

UNIVERSITY OF LONDON

GOLDSMITHS' COLLEGE

B. Sc. Examination 2003

COMPUTING

IS53016A (CIS332) Web Based Computing

Duration: 2 hours 15 minutes

Date and time:

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*Answer ALL three questions.*

*There are 100 marks available on this paper. Each question is worth 33 marks.*

*The notes which have been distributed for the course (including lab exercises notes) may be used. In addition the following books (or alternatively any other Java book) may be used:*

- *"Developing Distributed and E-Commerce Applications", Darrel Ince*
- *"Core Web Programming", Marty Hall et al.*
- *"Just Java 2", Peter van der Linden.*
- *"Not Just Java", Peter van der Linden.*
- *"Thinking in Java", Bruce Eckel.*

**THIS EXAMINATION PAPER MUST NOT BE  
REMOVED FROM THE EXAMINATION ROOM**

### Question 1

- (a) Write a socket server program that simply returns the time on the current system. [10]
- (b) Write a client that calls the server and sends you email to report the date and time on the server. [23]

### Question 2

- (a) Write a RMI server and client to simulate a stock price application. The `Remote` interface will contain one method:

```
public String getPrice(String symbol)
```

The client queries the server about the price of a specific stock. The server maintains an internal data structure(s) (filled with random stock values) mapping stock symbols to prices. The server searches the data structure(s) and returns the price of the stock that the client requested. [25]

- (b) Describe the steps required to compile and run this client/server application. [8]

### Question 3

- (a) Create a XML file and the corresponding DTD, containing records of university courses. Each course record should contain the course name, course code, the name of a student and the grade of the corresponding student. [10]
- (b) Write an application that uses a SAX (or DOM) parser to get information about the average grade of all courses a student has taken. This information should be extracted from the XML file you created in (a).  
  
The name of the student is provided as a command line argument, and your application uses this to extract all of the records for this particular student and calculate his average grade. [23]

## Java Classes Supplement

The following methods in the indicated classes might be useful:

```
java.lang
Class Integer {
    static int parseInt(String s):
        Parses the string argument as a signed decimal integer.

    static Integer valueOf(String s):
        Returns a new Integer object initialized to the value
        of the specified String.
}
```

```
java.lang
Class Double {
    static double parseDouble(String s):
        Returns a new double initialized to the value
        represented by the specified String, as performed
        by the valueOf method of class Double.

    static Double valueOf(String s):
        Returns a new Double object initialized to the
        value represented by the specified string.
}
```

```
java.lang
Class String {
    static String valueOf(double d):
        Returns the string representation of the double argument.

    static String valueOf(int i):
        Returns the string representation of the int argument.
}
```