4Th Year

Web Services and Security

Information Systems Department
Computer Science Faculty
Kabul University

By: Ziaullah Momand

2016

J2EE

Components

Building Component Based Enterprise Web Applications

J2EE Components

- **J2EE applications are made up of components.**

  - A J2EE component is a self-contained functional software unit that is assembled into a J2EE Application with its related classes and files and that communicates with other components

J2EE Container

- **The application server maintains control and provides services through an interface or framework known as a container.**
  - There are five defined container types in the J2EE specification

Server J2EE Containers

The server itself

which provides the J2EE runtime environment and the other two containers, e.g. Apache, Glassfish

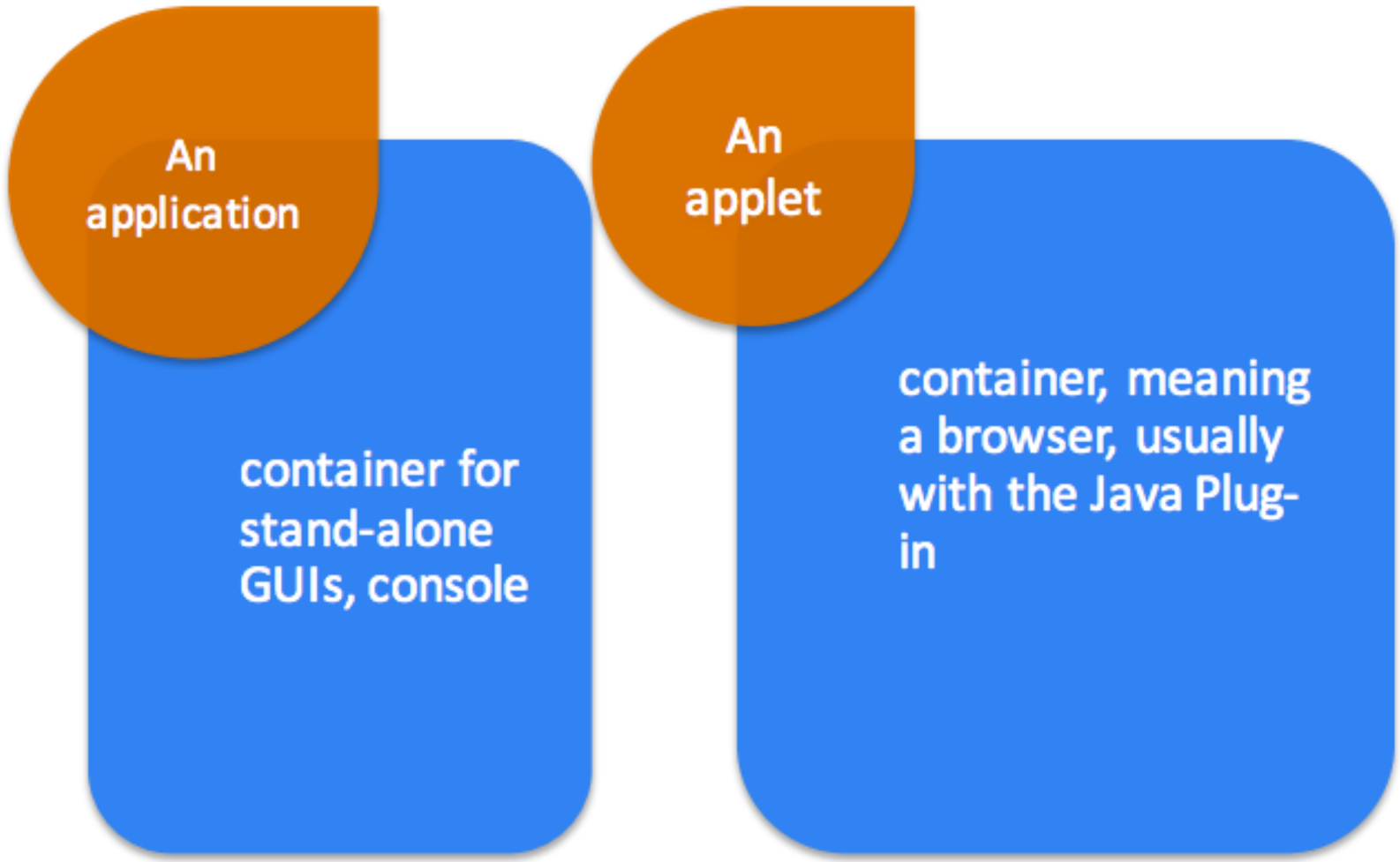
An EJB container

to manage EJB components

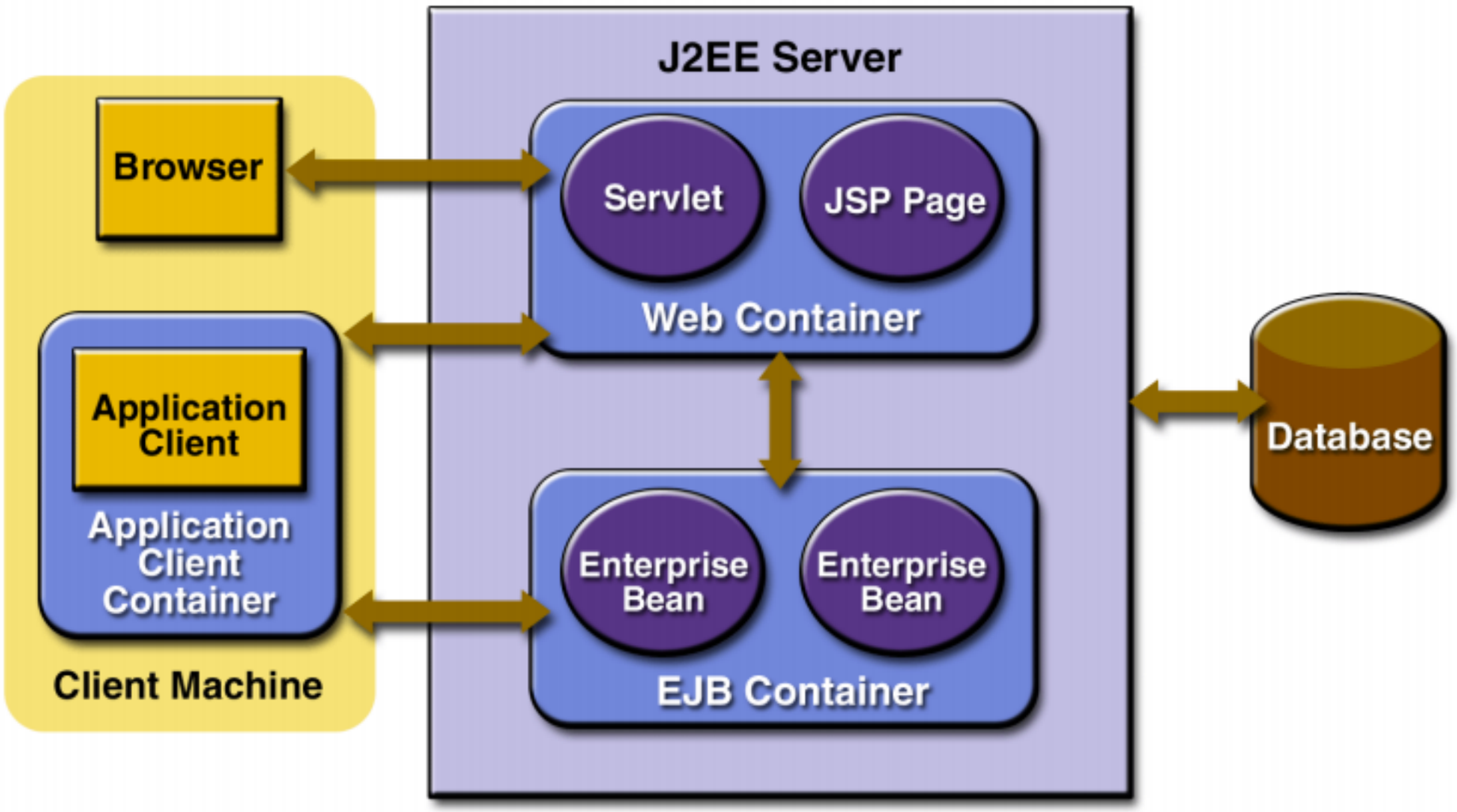
A Web container

to manage servlets and JSP pages

Client J2EE Containers



Containers 4-Tiers



J2EE Components

Client components run on the client machine, which correlate to the client containers (Application Container)

Web components Java Servlet and JavaServer Pages technology components are Web components that run on the web server. (Web Container)

EJB components (enterprise beans) are business components that run on the application server. (EJB Container)

Packaging Applications and Components

- Under J2EE, applications and components reside in Java Archive (JAR) files

  - These JARs are named with different extensions to denote their purpose, and the terminology is important

Various File Types

- Enterprise Archive (EAR) files represent the application, and contain all other server-side component archives that comprise the application.

  - Client interface files and EJB components reside in JAR files.

  - Web components reside in Web Archive (WAR) files.

Various File Types

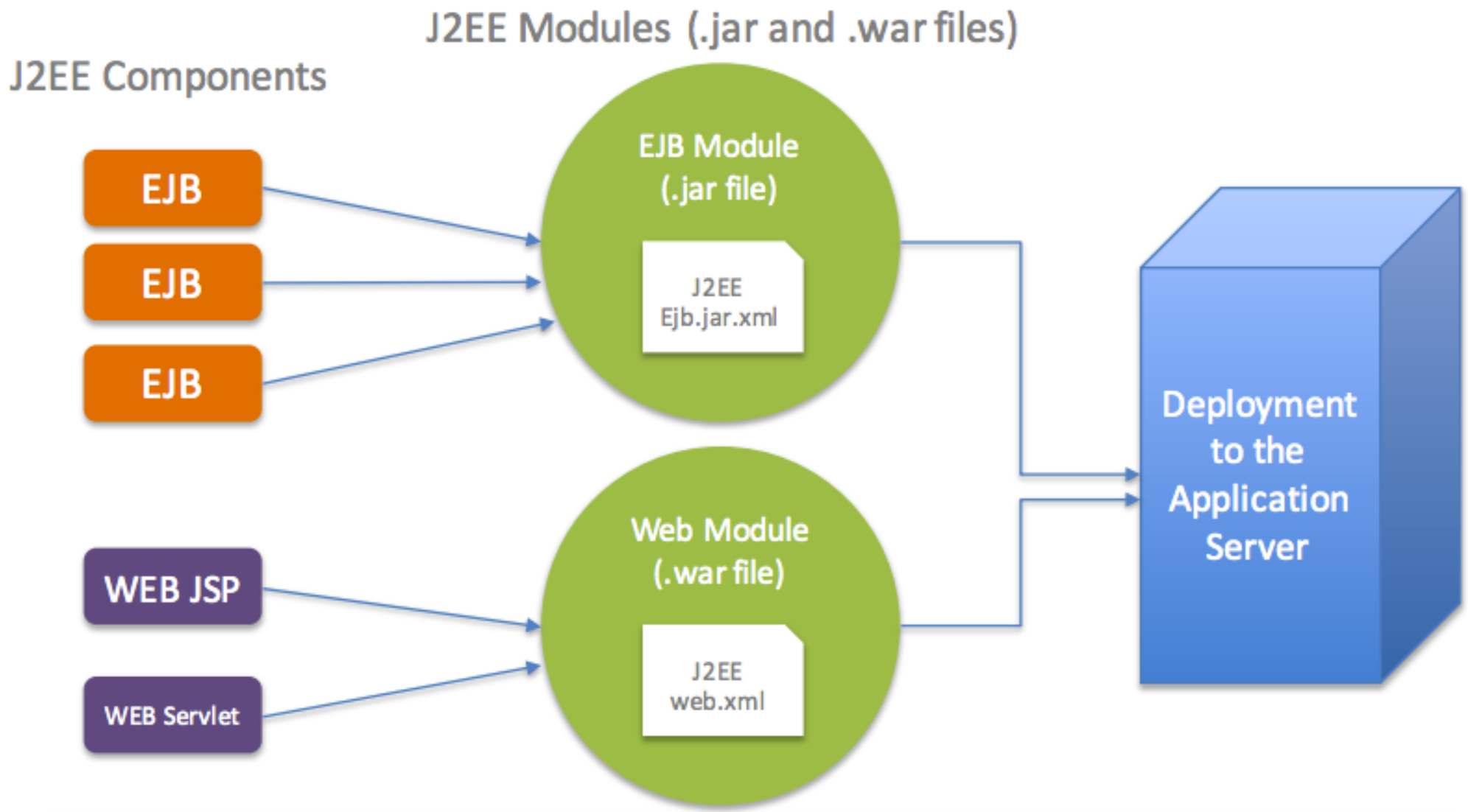
- A web application is a collection of servlets, HTML pages, classes, and other resources that can be bundled and deployed to several J2EE application servers.

  – A WAR file can consist of the following items: servlets, JSPs, JSP tag libraries, utility classes, static pages, client-side applets, beans, bean classes, and deployment descriptors (web.xml).

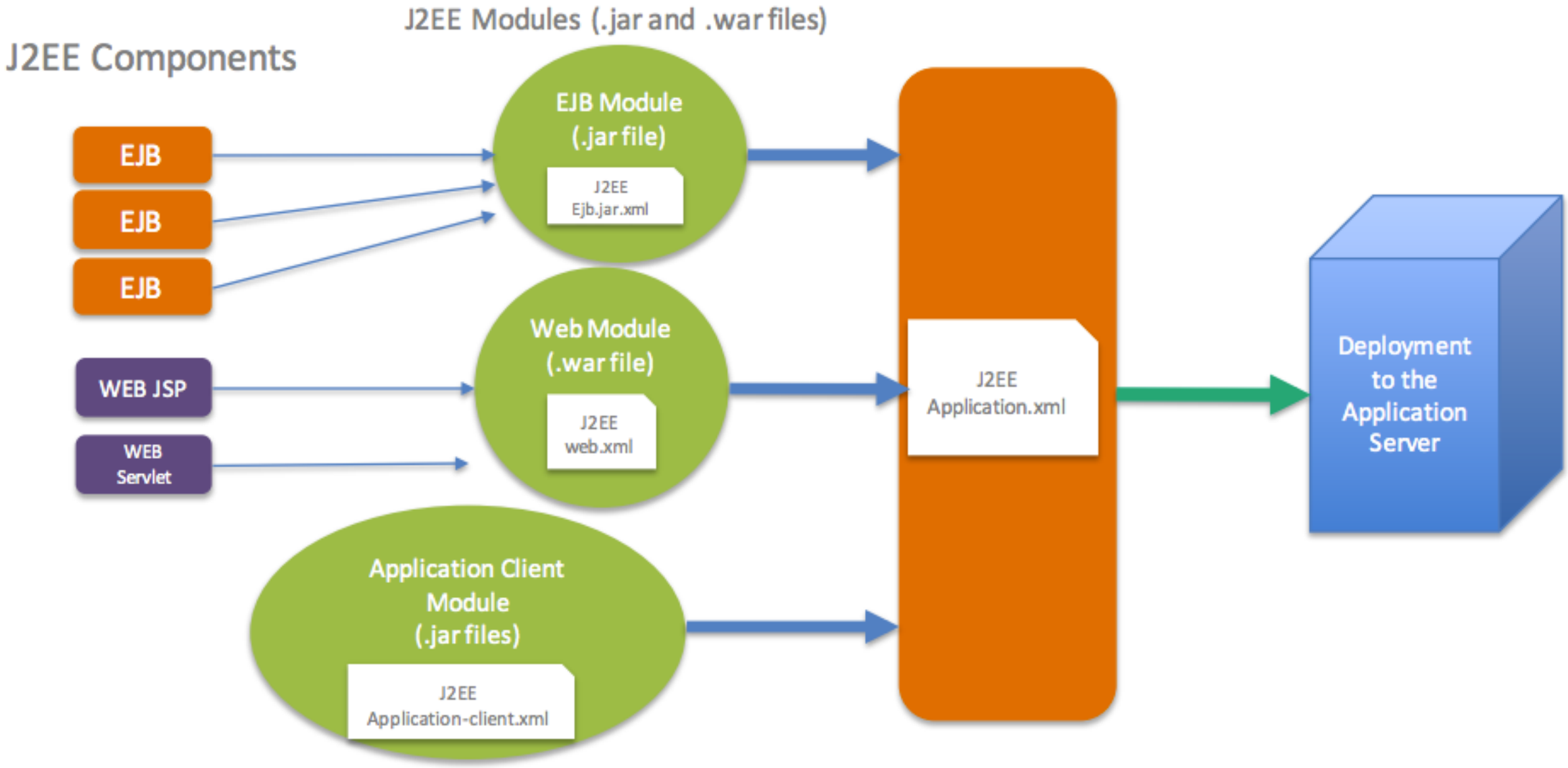
Deployment Descriptors

- It describes how the web application should be deployed.
  - Deployment descriptors are XML documents that describe **configuration** and other deployment settings
  - The statements in the deployment descriptor are declarative instructions to the J2EE container.

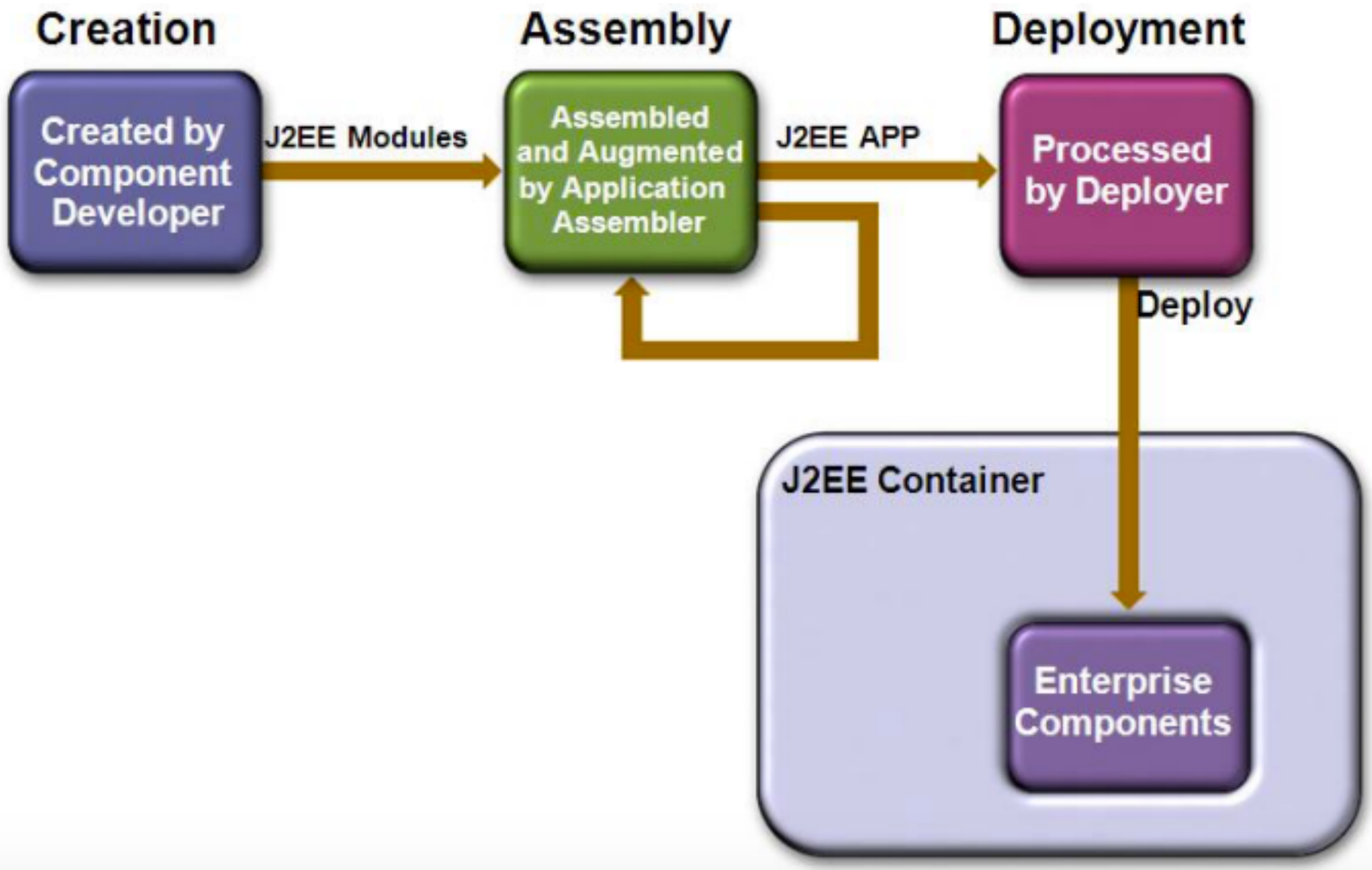
Module Assembly and Deployment



Module Assembly and Deployment



J2EE Application Development Lifecycle



J2EE Application Development Lifecycle

1. First, as a component developer, you write and compile component code. The component code again can be servlet, JSP, EJB.
2. Then, you a write deployment descriptor again as a component developer.
3. Then these J2EE components will be assembled into a ready-to-deployable package.
4. Then the package gets deployed over J2EE platform.

J2EE APIs

- The following are the J2EE APIs that are to be used in J2EE applications.
  - **EJB API** - This API enables the fast, simplified distributed application development at enterprise level.
  - **JDBC API** – Enables the relational database accessibility for java applications.
  - **Servlet API** – Provides simple consistent mechanism to manage the application at web server level.

J2EE APIs(cont…)

- **JSP API -** Provides simple and fastest dynamic web page development.

- **JMS API** – Provides the mechanism for simple messaging services.

- **Java Transaction API** – An interface between transaction manager and the others involved in distributed transaction system.

- **Java Mail API** – Provides platform and protocol independent mailing services.

?