

Define access control lists and capabilities, and discuss their relative strengths and weaknesses. (5 marks)

Describe how the access control list mechanisms work in Unix. (5 marks)

You have been asked to build a funds transfer system in which a payment is authorised only once it has been approved by both a manager and an accountant at a bank branch. How would you implement this system using Unix security mechanisms as the foundation? (10 marks)

Model answer

- (1) - bookwork - an ACL is an access matrix by columns and a capability is the same by columns
- (2) - bookwork - for full marks, want not just user/group but r/w/x but also suid, sgid
- (3) various possible answers but the neatest would involve use of groups and perhaps sgid applications that would move transactions from 'unapproved' file to 'approved by accountant' to 'approved for release'. Some attention to role of root; might be adequate to have an audit trail written to CD-ROM, or offsite, though procedural controls might also be used.