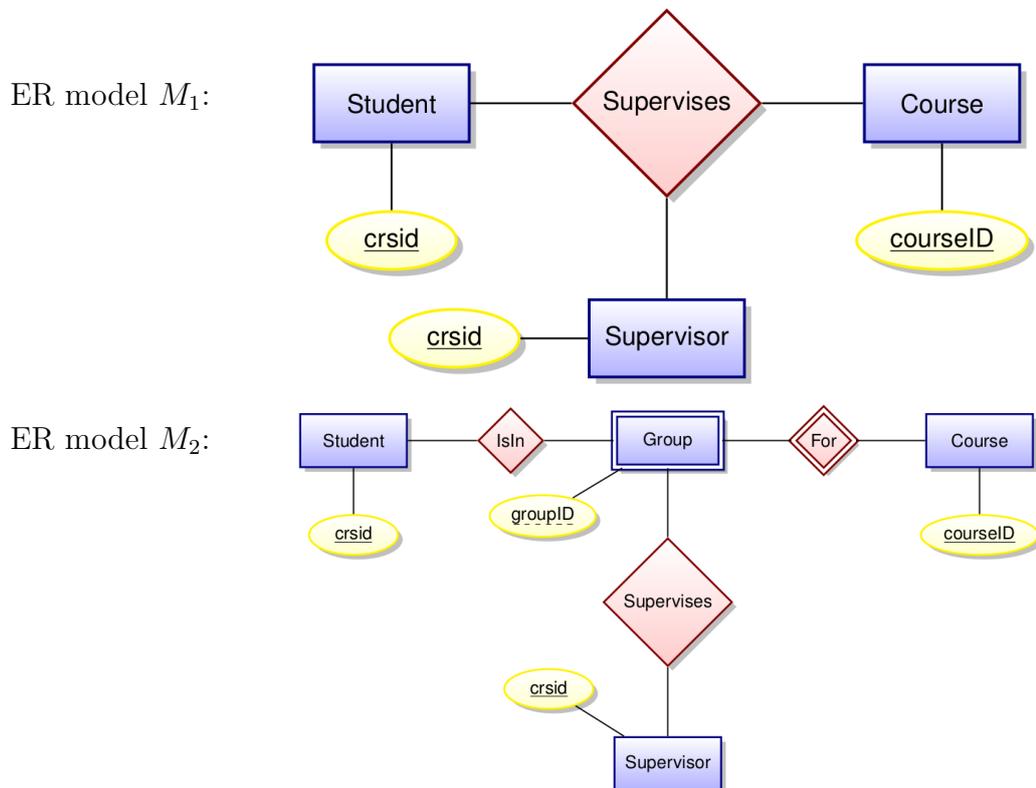


2 Databases (tgg22)

- (a) Part II supervisions are organised within the department rather than colleges. The department intends to implement a relational database application to track the allocation of supervisors to students. As a preliminary step it has asked two data modellers each to provide an Entity-Relationship for this task. The modellers delivered the two different ER diagrams below. Note that both models are incomplete in that many obvious attributes are missing as well as the cardinality constraints on relationships. However, argue that diagram M_2 represents a better initial model than diagram M_1 . [5 marks]



- (b) Present one way of implementing model M_2 in a relational database. Note that you first have to determine reasonable cardinalities for the relationships in M_2 . Justify your choices. [8 marks]
- (c) Using your relational implementations from Part (b), write an SQL query that returns records of the form `crsid`, `courseid`, `groupid` where `crsid` is the id of a student in a supervision group for course with id `courseid`, and the supervision group id is `groupid`. The `groupid` column should contain NULL if the student is not in any supervision group for the associated course. [7 marks]