

OLLSCOIL NA hÉIREANN
The National University of Ireland

NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATION 1998

THIRD YEAR EXAMINATION

[CT309]

PROGRAMMING LANGUAGES AND DISTRIBUTED SYSTEMS

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Candidates are required to answer any five questions.
All questions carry equal marks.
Time allowed: Three hours.

1. Discuss the functions of each of the seven layers of the OSI Reference Model. Which is the most important layer in your opinion?
2. Give an account of the main elements composing DNS. Why is such a service required in your opinion? Explain the terms 'namespace' 'resolver' and 'resource record' in the course of your answer.
3. Explain what is meant by the term 'electronic mail', name the main services you would expect to find associated with a typical mailer, and explain what is meant by the terms 'RFC822' and 'MIME'.
4. What is meant by error-detecting and error-correcting codes? Show how each type works, drawing on suitable examples. In what situations would you recommend the use of each type of code and why?
5. What is meant by a 'sequence number'? Through an example show how sequence numbers can be used to clarify ambiguous situations in both stop-and-wait and go-back-n control schemes. Comment also on the minimum number of sequence numbers that are in fact required in each of the two schemes.
6. Discuss the development of a web site, outlining the features you might expect to be present in a well-designed one, and discussing what languages you would bring to bear in its creation.
7. Discuss the main elements of the JavaScript language that make it suitable for web-based development.
8. Discuss the main elements of the IPv4 protocol. Why is IPv6 necessary in your opinion?