

Chapter– 1

CHSPRING BOOT AND SPRING SECURITY- MOTHERSON

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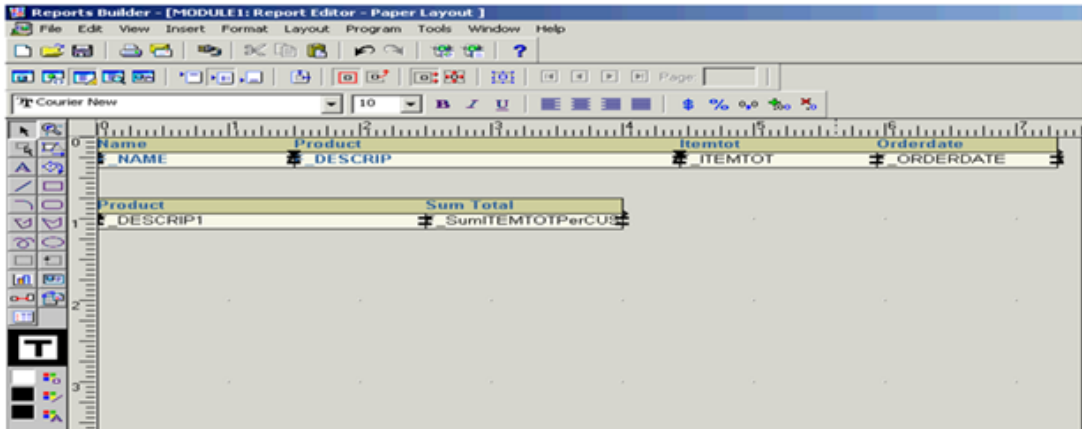
Founded in 1975, Motherson is one of the world's leading auto component makers, supplying to OEMs globally from over 270 facilities in 41 countries spread across five continents with over 135,000 employees. Motherson enjoys a market leadership position across its product verticals. Within the automotive industry, it is one of the largest global manufacturers of exterior rearview mirrors, wiring harnesses and polymer modules and has a diversified industry-leading portfolio of auto ancillary products and services that make it a full system solutions provider for its customers across the globe. Driven by technology and innovation, Motherson connects these attributes with creativity, employee participation and performance excellence to create world class products, services and solutions for its customers globally. Motherson believes its employees are its partners in progress, its biggest asset. The organisation nurtures an environment wherein employees thrive as dynamic professionals and individuals. The organisation is responsive to the professional aspirations of its employees and provides them with a plethora of growth opportunities, allowing them to grow and evolve professionally and spearhead strategic positions within the organization.

BUSINESS DIVISIONS

Motherson Group serves its customers with multiple products and services through its ten business divisions. With the support of the customers, these divisions continue to grow stronger and become more diverse and help Motherson move closer to its Vision of being a globally preferred sustainable solutions provider. The three major divisions of the group are Wiring Harness, Vision Systems and Modules and Polymer Products which contribute more than ninety-five percent to the group revenues.

ORACLE REPORTS

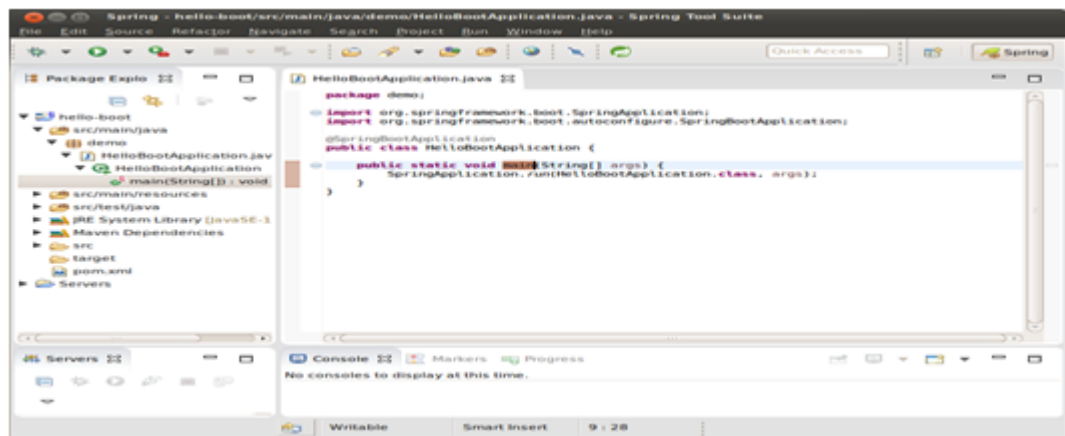
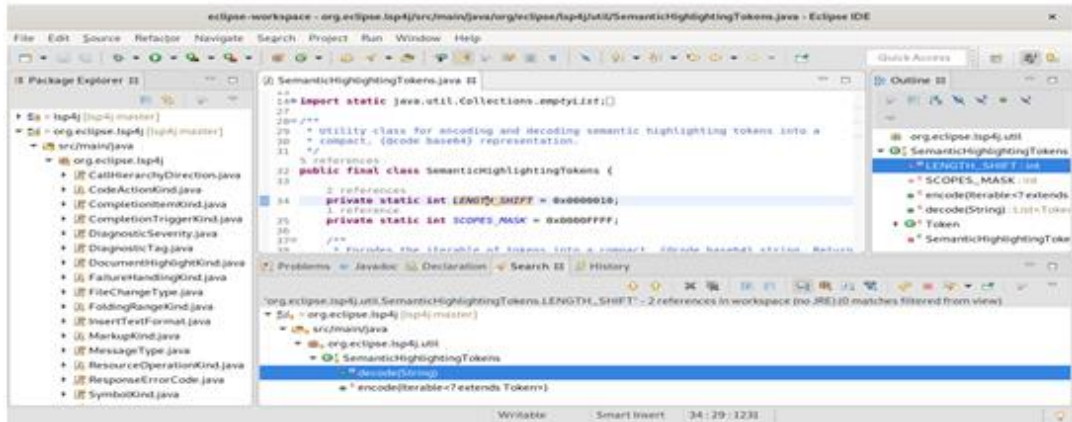
We were also trained in building Oracle Reports. These also follow a PL/SQL procedure. We learnt how to design and build a variety of standard and custom Web and paper reports using Oracle Reports Developer. Working in the declarative environment of Reports Builder, participants learn how to retrieve, display, and format data from any data source in numerous reporting styles and publish the output to any destination. There are two types of layout in Reports Builder Software; Web Layout and Paper Layout. Paper Layout is the more preferred one.



ECLIPSE IDE



The Eclipse IDE is famous for our Java Integrated Development Environment (IDE), but we have a number of pretty cool IDEs, including our C/C++ IDE, JavaScript/TypeScript IDE, PHP IDE, and more.



JDK 1.8

The JDK is a development environment for building applications using the Java programming language.

After downloading JDK 1.8 and installing it on the system, it needs to be registered in the **IDE as follows**:

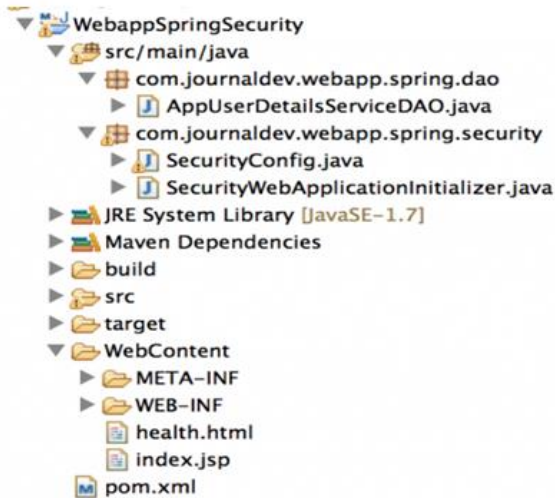
1. In the IDE, choose Tools > Java Platforms from the main menu.
2. Click Add Platform in the Java Platform Manager dialog.
3. In the Add Java Platform dialog, select Java Standard Edition and click next.
4. Specify the directory that contains the JDK and click next.

OTHER TOOLS USED:

- XAMPP Web server
- POSTMAN

We created a web application and integrated it with Spring Security.

We created a web application using “Dynamic Web Project” option in Eclipse, so that our skeleton web application is ready. Make sure to convert it to maven project because we are using Maven for build and deployment.



The application structure looked as shown above.

We looked into three spring security authentication methods.

1. **in-memory**
2. **DAO**
3. **JDBC**

For JDBC, we used MySQL database and have following script executed to create the user details tables.

```
CREATE TABLE `Employees` (`username` varchar(20) NOT NULL DEFAULT "",  
`password` varchar(20) NOT NULL DEFAULT "", `enabled` tinyint(1) NOT NULL  
DEFAULT '1', PRIMARY KEY (`username`) ) ENGINE=InnoDB DEFAULT  
CHARSET=utf8;
```

```
CREATE TABLE `Roles`(`username`varchar(20) NOT NULL DEFAULT "",`role`  
varchar(20) NOT NULL DEFAULT "",PRIMARY KEY (`username`,`role`))  
ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
INSERT INTO `Employees` (`username`, `password`, `enabled`)VALUES ('pankaj',  
'pankaj123', 1);INSERT INTO `Roles` (`username`, `role`)VALUES ('pankaj', 'Admin'),  
( 'pankaj', 'CEO'); commit;
```

Spring Security Maven Dependencies

This was our final pom.xml file.

```
<project xmlns="https://maven.apache.org/POM/4.0.0"  
xmlns:xsi="https://www.w3.org/2001/XMLSchema-instance"  
xsi:schemaLocation="https://maven.apache.org/POM/4.0.0  
https://maven.apache.org/xsd/maven-4.0.0.xsd">  
<modelVersion>4.0.0</modelVersion>  
<groupId>WebappSpringSecurity</groupId>  
<artifactId>WebappSpringSecurity</artifactId>  
<version>0.0.1-SNAPSHOT</version>  
<packaging>war</packaging>  
<dependencies>  
<!-- Spring Security Artifacts - START -->  
<dependency>  
<groupId>org.springframework.security</groupId>  
<artifactId>spring-security-web</artifactId>  
<version>3.2.3.RELEASE</version>  
</dependency>  
<dependency>  
<groupId>org.springframework.security</groupId>  
<artifactId>spring-security-config</artifactId>  
<version>3.2.3.RELEASE</version>  
</dependency>  
<dependency>  
<groupId>org.springframework.security</groupId>  
<artifactId>spring-security-taglibs</artifactId>  
<version>3.0.5.RELEASE</version>  
</dependency>  
<!-- Spring Security Artifacts - END -->
```

```
<dependency>
<groupId>javax.servlet</groupId>
<artifactId>jstl</artifactId>
<version>1.2</version>
<scope>compile</scope>
</dependency>
<dependency>
<groupId>javax.servlet.jsp</groupId>
<artifactId>jsp-api</artifactId>
<version>2.1</version>
<scope>provided</scope>
</dependency>
<dependency>
<groupId>javax.servlet</groupId>
<artifactId>javax.servlet-api</artifactId>
<version>3.0.1</version>
<scope>provided</scope>
</dependency>
<dependency>
<groupId>commons-logging</groupId>
<artifactId>commons-logging</artifactId>
<version>1.1.1</version>
</dependency>
<dependency>
<groupId>org.springframework</groupId>
<artifactId>spring-jdbc</artifactId>
<version>4.0.2.RELEASE</version>
</dependency>
</dependencies>
<build>
<sourceDirectory>src</sourceDirectory>
```

```
<plugins>
<plugin>
<artifactId>maven-compiler-plugin</artifactId>
<version>3.1</version>
<configuration>
<source>1.7</source>
<target>1.7</target>
</configuration>
</plugin>
<plugin>
<artifactId>maven-war-plugin</artifactId>
<version>2.3</version>
<configuration>
<warSourceDirectory>WebContent</warSourceDirectory>
<failOnMissingWebXml>>false</failOnMissingWebXml>
</configuration>
</plugin>
</plugins>
</build>
</project>
```

We have following dependencies related to Spring Framework.

1. **Spring-jdbc:** This is used for JDBC operations by JDBC authentication method. It requires DataSource setup as JNDI.
2. **Spring-security-taglibs:** Spring Security tag library, I have used it to display user roles in the JSP page. Most of the times, you won't need it though.
3. **Spring-security-config:** It is used for configuring the authentication providers, whether to use JDBC, DAO, LDAP etc.
4. **Spring-security-web:** This component integrates the Spring Security to the Servlet API. We needed it to plugin our security configuration in web application.

We used Servlet API 3.0 feature to add listener and filters through programmatically, that's why servlet api version in dependencies should be 3.0 or higher.

Spring Security View Pages

We have JSP and HTML pages in our application. We wanted to apply authentication in all the pages other than HTML pages.

health.html

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Health Check</title>
</head>
<body>
  <h3>Service is up and running!!</h3>
</body>
</html>
```

index.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<%@ taglib uri="https://java.sun.com/jsp/jstl/core" prefix="c" %>
<%@ taglib uri="https://www.springframework.org/security/tags" prefix="sec" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "https://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Home Page</title>
</head>
<body>
<h3>Home Page</h3>

  <p>
    Hello <b><c:out value="${pageContext.request.remoteUser}"/></b><br>
    Roles: <b><sec:authentication property="principal.authorities" /></b>
  </p>

  <form action="logout" method="post">
    <input type="submit" value="Logout" />
    <input type="hidden" name="${_csrf.parameterName}" value="${_csrf.token}"/>
  </form>
</body>
</html>
```

CONCLUSION

My experience with the company during the internship was very good. I gained a new sense of professionalism and a clearer view of what it meant to be in the professional world. I would like to also mention that the Company's team - true professionals with enormous experience, but at the same time very benevolent, open

and ready to help at any minute. Thanks to the friendly atmosphere at MIND, the internship exceeded all my expectations. I want to express my sincere gratitude to the whole team that worked with me and guided me. I am very glad for the opportunity to be part of MotherSon group!

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- *OracleReports:* https://docs.oracle.com/middleware/11119/classic/use-reports/pbr_intro001.htm
- *Eclipse IDE:* <https://www.eclipse.org/ide/>
- *JDK 1.8:* <https://www.oracle.com/in/java/technologies/javase/javase8-archive-downloads.html>
- *Maven 3.2:* <https://maven.apache.org/download.cgi>
- *Spring Tool Suite:* <https://spring.io/tools>
- *XAMPP/POSTMAN:* <https://www.apachefriends.org/download.html>/<https://www.postman.com/downloads/>