THE UNIVERSITY
of LIVERPOOL

MAY 2005 EXAMINATIONS

Bachelor of Arts : Year 3
Bachelor of Engineering : Year 3
Bachelor of Science : Year 3
No qualification aimed for : Year 1

Software Development Tools

TIME ALLOWED : Two Hours and a half

INSTRUCTIONS TO CANDIDATES

Answer **all** questions in Section A
Answer **only four** questions in Section B.

If you attempt to answer more questions than the required number of questions (in any section), the marks awarded for the excess questions will be discarded (starting with your lowest mark).

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SECTION A

Answer **ALL** Questions in this section.

1. Ant

   (a) What is a build process and why do we need one?

   6 marks

   (b) Draw a dependency graph of the build file (which for simplicity contains no real tasks)

   ```
   <project name="OurProject" default="deploy">
     <target name="init"/>
     <target name="compile" depends="init" />
     <target name="doc" depends="init" />
     <target name="deploy" depends="compile,doc" />
   </project>
   ```

   and give an explanation in which order these targets will be executed.

   6 marks

   (c) Describe the action of `<javac>` Ant task

   ```
   <javac srcdir="src" destdir="build/classes"/>
   ```

   4 marks

   (d) Give a simple example for the use of the glob mapper

   ```
   <mapper type="glob" from="*.java" to="*.java.bak"/>
   ```

   5 marks

   (e) What does "immutability of properties" mean?

   3 marks

   (f) What is the difference between the following two definitions of a property?

   ```
   <property name="directory" value="build/output"/>
   <property name="directory" location="build/output"/>
   ```

   5 marks

2. Ant, testing and JUnit.

   (a) Why is traditional testing via main and System.out.println methods considered as ineffective, and what is the solution?

   4 marks

   (b) Do we need JUnit test suites in Ant and why?

   3 marks

   (c) List the three main steps in writing a JUnit test case. Illustrate this by a simple example.

   8 marks

   (d) List at least six assertion methods allowed in test cases.

   6 marks

   (e) What is the role of the two additional methods setUp() and tearDown() in a test case?

   7 marks

   (f) State three reasons to consider `<junit>` task (unlike `<java>` task) as a better way to run test cases from Ant?

   3 marks

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SECTION B

Answer only **FOUR** Questions from this section.

Credit will be given for the best four answers in Section B.

3. Describe each of the four values of Extreme Programming.

10 marks

4. Describe the practice of continuous integration in Extreme Programming.

10 marks

5. Give at least six reasons why Ant is a good build tool?

10 marks

6. Give an example of an Ant task executing a Java class with arguments. What are the benefits of executing a Java program from inside Ant?

10 marks

7. What can prevent the generation of an HTML report before a build fails, and how to resolve this problem?

10 marks

8. Give a general description of Eclipse.

10 marks

9. Describe the essential steps, advantages, and peculiarities of creating and running a JUnit test case in Eclipse.

10 marks

10. Describe the essential steps, advantages, and peculiarities of creating and running an Ant build file in Eclipse.

10 marks

11. List, characterise and compare the most essential features of four types of automated testing, and state corresponding examples of testing tools.

10 marks