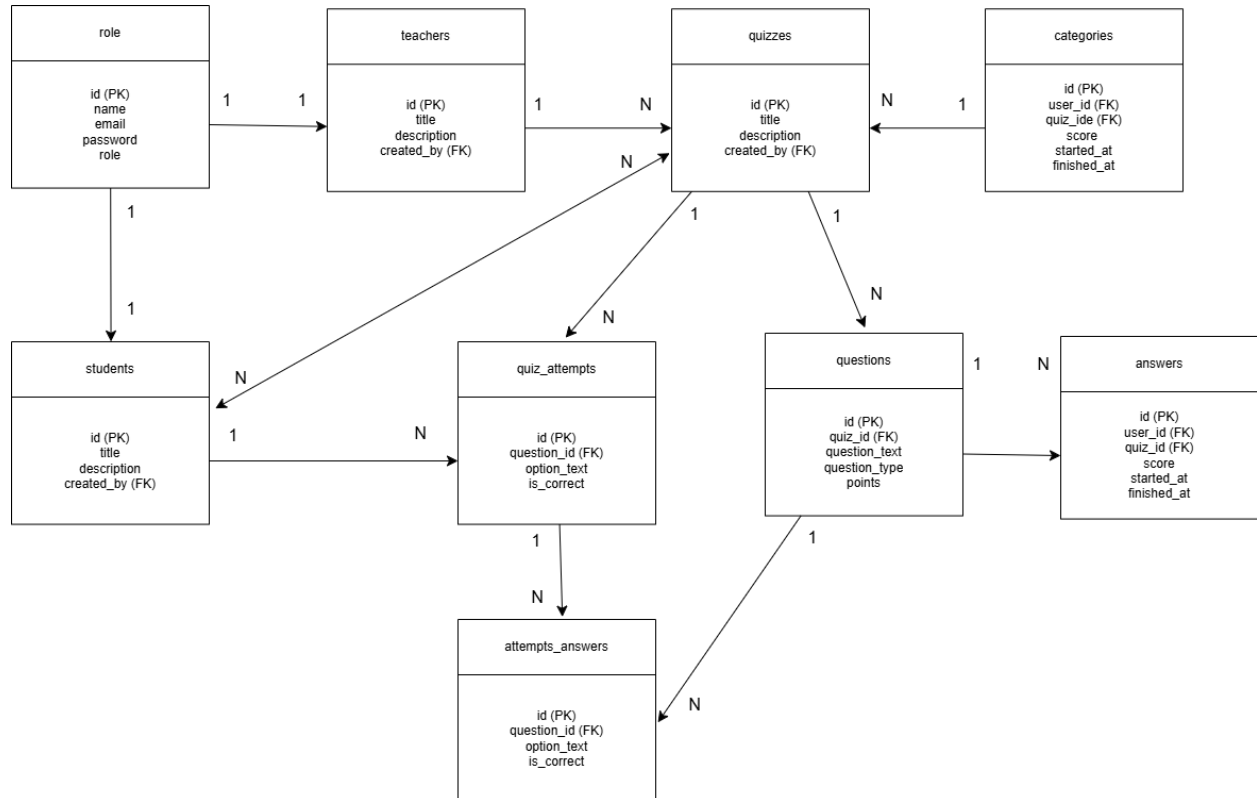


## Entity Relationship Diagram for TechQuiz Application



## Data Dictionary

Table Name	Column Name	Data Type	Constraints / Notes	Description
<b>roles</b>	id	BIGINT, PK, AI	Primary key	Unique identifier for role
	name	VARCHAR(255)	UNIQUE, NOT NULL	Role name (e.g., Admin, Student)
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp
<b>teachers</b>	id	BIGINT, PK, AI	Primary key	Teacher identifier
	name	VARCHAR(255)	NOT NULL	Teacher's full name
	email	VARCHAR(255)	UNIQUE, NOT NULL	Login email
	password	VARCHAR(255)	NOT NULL	Hashed password
	role_id	BIGINT, FK → roles.id	Optional if role assigned	Teacher's role
	created_at	TIMESTAMP		Auto timestamp

Table Name	Column Name	Data Type	Constraints / Notes	Description
	updated_at	TIMESTAMP		Auto timestamp
<b>students</b>	id	BIGINT, PK, AI	Primary key	Student identifier
	student_id	VARCHAR(50)	UNIQUE, NOT NULL	School-issued ID
	name	VARCHAR(255)	NOT NULL	Student full name
	role_id	BIGINT, FK → roles.id	Optional if role assigned	Student role
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp
<b>categories</b>	id	BIGINT, PK, AI	Primary key	Quiz category identifier
	name	VARCHAR(255)	UNIQUE, NOT NULL	Category name (e.g., Networking Basics)
	created_at	TIMESTAMP		Auto timestamp

Table Name	Column Name	Data Type	Constraints / Notes	Description
	updated_at	TIMESTAMP		Auto timestamp
<b>quizzes</b>	id	BIGINT, PK, AI	Primary key	Quiz identifier
	title	VARCHAR(255)	NOT NULL	Quiz title
	category_id	BIGINT, FK → categories.id	NOT NULL	Category of quiz
	teacher_id	BIGINT, FK → teachers.id	NOT NULL	Quiz creator
	difficulty	ENUM('Easy','Medium','Hard')	Default 'Easy'	Difficulty level
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp
<b>questions</b>	id	BIGINT, PK, AI	Primary key	Question identifier
	quiz_id	BIGINT, FK → quizzes.id	NOT NULL	Which quiz this question belongs to
	question_text	TEXT	NOT NULL	The question content

Table Name	Column Name	Data Type	Constraints / Notes	Description
	question_type	ENUM('MCQ','FillBlank','TrueFalse','Picture')	NOT NULL	Type of question
	points	INT	Default 5	Points awarded for correct answer
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp
<b>answers</b>	id	BIGINT, PK, AI	Primary key	Answer identifier
	question_id	BIGINT, FK → questions.id	NOT NULL	Which question this answer belongs to
	answer_text	TEXT	NOT NULL	Answer text
	is_correct	BOOLEAN	Default false	True if correct answer
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp

Table Name	Column Name	Data Type	Constraints / Notes	Description
<b>quiz_attempts</b>	id	BIGINT, PK, AI	Primary key	Each student quiz attempt
	student_id	BIGINT, FK → students.id	NOT NULL	Student who attempted
	quiz_id	BIGINT, FK → quizzes.id	NOT NULL	Quiz attempted
	score	INT	Default 0	Total score achieved
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp
<b>attempt_answers</b>	id	BIGINT, PK, AI	Primary key	Each answer given by a student in an attempt
	quiz_attempt_id	BIGINT, FK → quiz_attempts.id	NOT NULL	Links to attempt
	question_id	BIGINT, FK → questions.id	NOT NULL	Question answered
	answer_id	BIGINT, FK → answers.id	Nullable	MCQ/TrueFalse selected answer
	text_answer	TEXT	Nullable	Free-text answer for Fill in the

Table Name	Column Name	Data Type	Constraints / Notes	Description
				Blank or Picture
	created_at	TIMESTAMP		Auto timestamp
	updated_at	TIMESTAMP		Auto timestamp