

DUBLIN CITY UNIVERSITY

SEMESTER TWO EXAMINATIONS 2003

MODULE: CA464
(Title & Code) Distributed Programming

COURSE: B.Sc. in Computer Applications (CS Stream)
B.Sc. in Computer Applications (SE Stream)
B.Sc. in Computer Applications (IS Stream)

YEAR: 4

EXAMINERS: Dr. David Sinclair Ext: 5510
Prof. Gerry Lyons
Dr. Donncha O' Maidin

TIME ALLOWED: 2 Hours

INSTRUCTIONS: Please answer any 3 questions.

**THE USE OF PROGRAMMABLE OR TEXT STORING
CALCULATORS IS EXPRESSLY FORBIDDEN**

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INSTRUCTED TO DO SO**

Question 1

- 1(a) What factors characterise a distributed system? [6 marks]
- 1(b) Describe the properties & services model of a distributed system. [15 marks]
- 1(c) Discuss how Jini and Corba relate to the properties & services model. [12 marks]

[Total marks: 33]

Question 2

- 2(a) Why is programming in distributed systems inherently more difficult than programming in stand-alone systems? [6 marks]
- 2(b) Describe Leases in Jini. What is the role of the leasing mechanism in Jini? [15 marks]
- 2(c) Describe the LeaseRenewalManager class in Jini. Given an example of how it is used. [12 marks]

[Total marks: 33]

Question 3

- 3(a) What is the Discovery process in Jini? Describe the protocols that support the Discovery process. [6 marks]
- 3(b) What are Attributes in Jini? How are Attributes used to annotate a service? [12 marks]
- 3(c) Describe the JoinManager class in Jini. How is it used to publish a service? What are the advantages of the JoinManager over registering the service with the lookup service directly? [15 marks]

[Total marks: 33]

Question 4

- 4(a) How are events in a distributed system different from local events? [6 marks]
- 4(b) Describe Remote Events in Jini. [12 marks]
- 4(c) Show, with the use of code examples, how Remote Events are used when searching for services in lookup services. [15 marks]

[Total marks: 33]

Question 5

- 5(a) Describe the architecture of a CORBA system. [8 marks]
- 5(b) With respect to CORBA what is IDL and what is its relationship to the different elements of the CORBA architecture? [15 marks]
- 5(c) Describe the CORBA Event Service, its features and how it can be used in a CORBA application. [10 marks]

[Total marks: 33]