UNIVERSITY OF LONDON

GOLDSMITHS COLLEGE

B. Sc. Examination 2002

COMPUTING AND INFORMATION SYSTEMS

IS53016A (CIS332) Web-Based Computing

Duration: 2¼ hours

Date and time:

Full marks will be awarded for answering ALL questions in part A and TWO questions in part B.

Electronic calculator may be used. The make and model should be specified on the script and the calculator must not be programmed prior to the examination. Calculators which display graphics, text or algebraic equations are not allowed.

THE EXAMINATION PAPER MUST NOT BE REMOVED FROM THE EXAMINATION ROOM.

Part A: Answer all questions (each question carries 5 marks)

1. What is HTML and what can it be used for? (Your answer should give an indication of the range of commands that HTML supports).

   Questions 2 and 3: *For each of the following two situations, explain how an XML-based system is more suitable than an HTML-based one.*

2. You require different users to have different views of the same data.

3. You need to service applications that wander around a network, gathering information about commodities for sale, for example selecting the commodity with the cheapest price

4. *A bus network* is one of the three principal architectures for computer networks. What are the other two? Briefly describe what a *bus architecture* is?

5. Briefly explain the concept of a client-server system, including the concepts of fat and thin client systems.

6. What is a protocol? Name three of the protocols associated with the Internet, and say what they are used for.

7. What is a three-tiered software architecture? (Your answer should include a diagram and an example application.)

8. Compare and contrast message-passing and distributed objects technologies.

9. What are the principal functions of a Web Server? (Your answer should include an explanation of the structure and role of HTTP).

10. Name five functions of a Database Server.

Part B: Answer 2 Questions (each question carries twenty-five marks)

B1: XML:

Sweaters R Us, a woolly clothing company, would like to have a web presence for its stock. They would like to make available lists of available sweaters, scarves, and woolly hats, all with colours, sizes and prices.

a. Draw a tree that encapsulates the structure you see in this data

[8 marks]

b. Define a DTD that captures the structure in your tree

[5 marks]

c. Make an XML file that includes data that uses your DTD

[12 marks]

B2. Client-Server Systems

a. Explain the notion of streams, readers and writers in Java [5]

b. Explain the steps needed to make a socket connection in Java [5]

c. You have been asked to produce a date and time server. The server will provide the date and time to any client that logs in. Your server will continually wait for a connection, periodically writing the phrase "waiting for a connection" to the standard output.

Write the code for the server and for a potential client. [15]

B3: Graphical Interfaces in Java

a. What is the difference between an applet and an application in Java? From what class does a user interface generally inherit in an application? [4]

b. What are he steps necessary to add a widget (for example, a button) to your interface and have it respond to a mouseclick. [6]

c. You have been asked to produce a rudimentary sheeph simulator. The simulator has a green button and a red button. When the green button is pushed, the string "Bah" will appear in a textfield; when the red button is pressed, the textfield will disappear.

Write the code for the sheep, providing comments for all of the interesting lines of code [15]