**build tool**

For this project, the Ant was chosen as the build tool and the build.xml file has been generated to build the simulation.

Just like “Makefile” for C language, Ant is an efficient tool widely used to build projects. It has a variety of functions, such like compile classes of Java, define tags and configuration files and generate web package to submit to the tomcat. It uses xml to describe targets and set properties for each task.

The main problem with the Ant is that sometimes the syntax is very cumbersome in the build file. However, it can be handled through the internet due to its widespread use.

In this project, some targets are used to implement different functions like init, compile, run, clean. The targets of “init” and “clean” were implemented to make and remove build directories, “compile” and “compileTests” to compile source and test code, “run” and “runTests” to execute classes, and “jar” and “jarTests” to create jars. The use of MacroDef not only reduces duplication of effort, but improves the efficiency and the reusability of code, and guarantees the easiness of maintainess. The test results can be written to XML and HTML. For this case, it can be viewed through browser.

Therefore, build tool can be performed as “write once run many”. It can manage code more reasonable and keep the structure of project more extensible.