

a) A file server has a number of roles. It stores the application programs to be shared across the network and provides access to them (provided the user has appropriate access rights) <sup>through the network operating system.</sup>. The file server can also store shared file documents to be used / that were created with the application programs available. These files could be provided in an open shared directory or in <sup>a</sup> user's private allocated drive space, also controlled by and contained within the file server.

b) The data redundancy in Mr Ferraro's database is occurring as there are more than one computer at particular location, causing information on location, phone extension and room number to be repeated.

As the database increases size data redundancy can cause the file to take up more storage space than necessary. Also, if data needs to be updated it can cause information to be updated incorrectly by the computer or through manual input as computers in the



same location may get confused.

| c. | (Primary key)<br>Computer number | Computer RAM | Computer hard disk | (Foreign key)<br>Location |
|----|----------------------------------|--------------|--------------------|---------------------------|
|    | 001                              | 64           | 6                  | Reception                 |
|    | 002                              | 64           | 10                 | Reception                 |
|    | 003                              | 128          | 8                  | Manager's office          |
|    | 004                              | 96           | 8                  | Manager's office          |
|    | 005                              | 256          | 40                 | Store Room 3              |

| (Primary key)<br>Location | Phone extension | Room number |
|---------------------------|-----------------|-------------|
| Reception                 | 3227            | 9023        |
| Manager's office          | 1859            | 9115        |
| Store Room 3              | 2016            | 9153        |