

# Introduction to Java EE

Java Platform, Java EE, Servlets, JSP



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sli.do

#java-web



# Java Platform

## The Big Picture

# Java - The Big Picture

- The **Java Technology** is both a **programming language** and a **platform**
- The **Java programming language**:
  - Object-oriented
  - C-like syntax
- The **Java platform**:
  - Environment
  - Where Java applications run





# Java - The Big Picture (2)

- There are 4 Java platforms:

Java SE  
(Standard Edition)

Java ME  
(Micro Edition)

Java FX  
(Effects)

Java EE  
(Enterprise Edition)

# Java - The Big Picture (3)

- Each Java platform:
  - Provides a JVM & an API
  - Runs applications on any compatible system
  - Is completely independent
  - Provides all of the advantages of the Java programming language

Java SE

Java ME

Java FX

Java EE



# Java Enterprise Edition

Diving into the depths of Java EE



# Java Platform, Enterprise Edition

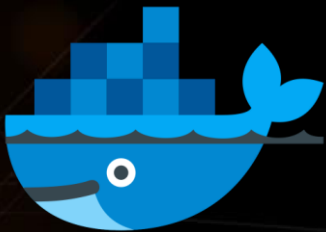
- Java EE
  - Formerly (J2EE), Currently Jakarta EE
  - A set of specifications extending Java SE
- Defined by its specification
  - Defines APIs and their interactions
- Used in various contexts, including:
  - E-commerce, Accounting, Banking Systems, etc.



# Java EE vs Java SE

## ■ Java SE

- Provides APIs to handle collections
- JVM is the container for Applications
- The container provides lower-level services



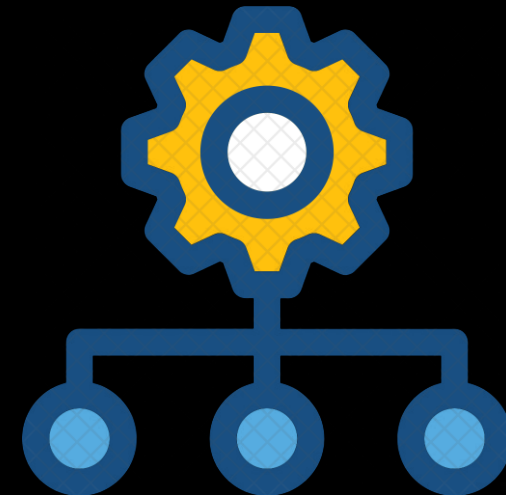
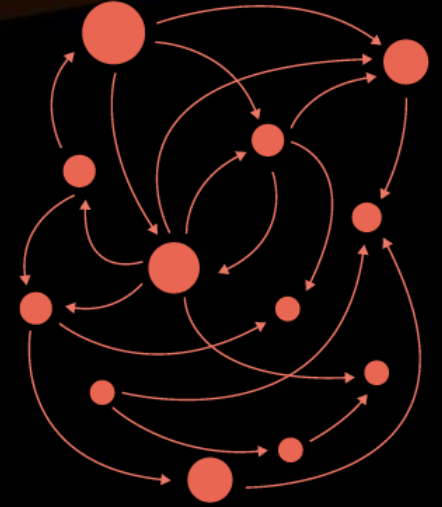
## ■ Java EE

- Provides APIs to handle transactions, persistence, security, messaging, etc.
- Applications are ran on a specific container
- The container provides higher-level services

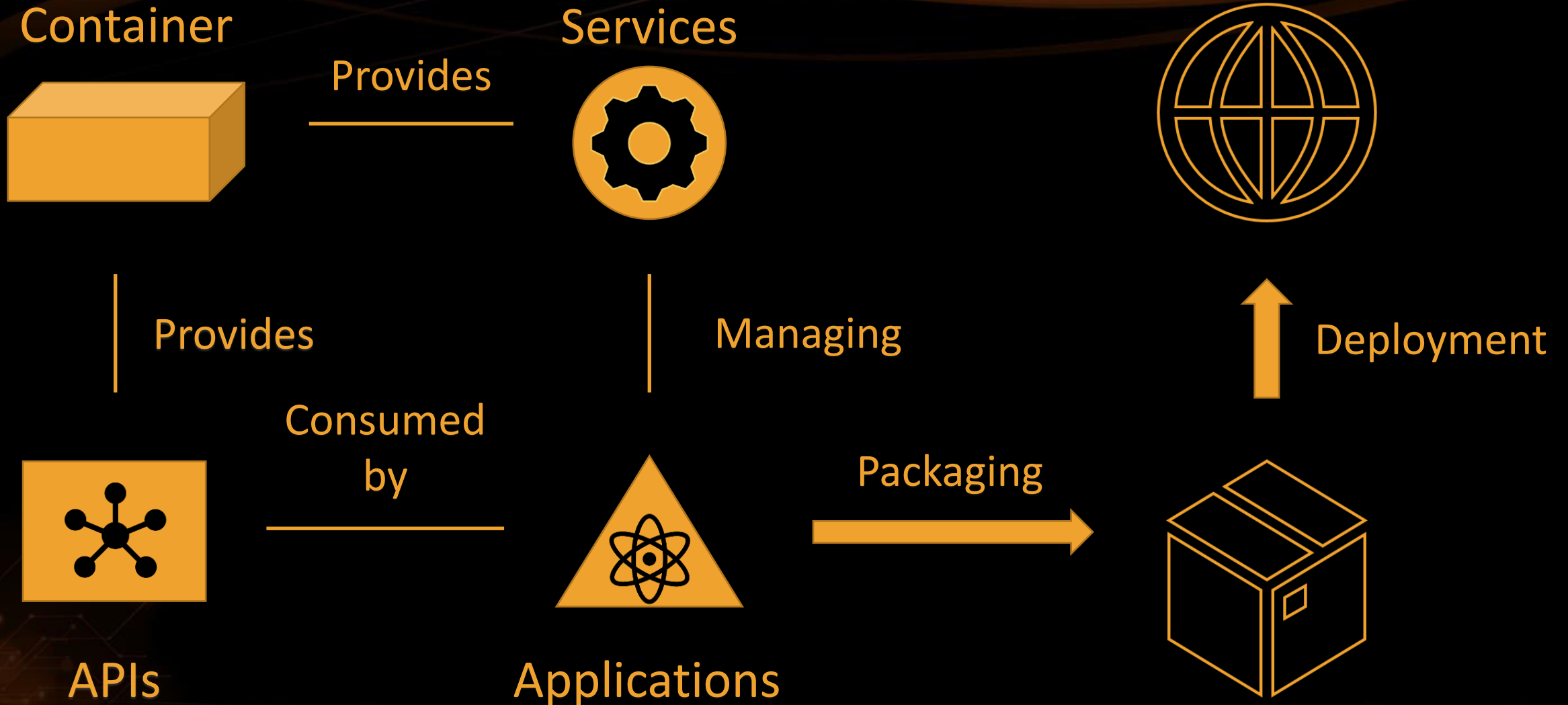


# Java EE simplifies

- Enterprise Applications:
  - Have powerful functionalities
  - Tend to be heavy and complex
- Java EE reduces complexity
  - Provides a programming model
  - Provides a Runtime environment
  - Provides various APIs



# Java EE Architecture



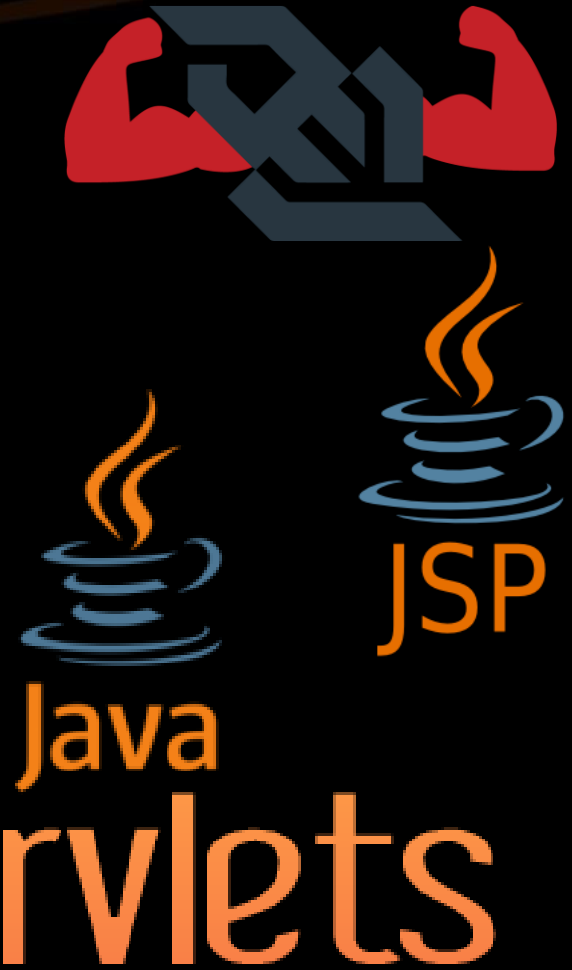
# Apache Tomcat





# What is a Apache Tomcat?

- Open-source Java Servlet Container
  - Developed by the Apache Software Foundation
  - Implements Java Servlet, JSP, Java EL, WebSockets
  - Provides a pure Java HTTP Server



# Tomcat Setup

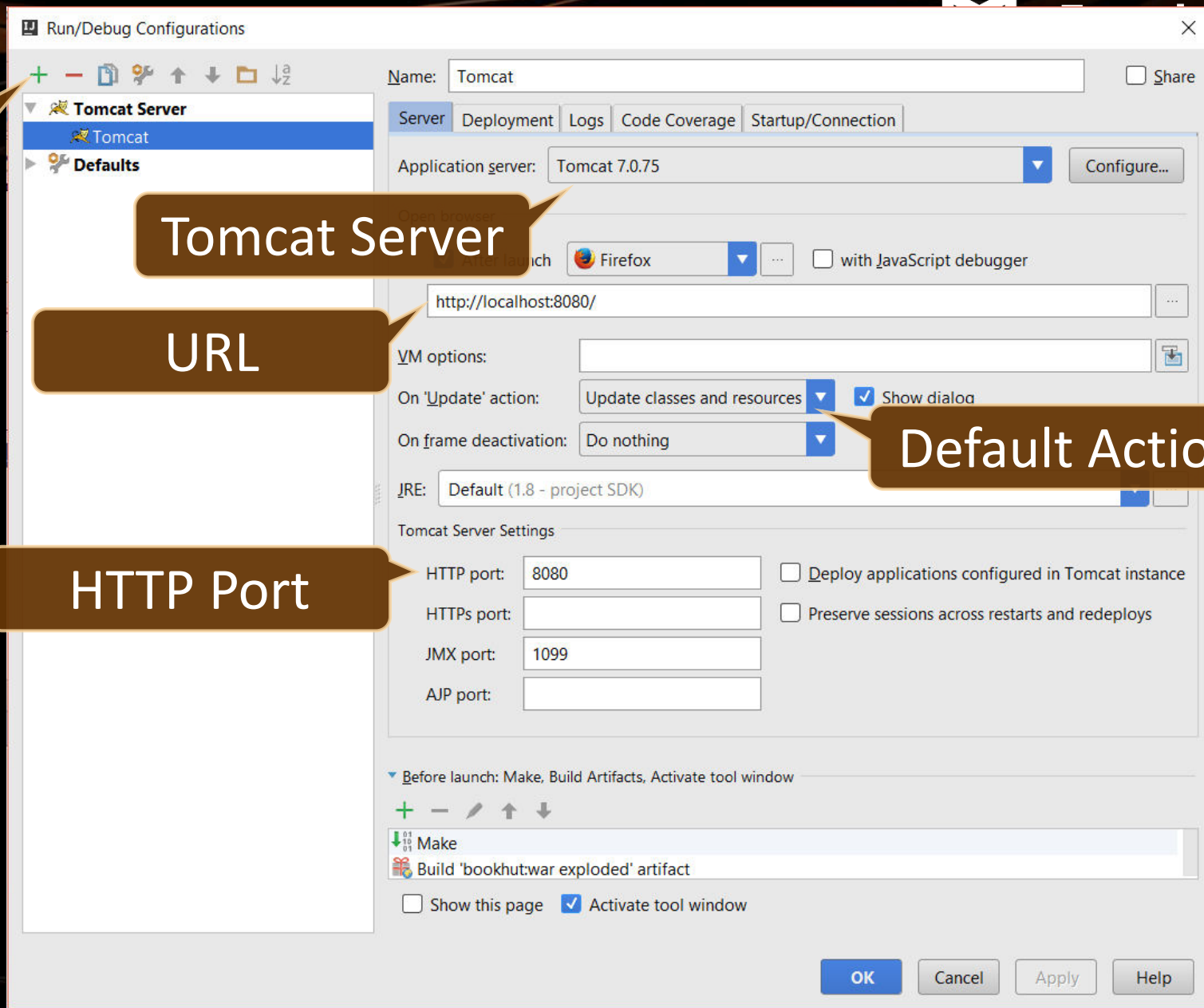
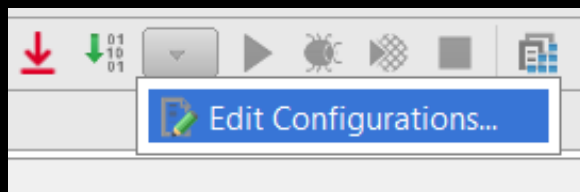
Add Tomcat

Tomcat Server

URL

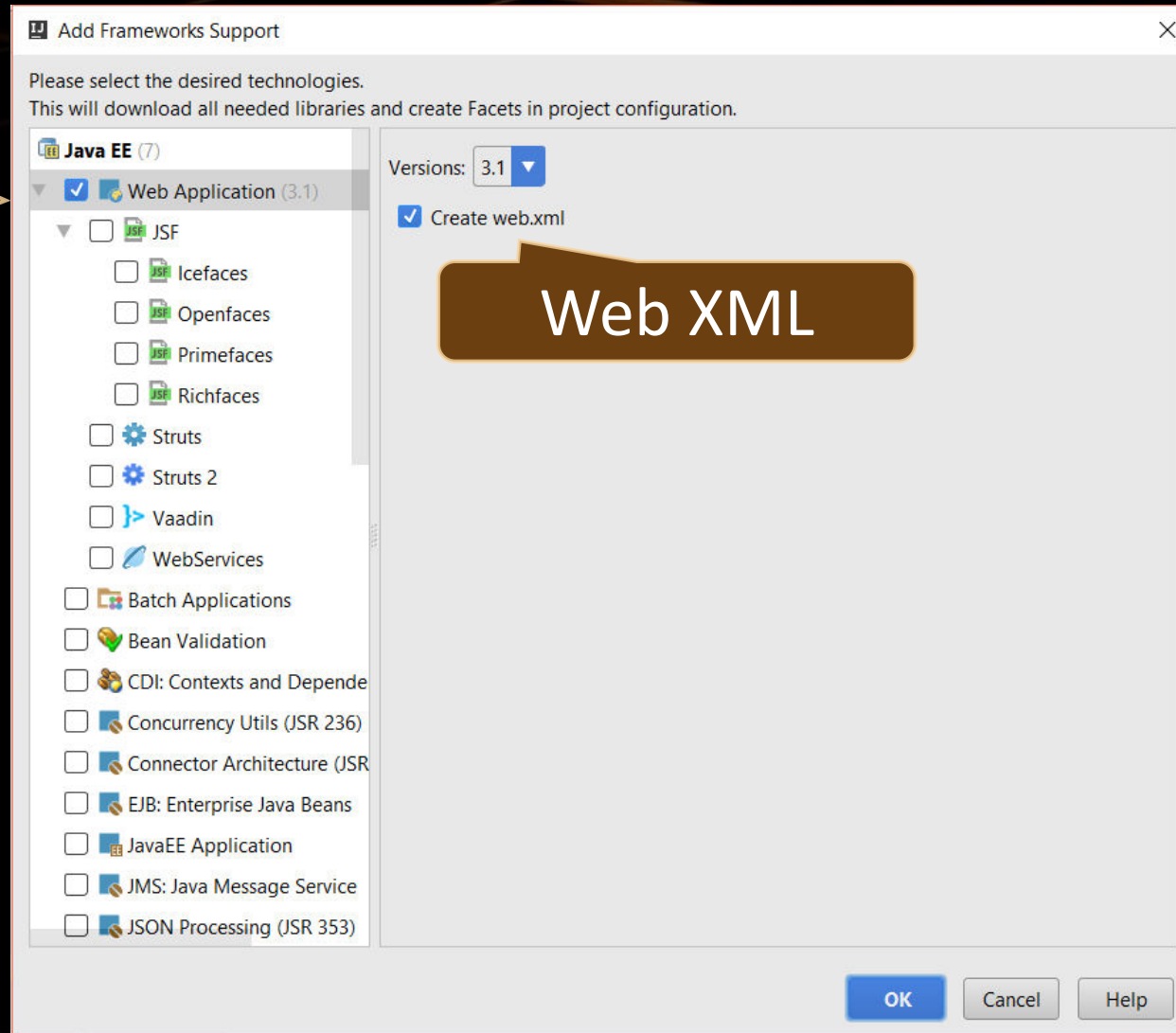
Default Action

HTTP Port



# Java EE Support

Web Support

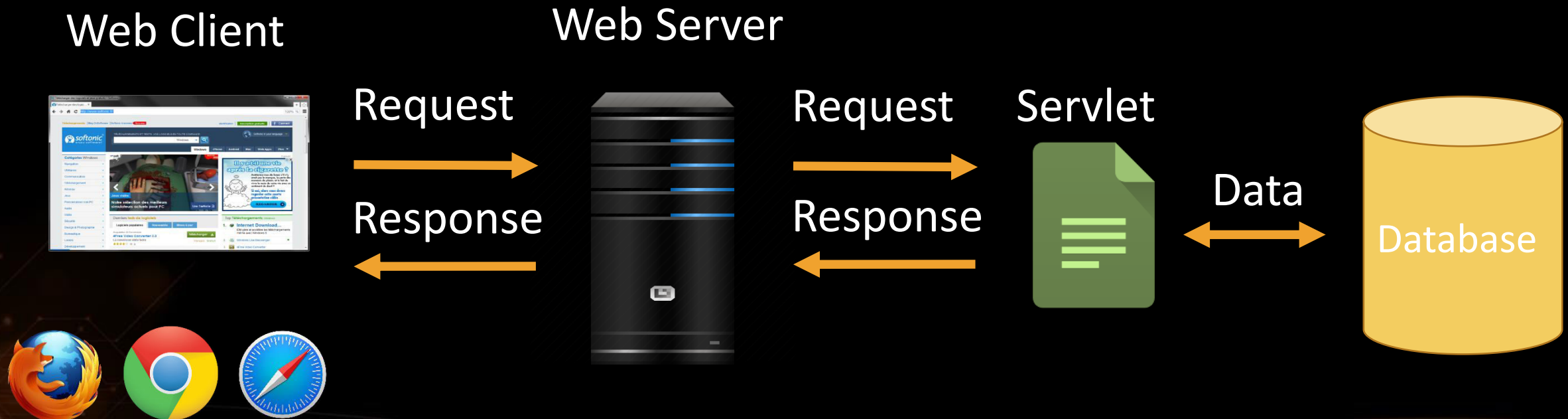




# Java Servlets

# Java Servlets

- Programs that run on a **Web/Application** server
  - Extend the capabilities of a Server
  - Able to respond to any type of request

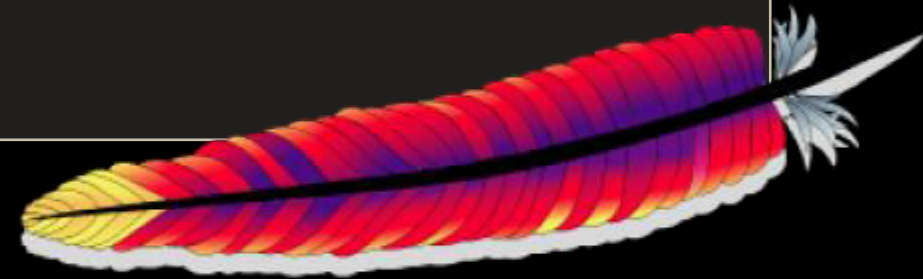




# Maven Dependencies

pom.xml

```
<dependency>  
  <groupId>javax</groupId>  
  <artifactId>javaee-api</artifactId>  
  <version>8.0</version>  
</dependency>
```



# Servlet Example

URL pattern

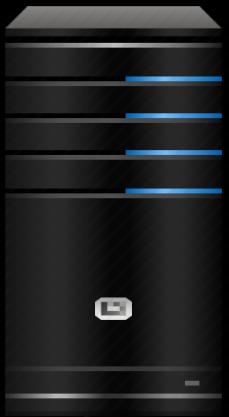
Servlet.java

```
@WebServlet("/home")
public class Servlet extends HttpServlet {
    protected void doPost(HttpServletRequest request,
                           HttpServletResponse response)
                           throws ServletException, IOException {
        Handle
        Post requests
    }

    protected void doGet(HttpServletRequest request,
                          HttpServletResponse response)
                          throws ServletException, IOException {
        Handle
        Get requests
    }
}
```

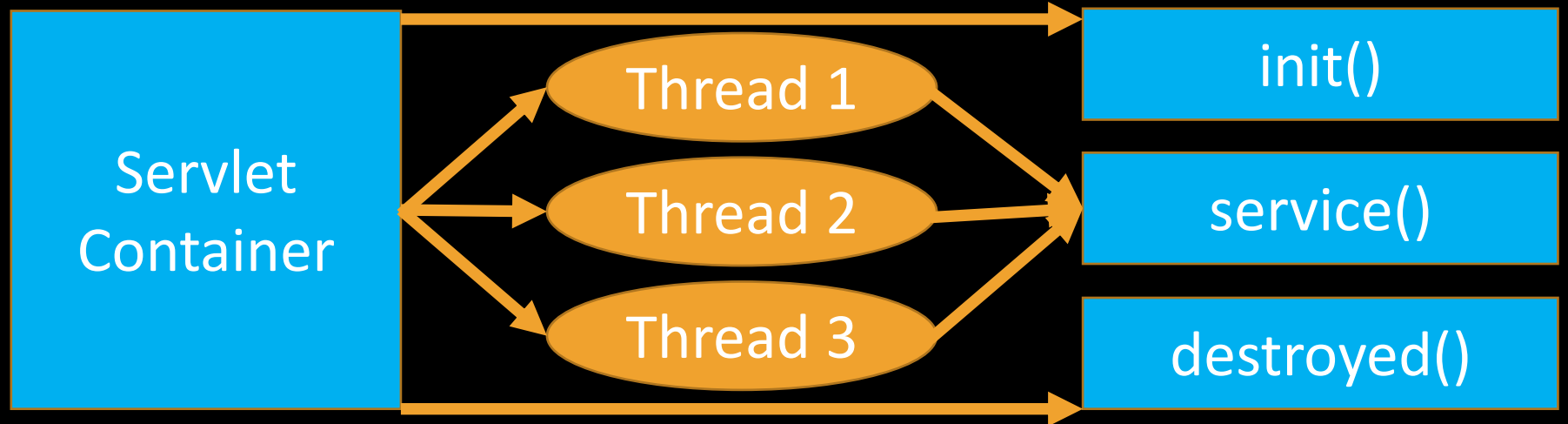
# Servlet Lifecycle

Web Server



Requests

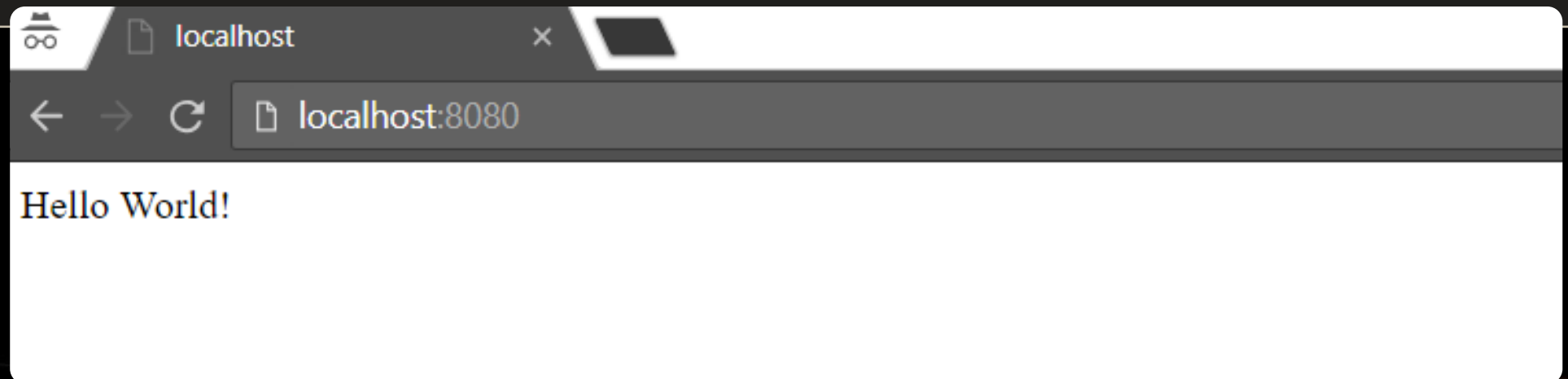
Java Virtual Machine



# Hello World!

## Servlet.java

```
@WebServlet("/header")
public class Servlet extends HttpServlet {
    protected void doGet(...) {
        PrintWriter out = response.getWriter();
        out.println("Hello World!");
    }
}
```



# Read Parameter

## Servlet.java

```
@WebServlet("/param")
public class Servlet extends HttpServlet {
    protected void doGet(...) {
        PrintWriter out = response.getWriter();
        String name = request.getParameter("name");
        out.println("Param:" + name);
    }
}
```

Param name

http://localho...etsAreAwesome X

Param name



localhost:8080/param?name=ServletsAreAwesome

Param:ServletsAreAwesome



# Redirect

## Servlet.java

```
@WebServlet("/form")
public class Servlet extends HttpServlet {
    protected void doGet(...) {
        response.sendRedirect("/home");
    }
}
```

Redirect to /home

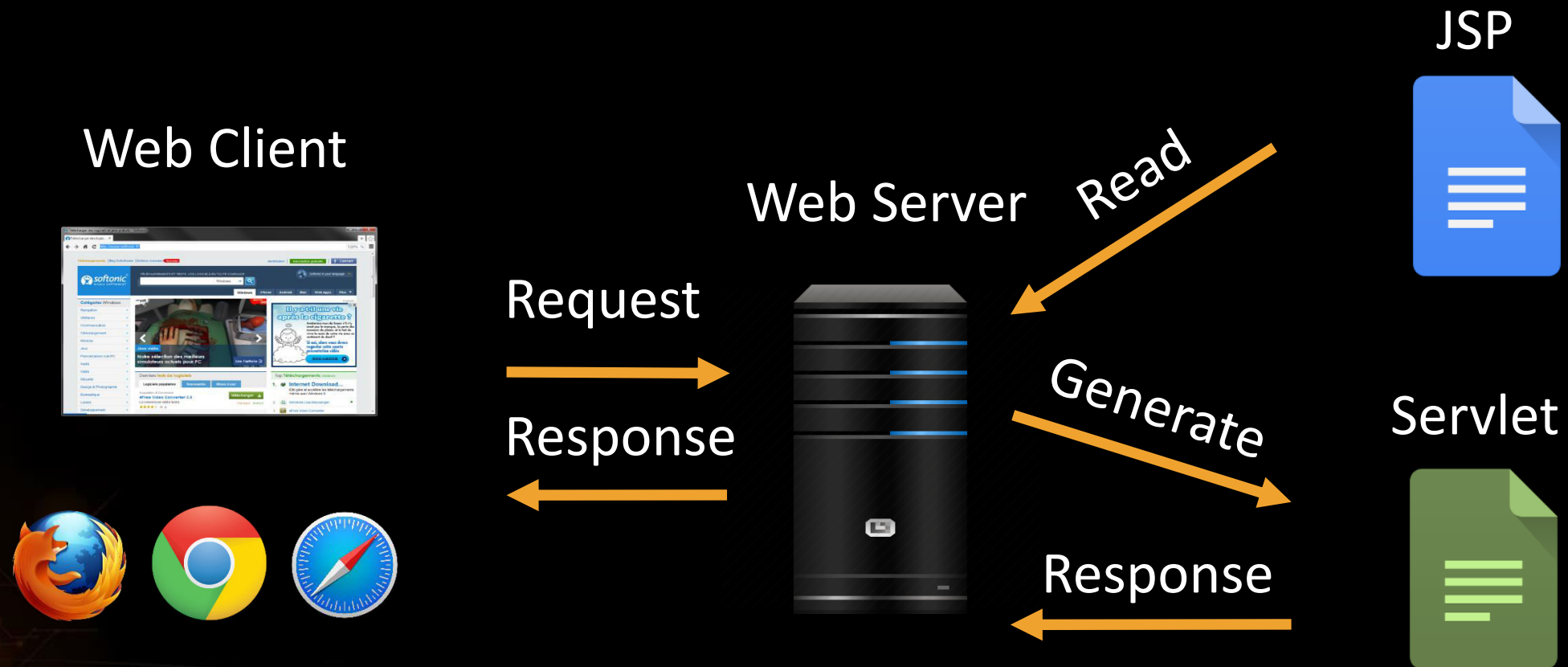
Status	Method	File	Domain	Cause
▲ 302	GET	form	localhost:8080	JS document
● 200	GET	home	localhost:8080	document
○ 200	GET	home.css	localhost:8080	stylesheet

# JSPs



# JSP

- Technology for developing web pages that support **dynamic content**



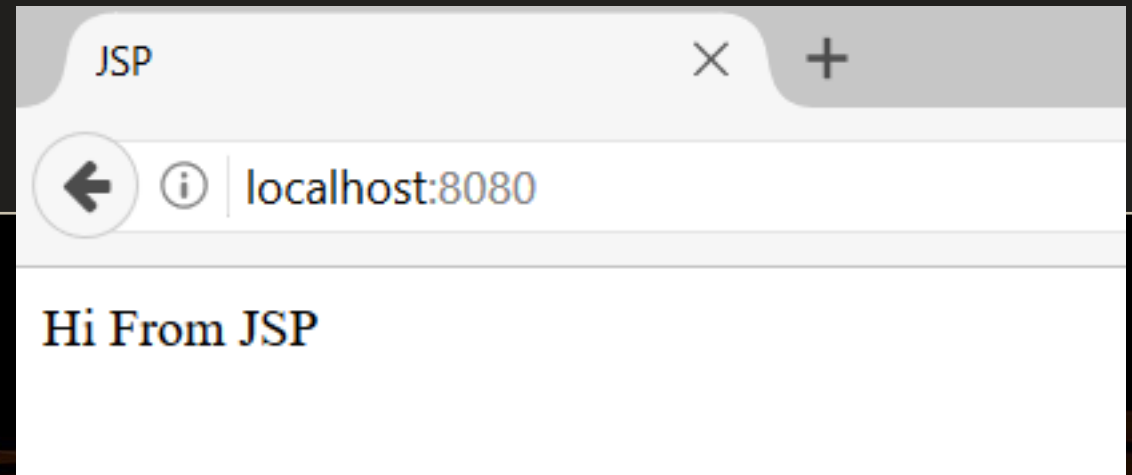
# JSP Example

index.jsp

```
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
  <head>
    <title>JSP</title>
  </head>
  <body>
    <%= new String("Hi From JSP")%>
  </body>
</html>
```

Page Directive

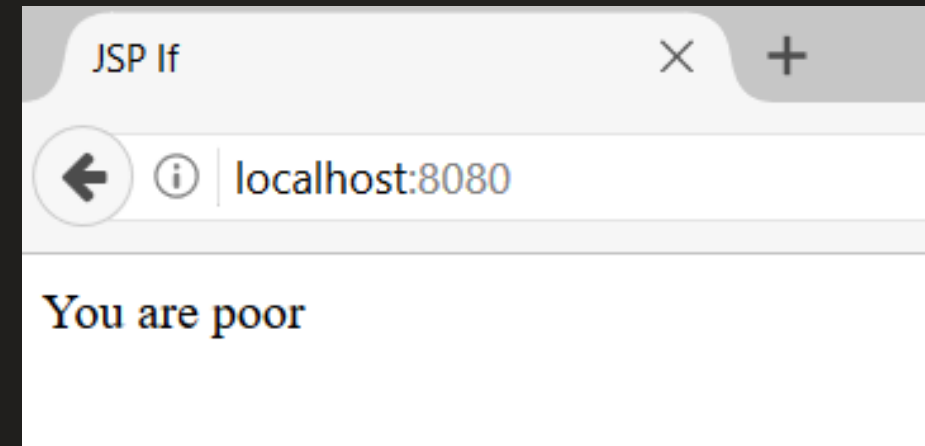
Java Code



# JSP Conditional Statement

index.jsp

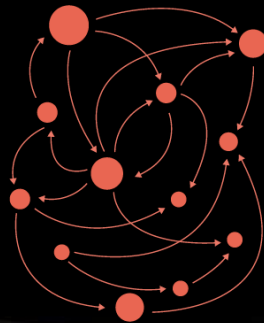
```
<%@ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
  <body>
    <%! int readBooks = 3;%>
    <% if(readBooks < 20) {%>
      <%= new String("You are poor")%>
    <%} else {%>
      <%= new String("You are rich")%>
    <%}%>
  </body>
</html>
```





# Summary

- The **Java Technology**:
  - A platform and a programming language
- **Java EE – The Big Picture**:
  - The Java EE Architecture
  - What are Servlets?
  - What are JSPs?



# Java Web Dev Basics – Introduction to Java EE



Questions?



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