



Apache ANT

A Java-based build tool



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Introduction

- The process of creating a software product involves much more than design and development
- In order to accomplish tasks of build, packaging, and deployment of source code that are required to make the final product, many steps need to be taken routinely which cost considerable time and effort.
- To make accomplishing such tasks less time consuming, many so called "Build Tools" have been developed to help automate these processes.
- Apache ANT is one such tool with clear and distinct advantages for Java developers.
- Today, We are going to learn about this tool.

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Agenda

- ANT: A Primer!
 - What is it? (Definition and History)
 - What does it do? (Features)
 - How can it be used? (Installation and Usage)
 - Demo!
 - Q/A

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ANT: What is it exactly?

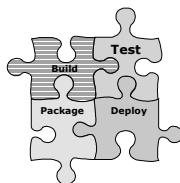
- Ant is a Cross-Platform, Extensible and Extendable, Java based system for creating software products.
- Uses XML to describe project tasks.
- Originally developed by Sun developers but later on donated to the open source community.
- Now part of the Apache foundation.
 - <http://ant.apache.org/>

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ANT: Features

- XML syntax for project files
 - Extensible (Through custom tags)
 - Extendable (Through Java Classes)
- Cross Platform (Just like Java itself)
- Task Oriented
 - Javac, Javadoc, jar, Mkdir, Copy, Delete, etc...
- Target based:
 - Multiple build targets per project
 - Conditional targets



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ANT: installation

- Download
 - Binary Dist: <http://ant.apache.org/bindownload.cgi>
 - Source Dist: <http://ant.apache.org/srcdownload.cgi>
 - Note: Additional build steps and system requirements
- Requires Java 1.2 and above
 - FAQ does not look Updated! Install JDK1.4 and above to be safe
- Extract to a proper directory for your platform
 - <http://ant.apache.org/manual/index.html>
- Add the "bin" and "lib" directories to your path.
- Set the ANT_HOME and JAVA_HOME environment variables to the directory where you installed Ant and Java SDK (if not already set)

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ANT: running builds

- By default, ANT reads build.xml
 - You define your build targets here
 - Make sure the build file is in the project root
 - Can change build file name, but you need to point ANT to it to run
- One ant project per file

```
<project> Everything else here! </project>
```
- Define a build target using

```
<target name="" depends="" />
```
- Targets can call targets in the same file using

```
<antcall target="" />
```

 - Break out different subprojects into different files
- Call other files using

```
<ant antfile="" dir="" target="" />
```
- Properties: Allow you to define variables to store values in

```
<property description="" name="" value="" />
```

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ANT: Basic example

```
<?xml version="1.0"?>
<project name="BasicExample" default="all" basedir=".">
  <property description="Compiled Classes Are Here"
    name="buildDirectory" value="${basedir}/build"/>
  <target name="init">
    <mkdir dir="${buildDirectory}" />
  </target>
  <target name="compile" depends="init">
    <javac srcdir="${basedir}" destdir="${buildDirectory}" />
  </target>
</project>
```

Before running ant script:

```
ParentDirectory
├── HelloWorld.java
└── build.xml
```

After running ant script with "ant -v" command

```
ParentDirectory
├── build
│   ├── HelloWorld.class
│   ├── HelloWorld.java
│   └── build.xml
```

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Ant: Summary

- Improves Java project build times
- Supports large and modular projects
- Conditional compilation of components
- Tag libraries easily extend Ants utility
- Automating build, testing and source-control tasks accelerate the build cycle

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More Information

- Official resources page:
 - <http://ant.apache.org/resources.html>
 - Good, frequently updated information
- Many books on the subject in bookstores
 - Barnes and Noble
 - Borders

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