: It maintains state of a client across multiple requests.

3) **Singleton Session Bean**: One instance per application, it is shared between clients and supports concurrent access.

Stateless Session Bean

- **Stateless Session bean** *is a business object that represents business logic* only. It doesn't have state (data).

- In other words, *conversational state* between multiple method calls is not maintained by the container in case of stateless session bean.

- It can be accessed by one client at a time. In case of concurrent access, EJB container routes each request to different instance.

Stateful Session Bean

- **Stateful Session bean** is a business object that represents business logic like stateless session bean. But, it maintains state (data).

- In other words, conversational state between multiple method calls is maintained by the container in stateful session bean.

Message Driven Bean

- A message driven bean (MDB) is a bean that contains business logic. But, it is invoked by passing the message. So, it is like JMS Receiver.

- MDB asynchronously receives the message and processes it.

- A message driven bean receives message from queue or topic, so you must have the knowledge of JMS API.

- A message driven bean is like stateless session bean that encapsulates the business logic and doesn't maintain state.

Entity Bean

- Entity bean represents the persistent data stored in the database. It is a server-side component.

- In EJB 2.x, there was two types of entity beans: **bean managed persistence** (BMP) and **container managed persistence** (CMP).

Disadvantages of EJB

- Requires application server
- Requires only java client. For other language client, you need to go for webservice.
- Complex to understand and develop ejb applications