**Lab 1 [Explain App, Modernize Runtime and Explain Code Changes]**

**Build Project**

1. Open a terminal, and go to your project folder, and navigate to was\_dependency folder.
2. Once inside the folder, run the following command to build project:

mvn install:install-file -Dfile=was\_public.jar -DpomFile=was\_public-9.0.0.pom

**Explain Application**

1. Git clone the project from the repository.
2. Import the project into Eclipse:
   * In the package explorer, select import projects, and select Maven followed by selecting existing Maven projects
   * Browse to the project which you cloned from the git, click open and finish.
3. Once your IDE is setup, we will get an explanation of the entire project to understand what the app is doing.

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1. Once you click Explain Code, a new tab would open up and it will show the explanation of the entire application.

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**Modernize app runtime (traditional WebSphere to Liberty)**

1. Right click on the project, select watsonx Code Assistant for Enterprise Java Applications, then select Modernize to Liberty:

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1. After selecting modernize to liberty, following box should appear:

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1. Click select a migration bundle, and browse to your cloned project and select the file: migration-bundle/modresorts.ear\_migrationBundle.zip
   * That migration bundle has been generated by Transformation Advisor as a result of scanning the ModResorts application that was deployed to the traditional WebSphere Application Server environment. It contains configuration information for the application (the server.xml), and analysis that describes the issues that need to be addressed (the code changes that need to be made) in order for the application to run successfully on Liberty.
2. You should see the following screen after choosing the migration bundle:
   * The server.xml contains the configuration for the application. The Containerfile can be used to build a Liberty image of your application (outside the scope of this scenario)

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1. Click the button to add the files to the project. You should see the following panel:

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You will see 4 issues that must be fixed before the application can run successfully in Liberty. Three of the issues have auto fixes, and one issue has an assisted fix using the watsonx Code Assistant.

1. At this point BEFORE we actually fix the issues, it is interesting to take a look at the ModResorts application. Because we have the server.xml in place, the application can be run on Liberty, although we will expect that at least some functionality is broken because we have not yet addressed the issues.
   * Launch ModResorts from the Liberty Dashboard:

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1. Go to <http://localhost:9080/resorts.> You should see the ModResorts UI.
   * Let’s take a look at a part of the functionality that is broken. Click the “Logout” button. You should see an error:

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* + We see this exception because the logout is using a WebSphere API that is not supported on Liberty. Now we will go back to the list of issues in eclipse to fix that along with other issues.

1. In Eclipse in the Modernize project panel, click the **Run auto-fixes** button. They should complete in less than a minute.
2. Click the Build and refresh button. You should observe that the 3 issues with auto fixes now go away from the list:

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1. Now we will use watsonx Code Assistant to fix the remaining issue.
2. Due to limitation in private preview release, it is not easy to know which piece of code the issue relates to. To see this, you need to click on the **View analysis report** link. In the report, find the issue and click on **Show results** to reveal the file, method and line for the issue.

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1. Open the UpperServlet.java file in the IDE.
   * Select the entire class (beginning at “public class” and ending at the final enclosing “}” and click the **Help me** button.
2. The IDE will automatically switch to the chat window, and you will see that watsonx Code Assistant is working on the solution. After a couple of moments, you should get a code snippet returned:
   * The code snippet should contain a method (probably called **escapeHTML**) and a separate snippet that show you how to replace the current call to the **ResponseUtils** utility with the new method.
   * Add the new method to the class, and replace the call to **ResponseUtils** with a call to the new method as described.
   * **NOTE:** The solution should also return an alternative solution, which involves using the Apache Commons Text library to solve the problem. You may review that as an alternative, but no need to take any action on that in this scenario.

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1. After saving your work, go back to the **Modernize project** panel, and click **Build and refresh**. After a couple of moments, you should observe all the issues are fixed.

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1. You can now return the <http://localhost:9080/resorts> to see that the application is running (Note: if you previously stopped the server in Liberty Tools, you need to restart it at this point). Let’s look at the logout function now and verify that it works.
   * Click the logout button.
   * You should see a login page.
   * For ease of demo setup, security for the application is actually turned off. You can enter any credentials and click login.

**ModResorts is now a Liberty application!**

**Explain Code Changes:**

1. Before proceeding, it would be good to see what all changes have been made to the code, as they can later be included in the documentation or in the release notes
2. Right click on the project, click on watsonx code assistant for enterprise java applications and select explain code changes:

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1. In the console below, the code changes will show to explain all the changes that have been done to application as part of the modernization process

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