AM05 Data Mgmt – Lab 2 – Solution

This lab has two parts. The first part asks you to complete some SQL queries while the second asks you to complete some logical database design tasks.

Part 2. SQL

Question 1

Note: The notation used here is an alternative way of describing the relational schema with referential integrity constraints. The arrows are replaced with "<ColumnX> references TABLE<ColumnY>" statements. FKs indicated with italics and dashed underlining, when possible.

RTABLE(RTableNbr, RTableNbrOfSeats, RTableRating)

SEATING(SeatingID, NbrOfGuests, StartTimeDate, EndTimeDate, *ManagerID*)
ManagerID references MANAGER(EmployeeID)

SEATINGTABLES(*RTableNbr, SeatingID*)
RTableNbr references RTABLE(RTableNbr)
SeatingID references SEATING(SeatingID)

EMPLOYEE(EmployeeID, EmpLName, EmpFName, EmpType)

MANAGER(EmployeeID, MonthlySalary)
EmployeeID references EMPLOYEE(EmployeeID)

WAITER(EmployeeID, HourlyWage, *ManagerID*)
EmployeeID references EMPLOYEE(EmployeeID)
Manager ID references MANAGER(EmployeeID)

SPECIALTY(SpecialtyID, SpecialtyDesc)

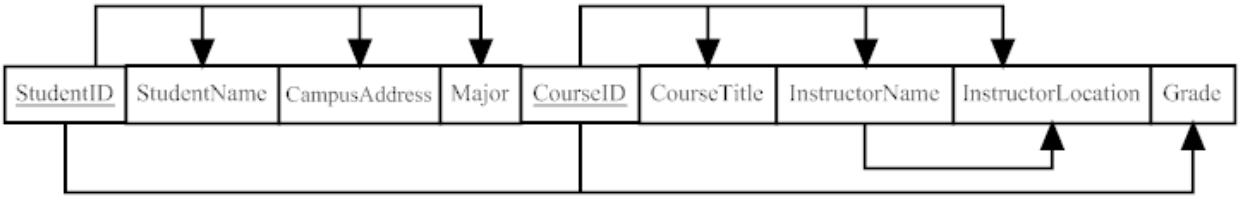
WAITERSPECIALTY(*EmployeeID, SpecialtyID*)
EmployeeID references WAITER(EmployeeID)
SpecialtyID references SPECIALTY(SpecialtyID)

ASSIGNMENT(*SeatingID*, *EmployeeID*, StartTimeDate, EndTimeDate, TipsEarned)
SeatingID references SEATING(SeatingID)
EmployeeID references WAITER(EmployeeID)

Question 2

Transforming (GRADE REPORT) to relations:

a. *Functional dependencies*



b. The relation is currently in the first normal form (1NF) because it has no repeating groups and has a name and a valid primary key, but is not in 2NF because it has partial transitive dependencies. For example, StudentName is dependent on only one of the two components of the primary key (StudentID).

c. 3NF relations for GRADE REPORT

STUDENT

StudentID	StudentName	CampusAddress	Major

REGISTRATION

StudentID	*CourseID*	Grade

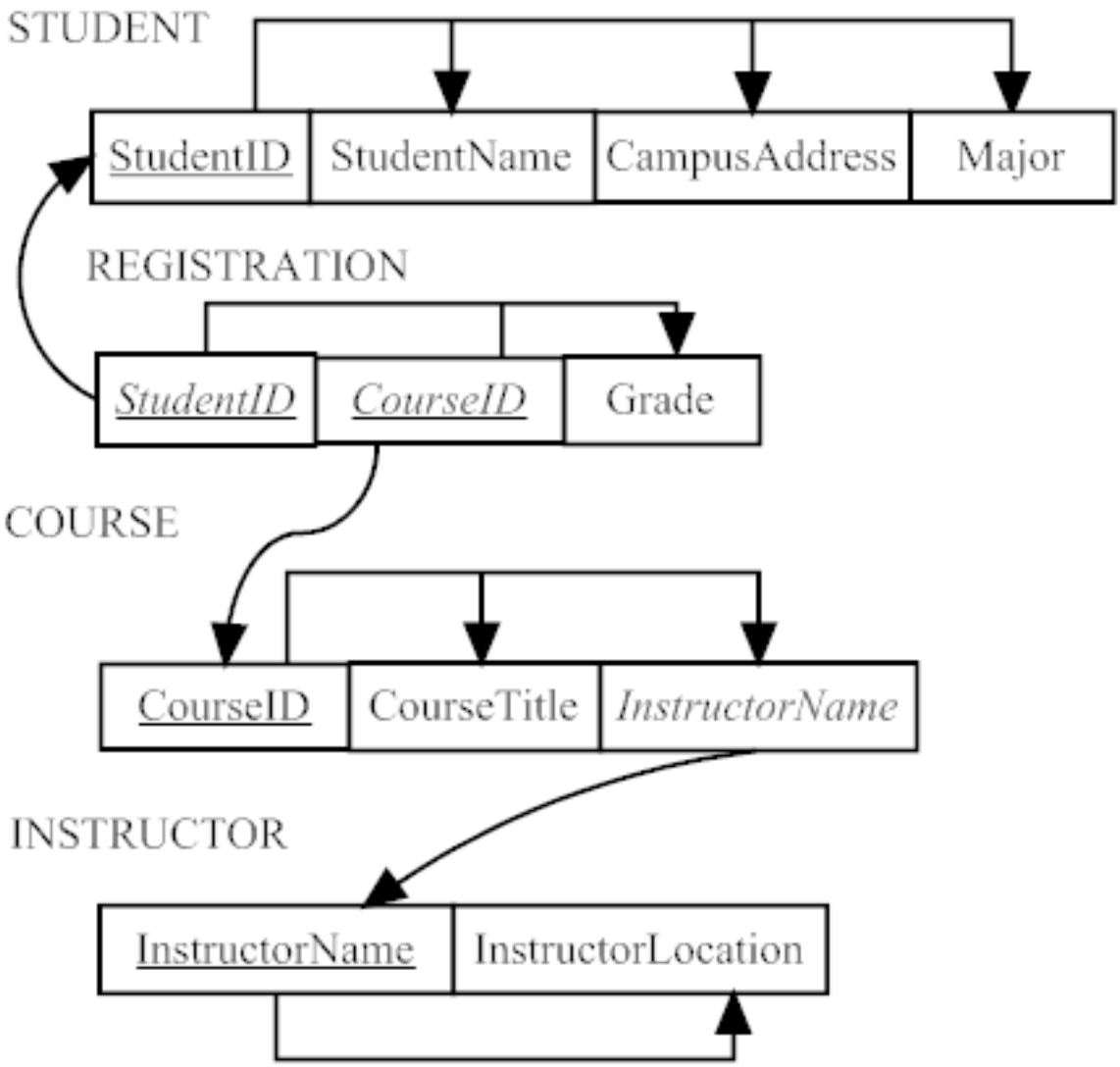
COURSE

CourseID	CourseTitle	*InstructorName*

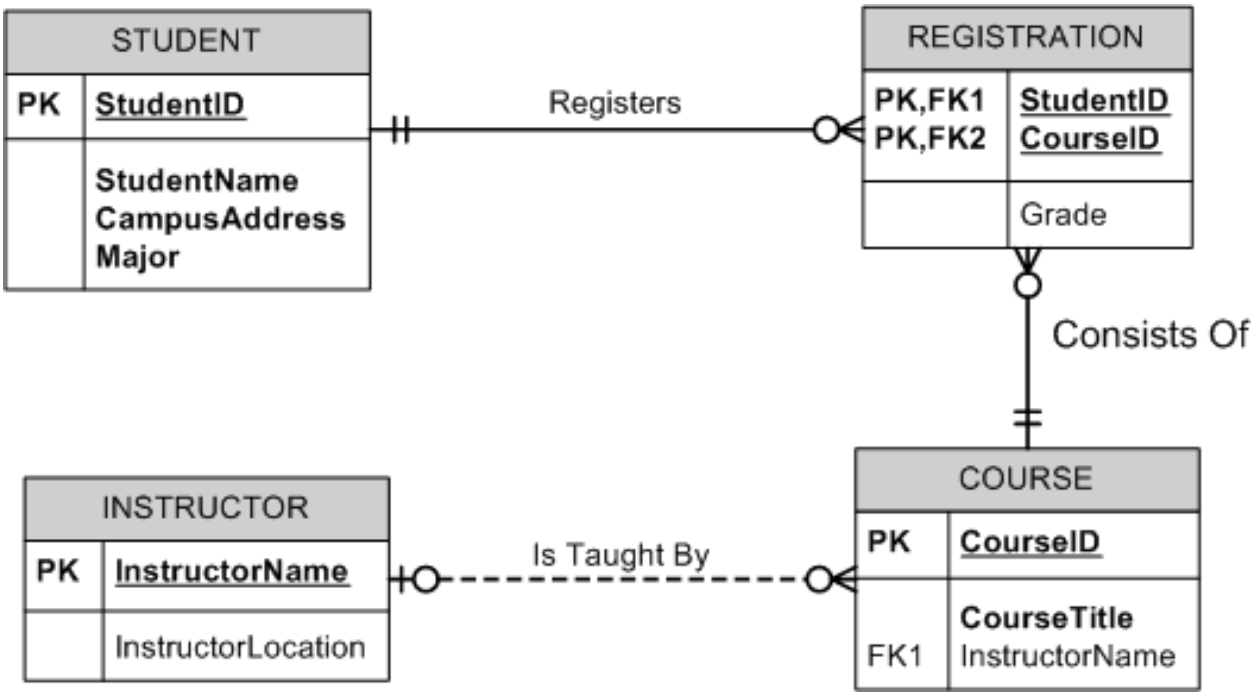
INSTRUCTOR

InstructorName	InstructorLocation

d. Relational schema with functional dependencies



Or as an ERD


STUDENT
PK
StudentID
StudentName
CampusAddress
Major
Registers
REGISTRATION
PK,FK1
PK,FK2
StudentID
CourseID
Grade
Consists Of
COURSE
PK
CourseID
CourseTitle
FK1
InstructorName
Is Taught By
INSTRUCTOR
PK
InstructorName
InstructorLocation