

Object Oriented Programming II (JAVA ADVANCED)

420-P33-SU

Course Objectives and Java EE

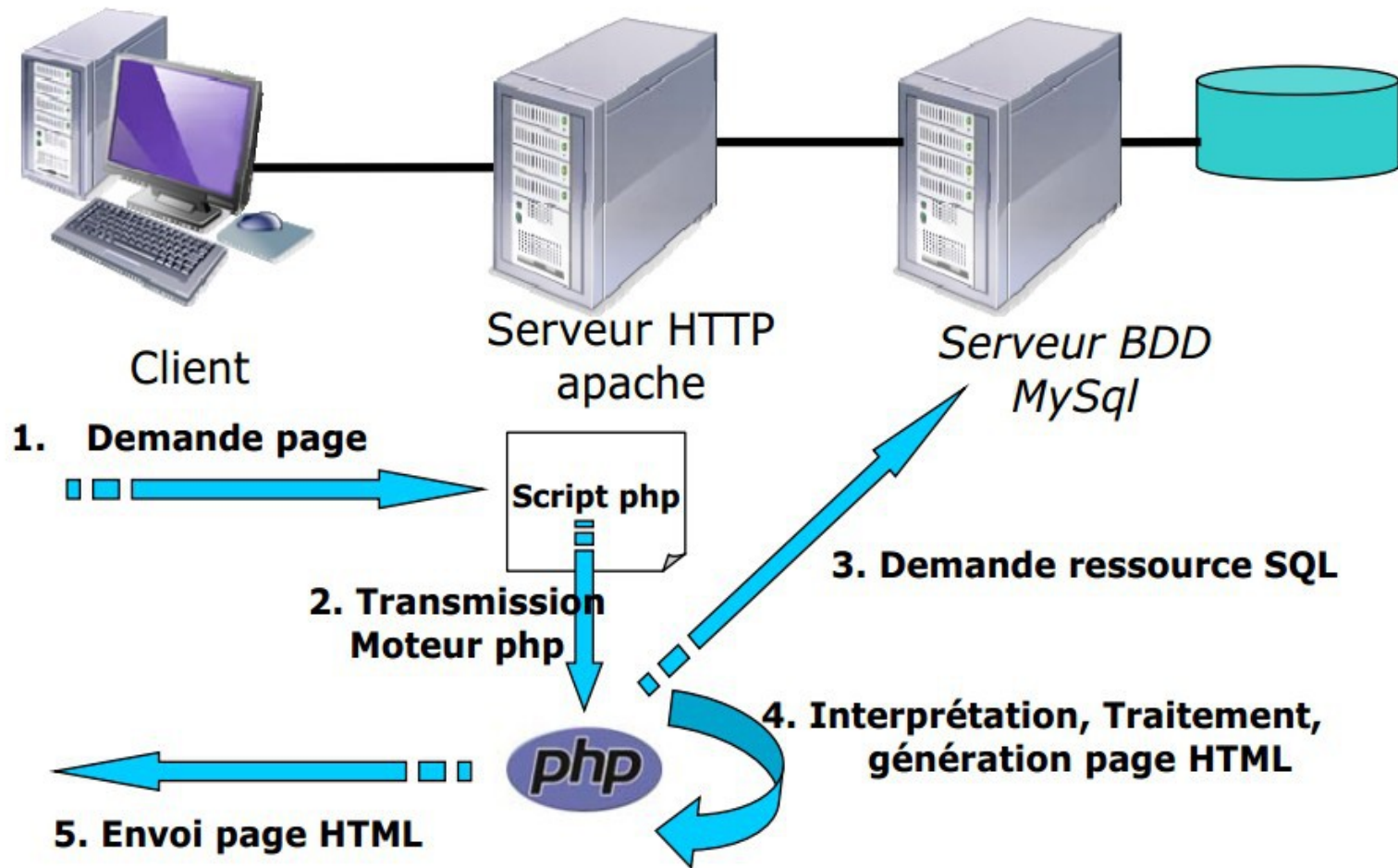
General Objectives

- ♦ Understand how a web application functions.
- ♦ Understand HTTP.
- ♦ Develop Servlets and JSP pages.
- ♦ Master the concepts of answer, query, cookie and session.
- ♦ Operate a database with JDBC
- ♦ Apply object oriented MVC design.

Course Objectives

- ♦ J2EE Architecture
- ♦ TP Group E-boutique
- ♦ Installation of the JDK, Tomcat, and Eclipse development environments.
- ♦ SQL Server MySql WorkBench
- ♦ Installation of TortoiseSVN / MySQLWorkBench
- ♦ Test Netquiz
- ♦ Test ExamViewer
- ♦ First “Hello World” application
- ♦ The HTTP protocol

Client - Server 3-TIER application PHP/MYSQL :

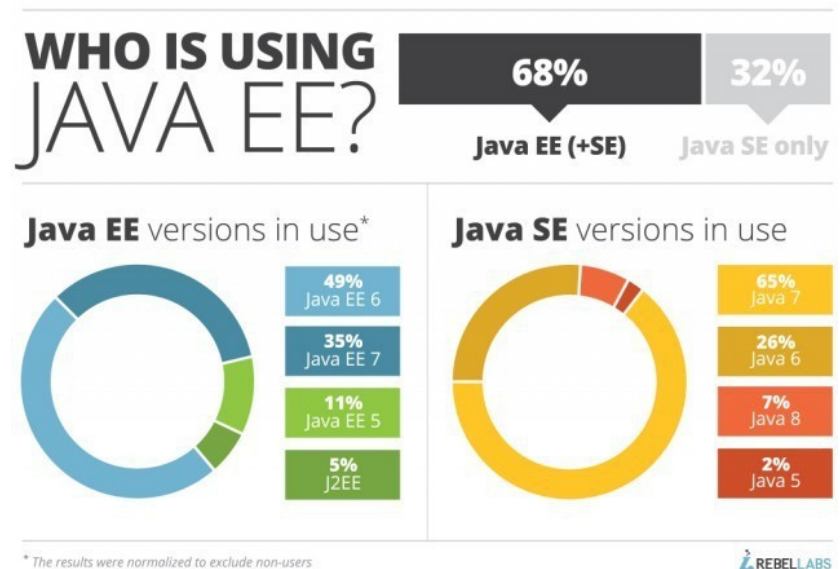


Java Enterprise Edition Architecture

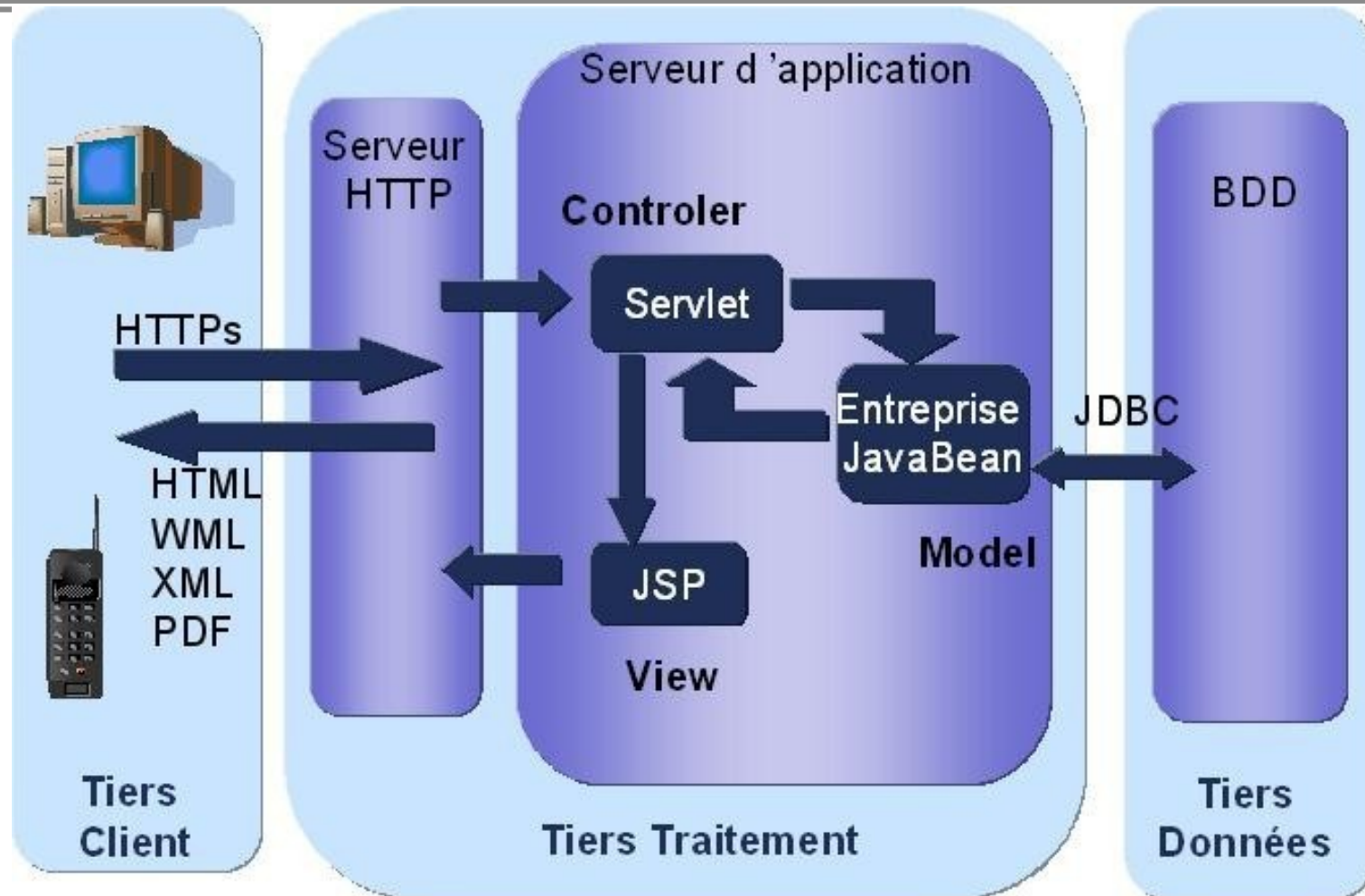
- ♦ A version of Java by **Sun** particularly directed at enterprise applications.
 - / MVC Development model (Model - View - Controller)
 - / Set of services (JDBC , XML)
 - / Object containers (Servlet, EJB)

Java EE complements Java SE with additional software libraries specifically dedicated to professional application development.

- ♦ Past Versions:
 - / J2EE was published in 1999
 - / 3. appeared in 2001
 - / 4. in 2003 (support XML & services Web)
 - / 5. in 2007 (renamed Java EE 5)
 - / 6. and 20(Java EE 6)
 - / 7. Java EE 7
 - / 2014 Java EE 8 uses JRE 1.8



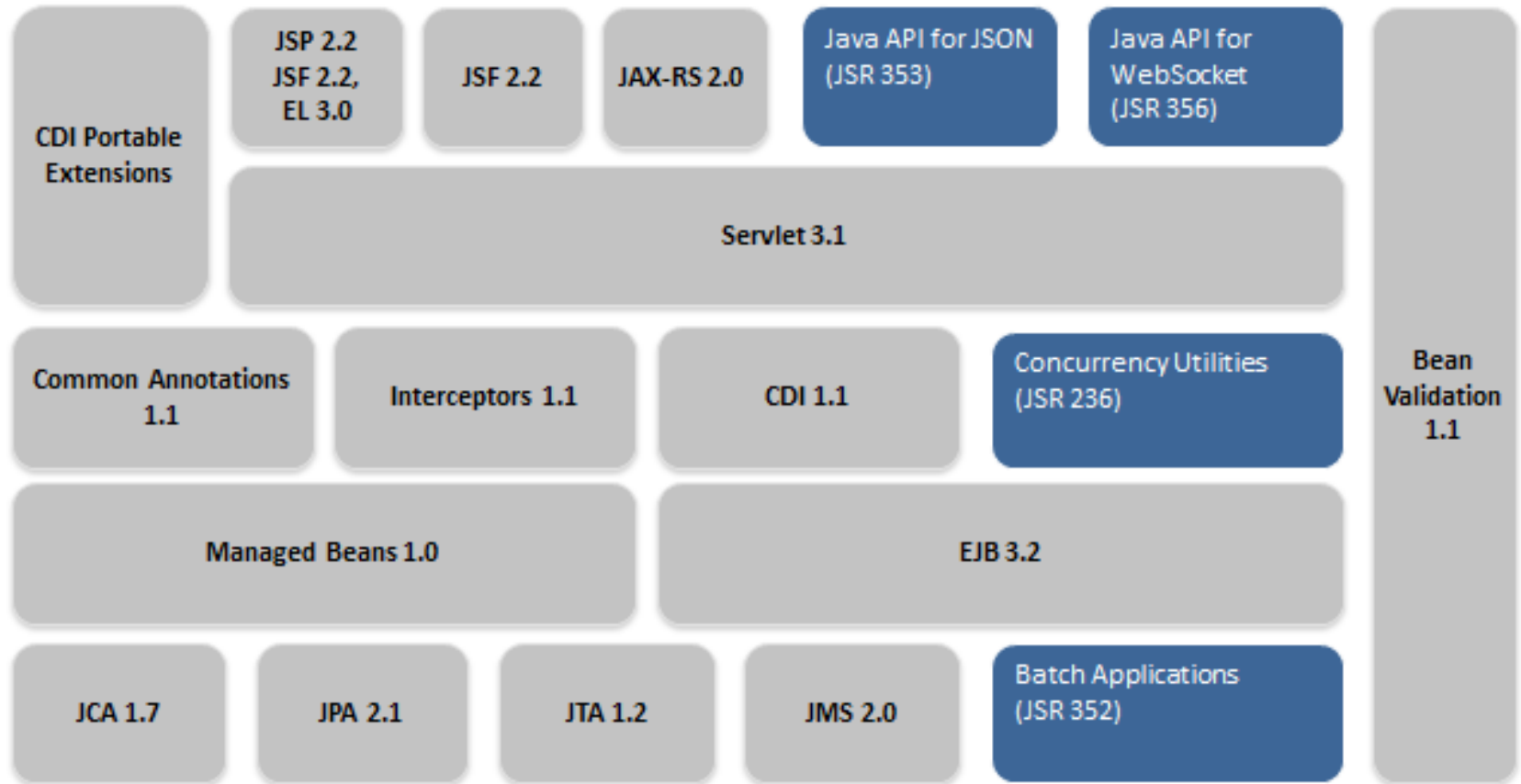
Java Enterprise Edition Architecture



3 Tier Model

General Principle of Operation :

- ♦ 1 : Send a HTTP request to a servlet.
- ♦ 2 : Interpreting the request by the servlet and redirect it to the EJB or JavaBean.
- ♦ 3 : Processing the request with or without access to the database.
- ♦ 4 : Return the result to the servlet.
- ♦ 5 : Redirect the result to a JSP (Java Server Pages)
- ♦ 6 : Return the response to the Client.



The Programming Interfaces that compose Java Enterprise Edition

- ♦ **Servlet** : represents the Controller (“C”) of the MVC paradigm.
- ♦ **Portlet** : Web Container (Servlet API Extension)
- ♦ **Java Server Pages (JSP)** : Web Framework
- ♦ **Java Standard Tag Library (JSTL)** : Tag library for Java Server Pages.
- ♦ **Java Server Faces (JSF)** : Java Server Face, Web Framework
- ♦ **Enterprise JavaBean (EJB)** : Distributed Transitional Components
- ♦ **Java Database Connectivity (JDBC)** : Database Connection API
- ♦ **Java Message Service (JMS)** : Asynchronous Message Communication API
- ♦ **JavaMail** : Email management API
- ♦ **JPA** : Data Persistence Management API

JEE Servers

Server :

- ♦ JBoss : JEE certified
- ♦ Glassfish : JEE reference implementation (Sun)
- ♦ JOnAS : **J**ava **O**pen **A**pplication **S**erver
- ♦ WebSphere : JEE certified
- ♦ WebLogic : JEE certified
- ♦ Géronimo
- ♦ Apache



GlassFish



Web Containers

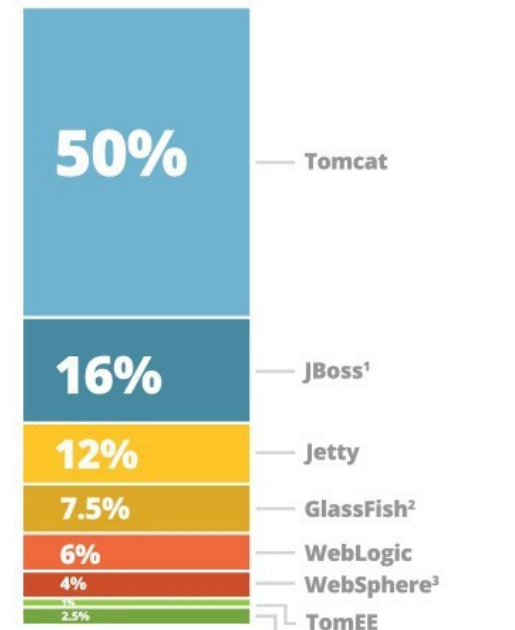
- ♦ Tomcat
- ♦ Jetty



Very strong competition

from 2014

App Server most often used*



¹ Includes WildFly and JBoss EAP

² Includes both GlassFish Server and Open Source editions

³ Includes Liberty Profile

Installation, Eclipse, Tomcat

- ♦ **JDK - Java Development Kit (Remember JVM)**
- ♦ **Tomcat (Application Server or Web Container)**
- ♦ **Eclipse**

- ♦ **Add environment variables:**

JAVA_HOME absolute path of Java Development Kit (JDK)

C:\Program Files (x86)\Java\jdk1.7.0 Path (might be sufficient)

C:\Program Files\Java\jdk1.7.0\bin

CATALINA_HOME absolute path of TomCat installation (if you are not using Eclipse to run TomCat)

C:\apache-tomcat-7.0.42 your installation directory

- ♦ **Path for testing the installation of TomCat :** (if you aren't using Eclipse to run TomCat)

<http://localhost:8080/index.jsp>

Hello World !!!

- ◆ In WebContent create a page hello.html
- ◆ Run the Dynamic Web Project on TomCat
- ◆ Configure the web.xml

XML Configuration

- ♦ 2 Files :
 - / server.xml -» server configuration
 - v In Eclipse
 - v On the Web Server
 - / web-»project configuration
 - v In eclipse

Web.xml context configuration

```
< ?xml lversion= "1.0" encoding= "U TF-8"?>
< web-app
xm lns:xsi= "http://w w w .w 3.org/2001/XM LSchema-
instance" xm lns= "http://xm lns.jcp.org/xm
l/ns/javaee" xsi:schem aLocation= "http://xm
lns.jcp.org/xm l/ns/javaee http://xm lns.jcp.org/xm
l/ns/javaee/web-app_3_1.xsd" id= "WebApp_ID "
version= "3.1" >
< display-name > test < /display-name >
< welcome-file-list>
< welcome-file> myPageToLaunch.html
< /welcome-file>
< /welcome-file-list>
< /web-app>
```