3 Operating Systems (IML)

One goal of a multiuser operating system is to protect each user's information and activity from damage caused by accidental or deliberate actions of other users of the system.

(*a*) Describe a mechanism that operating systems use to reduce the opportunity for a user process to prevent another user's process from making progress. In your description include any particular hardware features that are relied upon.

[3 marks]

(*b*) Describe two alternative mechanisms that operating systems could use to reduce the opportunity for a user process to access or corrupt the information being used by another user's process. In your descriptions include any particular hardware features that are relied upon.   [6 marks]

(*c*) Describe how an operating system might attempt to ensure that long-term user information (that is, information which exists beyond process execution) is not interfered with or misused by other users. Your description should be clear about when actions are performed and the resources they consume.   [5 marks]

(*d*) To what extent are the mechanisms described above useful in single user systems?   [3 marks]

(*e*) How do operating systems ensure that they are not themselves overly-restricted by these mechanisms?   [3 marks]