

Informal Phone System Description

A university wants to computerize its internal telephone directory. The database must keep a record of all the people who are currently members of the university (as only they can have telephone extensions). The database must cope with the possibility that one person may be reached at several extensions and also with the possibility that several people might have to share an extension. Six operations are to be provided, namely

- (1) that of adding an entry to the database, where an entry is an association between a person and a telephone extension,
- (2) that of interrogating the database by person (in which case the output is the set of telephone extensions at which that person can be reached),
- (3) that of interrogating the database by extension number (in which case the output is the set of people who can be reached at that extension),
- (4) that of removing an entry from the database,
- (5) that of adding a person to the database's record of who is currently a member of the university and
- (6) that of removing a person from the database along with all those entries in which he or she figures.