

2004 Paper 9 Question 4

Distributed Systems

A network-based service manages persistent objects. The service must enforce an access control policy to protect the objects.

- (a) Discuss how this access control might best be implemented for the following example of objects and policy components:

Objects: Files in a University Department's file service, operating behind a firewall.

Policy: The owner may specify read, write and execute rights in terms of principals and groups. [4 marks]

- (b) Discuss how this access control might best be implemented for *two* of the following examples:

- (i) Objects: Files in a commercial, distributed, Internet-based file service.

Policy: The owner may authorise other principals to download the file.

- (ii) Objects: Sales data relating to a company.

Policy: Those employed in the Sales Departments of all branches of the company worldwide may read the data.

- (iii) Objects: Electronic health records (EHRs) in a nationwide service.

Policy: The owner (patient) may read from its own EHR. A qualified and employed doctor may read and write the EHR of a patient registered with him/her.

- (iv) Object: The solution to online coursework.

Policy: The coursework setter has read and write access. A candidate has no access until after the marks have been published.

[8 marks each]