Plugins

What is a Plugin?

Maven Plugin is `the heart of the Maven framework`. A unit work in Maven or a single output is produced by a specific Maven Plugin. Some of the plugins are bound to some of the phases of Maven Build Lifecycles. But some are independent. Plugins do the works like `creating jar files, war files, compiling code, compiling unit test code, creating project documentation or JavaDoc (Java Documentation), and so on`. Almost any action that you can think of performing on a project is implemented as a Maven plugin.

Plugins run in the context of POM descriptions. The behaviors of a plugin can be customized by these descriptions. One of the simplest plugins in Maven is the clean plugin. The Maven Clean Plugin (maven-clean-plugin) is responsible for removing the target directory of a Maven project. When you run `mvn clean`, Maven executes the `clean goal` as defined in the clean plug-in, and the target directory is removed. The clean plugin defines a parameter that can be used to customize plugin behavior, this parameter is called outputDirectory and it defaults to ${project.build.directory} which is the `target directory`.

Goals in Maven can be executed `via the command-line interface` within the format specified below:

`mvn [plugin-name]:[goal-name]`. If you want to run both the clean phase and compiler plugin's compile goal, you should run the command `mvn clean compiler:compile`. Every plugin can have one or more goals. As mentioned above, these goals can be bound to different phases but they can also be run through different profiles. When a specific profile is triggered, the plugin can be executed.

All plugins should have the minimum requirement of having the `groupId, artifactId, and version` elements. Maven's core plugins comprise 9 different plugins which are clean, compiler, deploy, failsafe, install, resources, site, surefire, and verifier. To be able to see the list of plugins, you should visit Maven's plugin site. You can reach the details of a specific plugin by clicking on the name of the plugin on the website.

Types of Plugins

There are two types of plugins:

These are `Build Plugins` and `Reporting Plugins`. Build plugins are configured under `<build>` tag and run during the build time. Whereas Reporting Plugins are configured under `<reporting>` tag and run while you are generating the site for the project.

Maven plugins (build and reporting) are configured by specifying a `<configuration>` element where the child elements are mapped to fields, or setters, inside the code of a plugin.