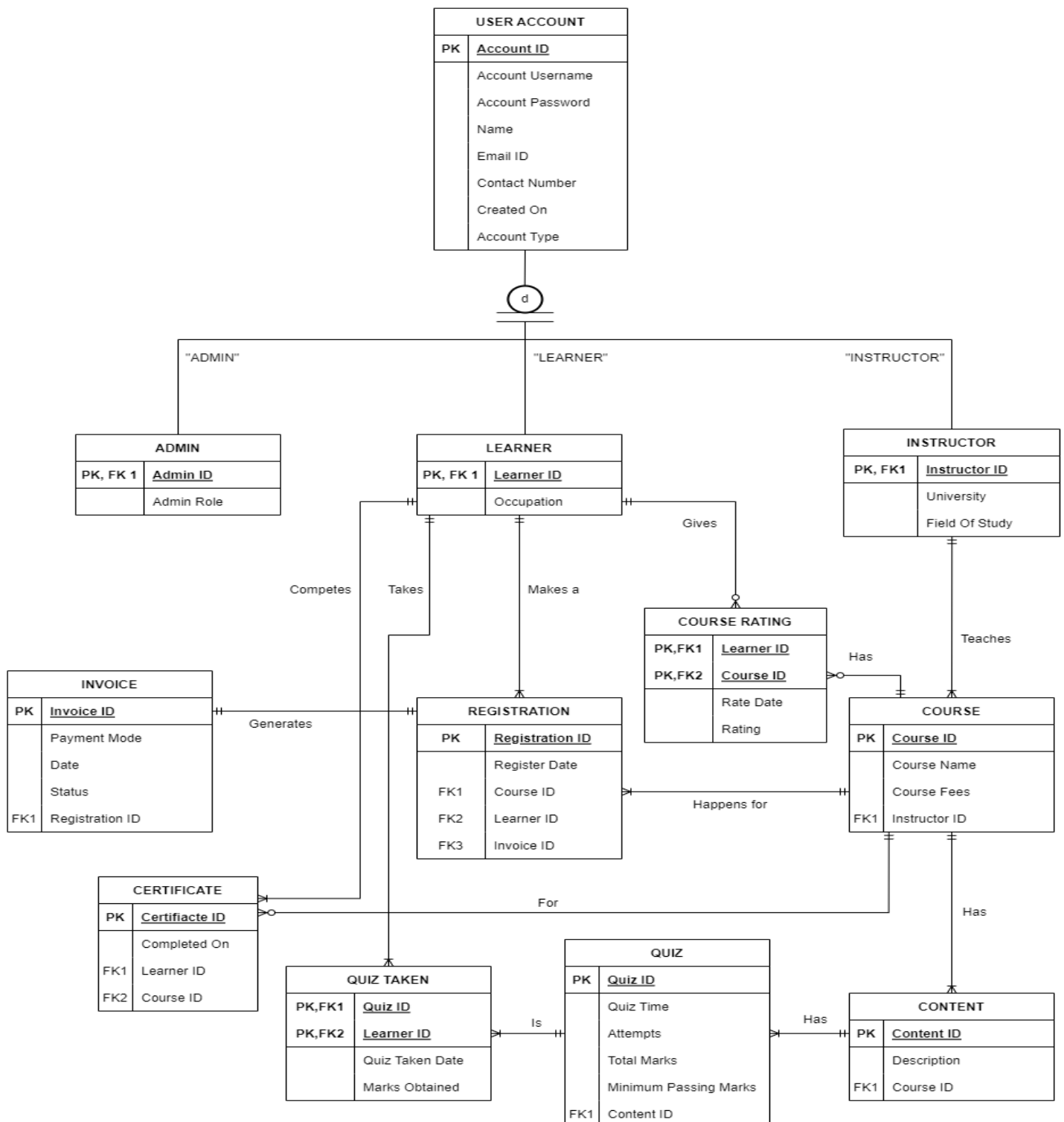# Database Management and Database Design

E-Learning Management System

Team 14

ER Diagram:

E Learning Management System

USER ACCOUNT	
PK	Account ID
	Account Username
	Account Password
	Name
	Email ID
	Contact Number
	Created On
	Account Type

"ADMIN" "LEARNER" "INSTRUCTOR"

ADMIN	
PK, FK 1	Admin ID
	Admin Role

LEARNER	
PK, FK 1	Learner ID
	Occupation

INSTRUCTOR	
PK, FK1	Instructor ID
	University
	Field Of Study

Gives

Competes   Takes   Makes a   Teaches

COURSE RATING	
PK,FK1	Learner ID
PK,FK2	Course ID
	Rate Date
	Rating

Has

INVOICE	
PK	Invoice ID
	Payment Mode
	Date
	Status
FK1	Registration ID

Generates

REGISTRATION	
PK	Registration ID
	Register Date
FK1	Course ID
FK2	Learner ID
FK3	Invoice ID

Happens for

COURSE	
PK	Course ID
	Course Name
	Course Fees
FK1	Instructor ID

For

Has

CERTIFICATE	
PK	Certifiacte ID
FK1	Learner ID
FK2	Course ID
	Completed On

QUIZ TAKEN	
PK,FK1	Quiz ID
PK,FK2	Learner ID
	Quiz Taken Date
	Marks Obtained

Is

QUIZ	
PK	Quiz ID
	Quiz Time
	Attempts
	Total Marks
	Minimum Passing Marks
FK1	Content ID

Has

CONTENT	
PK	Content ID
	Description
FK1	Course ID

Changes committed:

- We Identified that we could create a Super Type and Sub Type Relation for the following entities:
    1. USER ACCOUNT
    2. ADMIN
    3. LEARNER
    4. INSTRUCTOR

- The USER ACCOUNT super type entity will have 3 subtype ADMIN, STUDENT, and INSTRUCTOR. ADMIN(who manages the system), LEARNER(who register for a courses and completes it) and INSTRUCTOR(who teaches the course). We have applied Total specialization rule since USER ACCOUNT will be created by either ADMIN or STUDENT or INSTRUCTOR.

- A USER ACCOUNT cannot be for the admin, learner, and instructor at the same time. Therefore, the disjoint rule is indicated in the circle.

- We added Date attribute in QUIZ TAKEN and COURSE RATING entity.

- No multivalued attributes, no composite attributes, and no many-to-many relationships are present in the above diagram.

- All entities have a primary key, and foreign keys for any relationships they participate in.