# Apache Ant

Java build tool

## CONCEPTS

Ant reads build.xml in the current directory. Run with no target and it runs the project's default target.

**Project** build.xml, default target

**Target** named step, depends on others

**Task** javac, jar, copy ...

Properties are immutable: the first definition wins, so -D on the command line overrides build.xml.

## RUN

**ant**
Run the project's default target

**ant** *<target>* **[***<target>***...]**
Run targets in order

**ant -projecthelp / ant -p**
List targets that have a description

**ant -buildfile** *<file>* **/ ant -f** *<file>*
Use a different build file

**ant -find [***<file>***] / ant -s [***<file>***]**
Search parent dirs for the build file

**ant -version**
Print Ant version

**ant -diagnostics**
Print Java, classpath and Ant diagnostics

**ant -help / ant -h**
Show command line options

**ant -keep-going / ant -k**
Continue with targets not depending on a failure

## PROPERTIES AND OUTPUT

**ant -D***<name>***=***<value>*
Set a property from the command line

**ant -quiet / ant -q**
Less output

**ant -verbose / ant -v**
Extra output

**ANT_OPTS="-Xmx1g" ant**
Pass options to the JVM

## BUILD FILE BASICS

*<project name="<n>"* **default="***<target>***" basedir="."***>*
Root element

*<target name="<n>"* **depends="***<a>***,***<b>***" description="***<text>***"***>
Define a target

*<property name="<n>"* **value="***<v>***"/>**
Define a property

*<property file="build.properties"/>*
Load properties from a file

**${***<name>***}**
Reference a property

*<path id="<id>">**<fileset dir="lib" includes="*.jar"/>**</path>*
Reusable classpath

*<fileset dir="<d>"* **includes="**/*.java" excludes="***<pat>***"/>**
Select files by pattern

## COMMON TASKS

*<mkdir dir="<d>"***/>**
Create a directory

*<delete dir="<d>"***/>**
Remove a directory tree

*<copy todir="<d>">**<fileset dir="<s>"/>**</copy>*
Copy files

*<javac srcdir="src" destdir="build/classes" classpathref="<id>"*
**includeantruntime="false"/>**
Compile Java sources

*<jar destfile="dist/<n>***.jar" basedir="build/classes"/>**
Build a jar

*<manifest>**<attribute name="Main-Class" value="<cls>"/>**</manifest>*
Set jar manifest (inside <jar>)

*<java classname="<cls>"*
**classpathref="***<id>***" fork="true"/>**
Run a Java class

*<junit printsummary="yes" haltonfailure="yes">*
Run JUnit tests