Chap:6

EJB(Enterprise JavaBean)

Prepared: JINAL JOSHI

Syllabus Content

- Introduction
- Benefits of EJB
- Restriction on EJB
- Types of EJB
    - 1.Session Beans
    - 2.Entity Beans
    - 3.Message-driven beans
- Timer service

- **Introduction of EJB**

Introduction of EJB

- EJB (*Enterprise Java Bean*) is used to develop scalable, robust and secured enterprise applications in java.
- EJB stands for **Enterprise Java Beans**.
- EJB is an essential part of a J2EE platform.

- J2EE platform has component based architecture to provide multi-tiered, distributed and highly transactional features to enterprise level applications.

▪Introduction of EJB

▪EJB stands for Enterprise Java Beans. EJB is an essential part of a J2EE platform. J2EE platform has component based architecture to provide multi-tiered, distributed and highly transactional features to enterprise level applications.

▪ EJB provides an architecture to develop and deploy component based enterprise applications considering robustness, high scalability, and high performance.

▪An EJB application can be deployed on any of the application server compliant with the J2EE 1.3 standard specification. We'll be discussing EJB 3.0 in detail in this tutorial.

- Benefits(uses) of EJB

Benefits of EJB

- EJB provides an architecture to develop and deploy component based enterprise applications considering robustness, high scalability, and high performance.

- An EJB application can be deployed on any of the application server compliant with the J2EE 1.3 standard specification.
- To run EJB application, you need an *application server* (EJB Container) such as Jboss, Glassfish, Web logic, Web sphere etc. It performs:

- life cycle management,
- security,
- transaction management, and
- object pooling.
- EJB application is deployed on the server, so it is called server side component also.

▪Benefits of EJB

- Simplified development of large-scale enterprise level application.

- Application Server/EJB container provides most of the system level services like transaction handling, logging, load balancing, persistence mechanism, exception handling, and so on.

- Developer has to focus only on business logic of the application.

- EJB container manages life cycle of EJB instances, thus developer needs not to worry about when to create/delete EJB objects.

- Restriction(limits) on EJB

Restriction on 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.

- Types of EJB

Types of EJB

- EJB is primarily divided into three categories; following table lists their names with brief descriptions:

- 1. Session Bean
- 2.Entity Bean
- 3. Message Driven Bean

▪Types of EJB

- **Session Bean:**

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

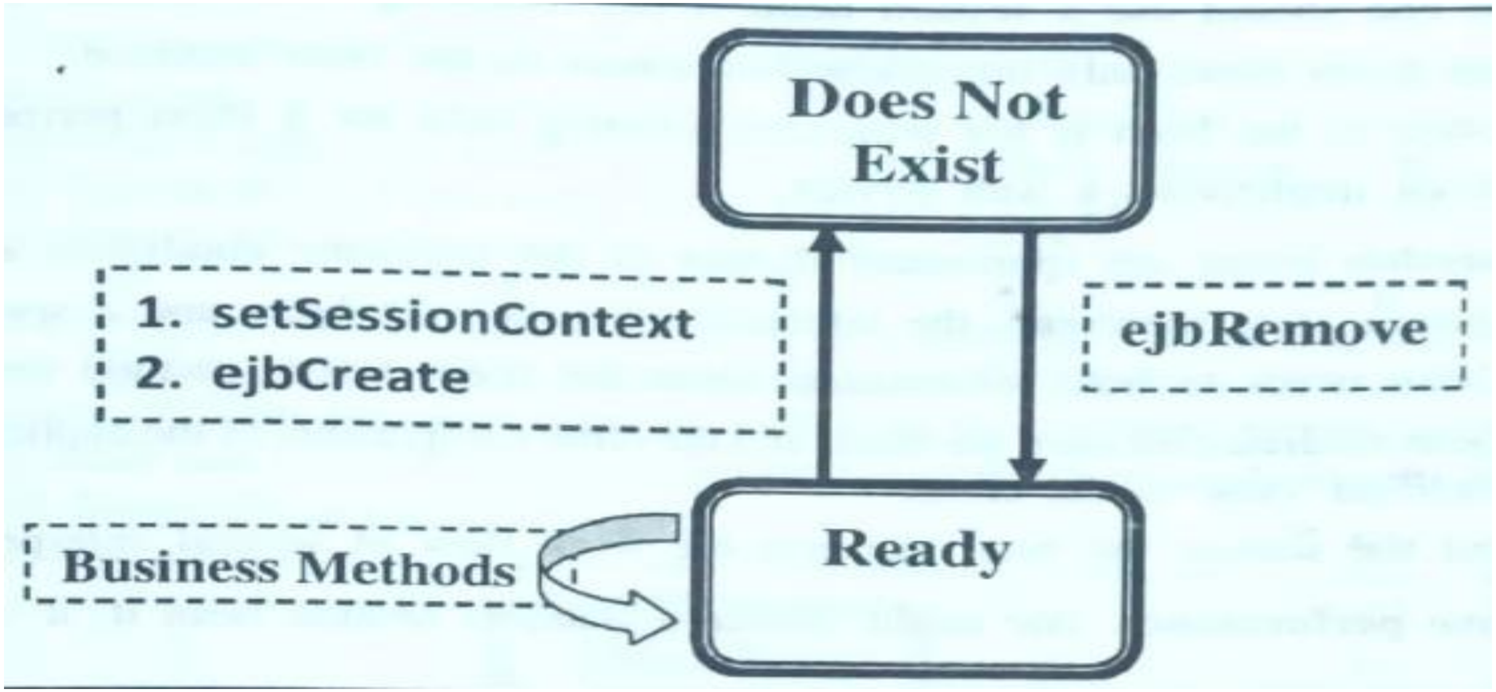
▪It can be used for calculations, database access etc.

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

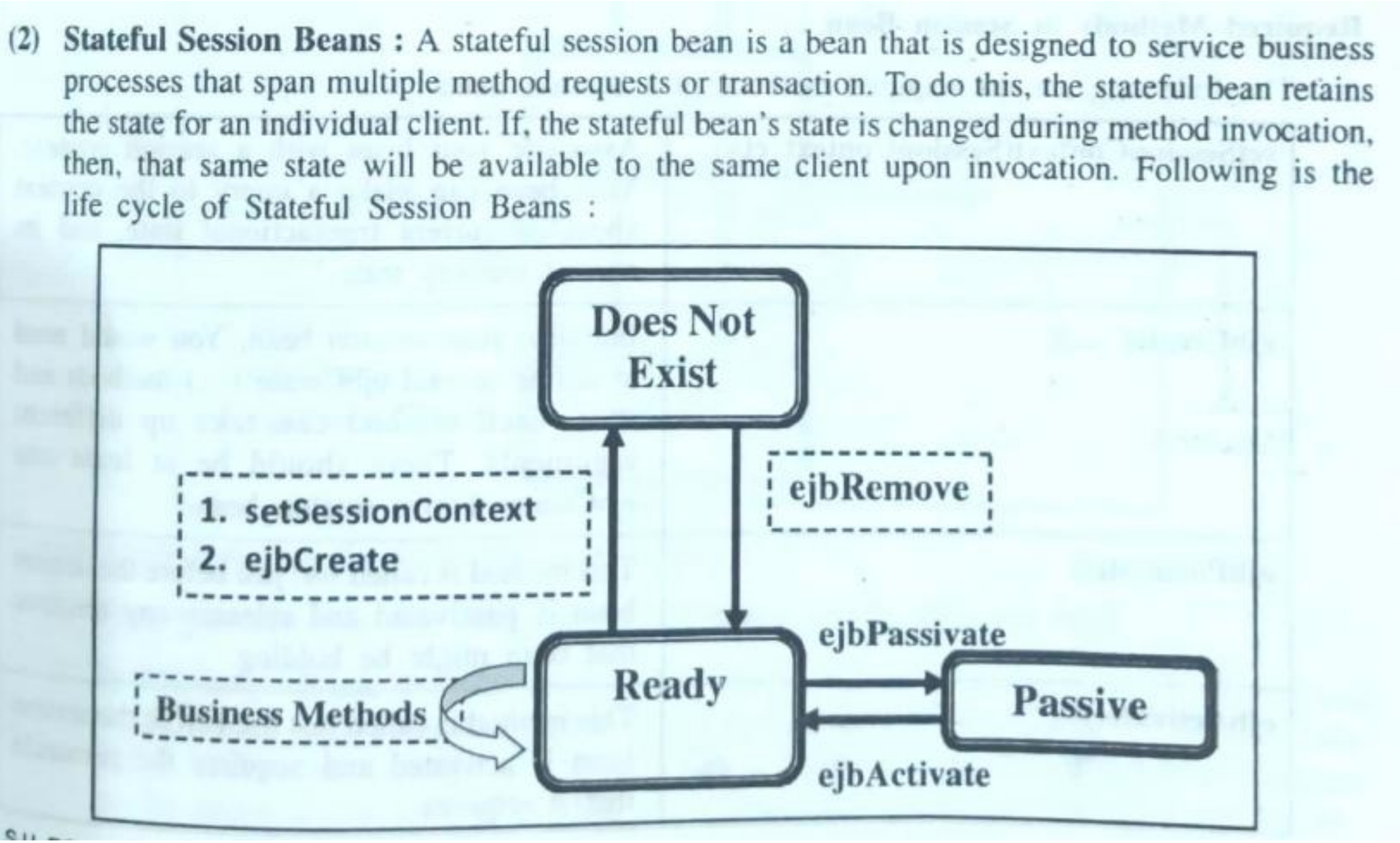
▪Types of Session Bean

There are 3 types of session bean.

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


Does Not Exist
1. setSessionContext
2. ejbCreate
ejbRemove
Business Methods
Ready

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



(2) **Stateful Session Beans :** A stateful session bean is a bean that is designed to service business processes that span multiple method requests or transaction. To do this, the stateful bean retains the state for an individual client. If, the stateful bean's state is changed during method invocation, then, that same state will be available to the same client upon invocation. Following is the life cycle of Stateful Session Beans :

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

Types of EJB

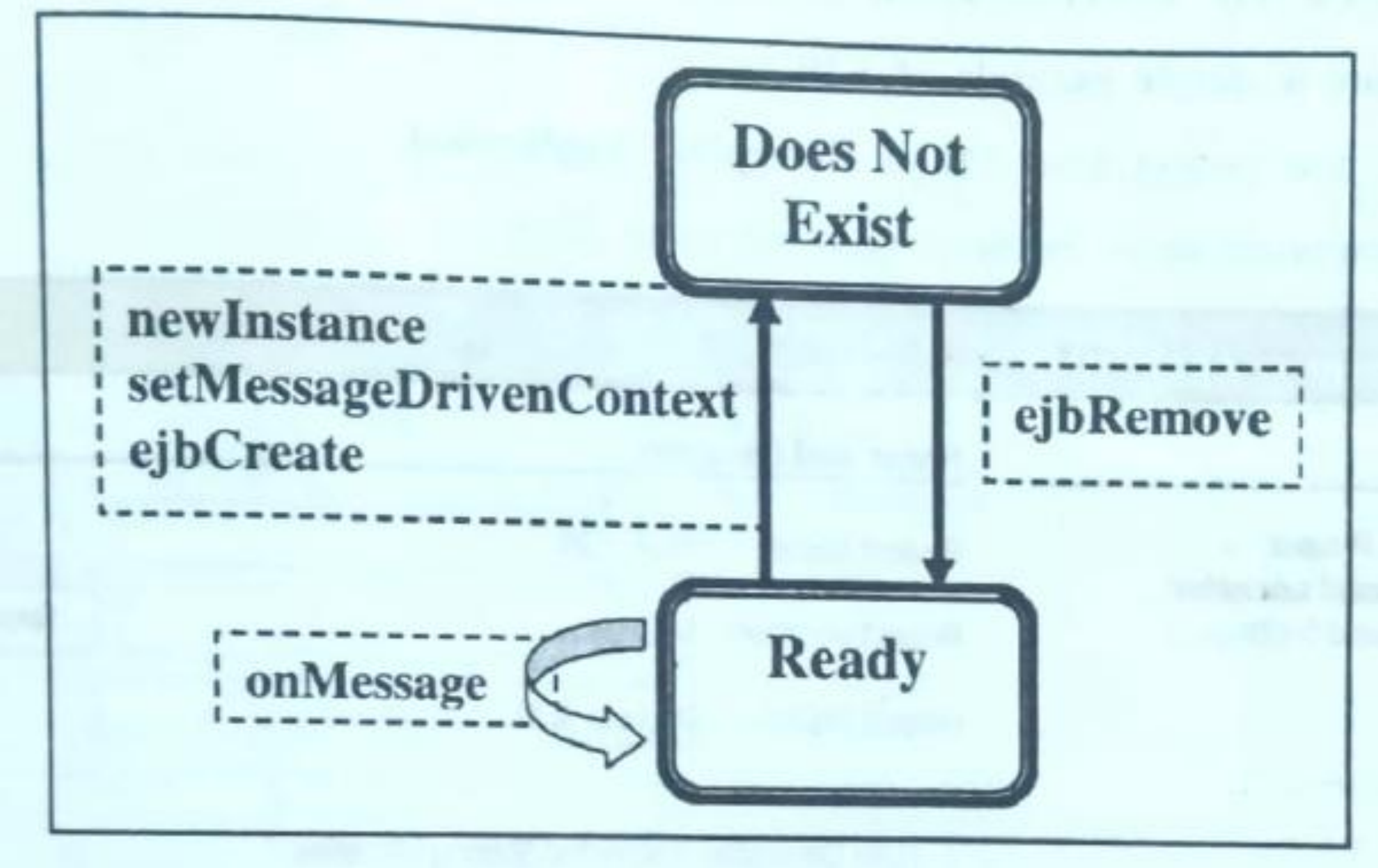
- **2.Entity Bean:**
- Entity beans represent persistent data storage. User data can be saved to database via entity beans and later on can be retrieved from the database in the entity bean.
- Entity bean represents the persistent data stored in the database. It is a server-side component.

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

Types of EJB

- 3**. Message Driven Bean(MDB)**
- 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.


Does Not Exist
newInstance
setMessageDrivenContext
ejbCreate
ejbRemove
onMessage
Ready

- **Timer service**

Timer service

- Timer Service is a mechanism by which scheduled application can be build. For example, salary slip generation on the 1st of every month.

- EJB 3.0 specification has specified @Timeout annotation, which helps in programming the EJB service in a stateless or message driven bean.
- EJB Container calls the method, which is annotated by @Timeout.

Timer service

- The TimerService interface provides enterprise bean components with access to the container-provided Timer Service.
- The EJB Timer Service allows stateless session beans, singleton session beans, message-driven beans . To create a timer, we need to create TimerService object and use one of its createTimer() method.
- The Timer Service is accessed via dependency injection, through the getTimerService method of the EJBContext interface, or through lookup in the JNDI namespace.

Timer service

- Example:

```
public class IntervalTimerDemo
{
   public void createTimer(long milliseconds);
}
```

Assignment Question

- Q.1 Write short note on EJB
- Q.2 Write uses of EJB
- Q.3 Write limitations of EJB
- Q.4 Explain types of EJB
- Q.5 Explain timer service in EJB.