Database Systems Development
M30232
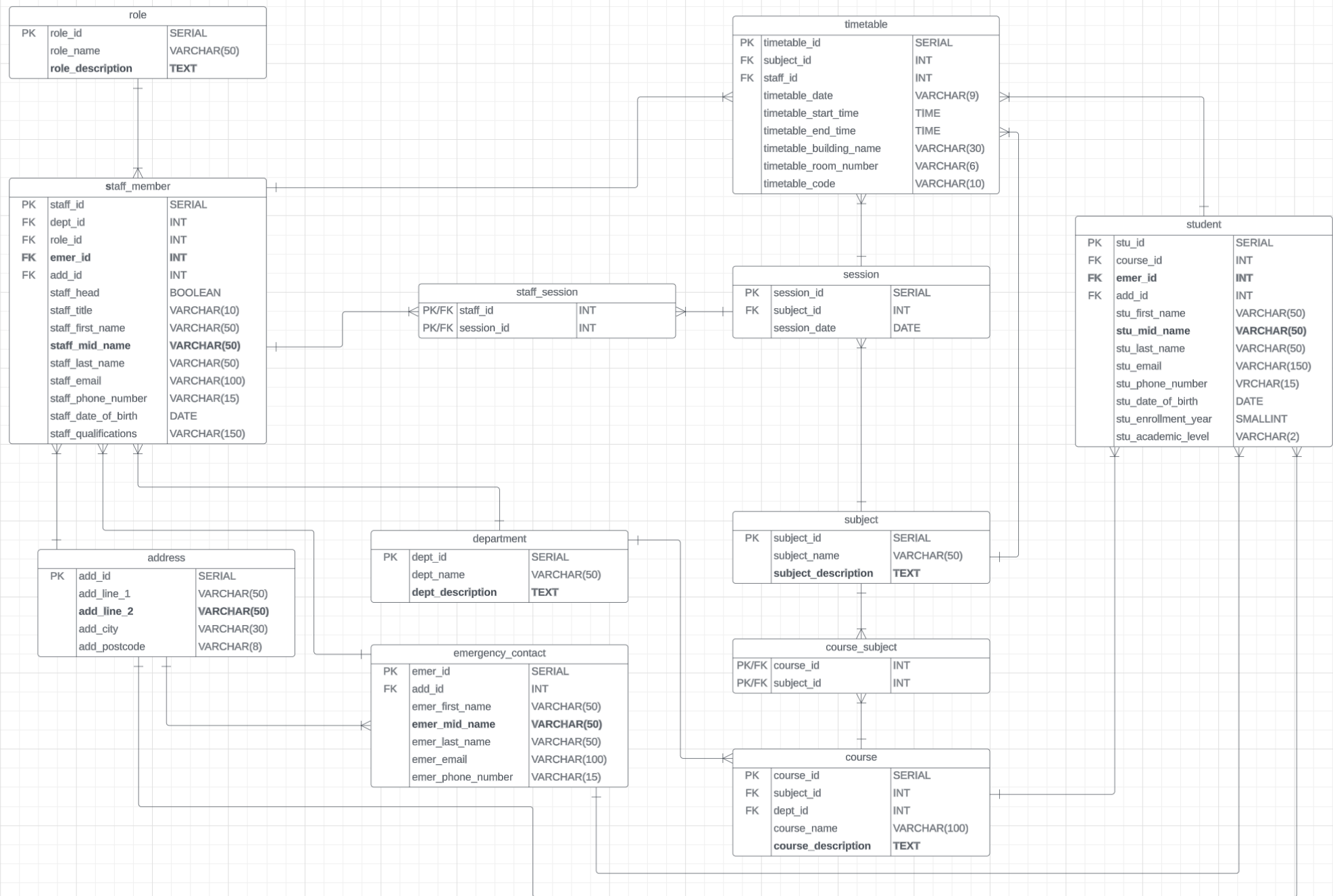
CW1

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1. Entities Diagrams
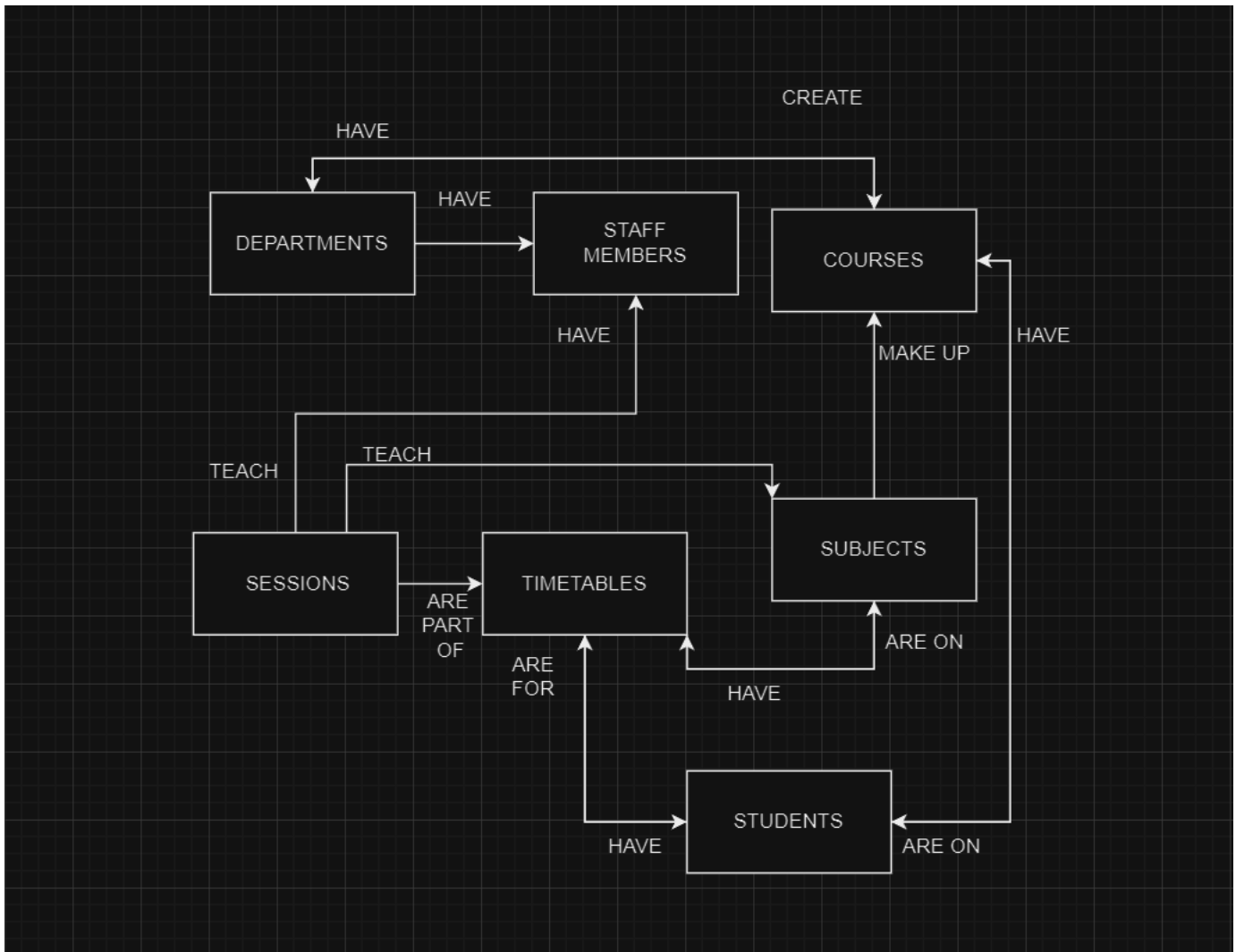
2. Entity Relationship Diagram (ER

role

PK	role_id	SERIAL
	role_name	VARCHAR(50)
	role_description	**TEXT**

timetable

PK	timetable_id	SERIAL
FK	subject_id	INT
FK	staff_id	INT
	timetable_date	VARCHAR(9)
	timetable_start_time	TIME
	timetable_end_time	TIME
	timetable_building_name	VARCHAR(30)
	timetable_room_number	VARCHAR(6)
	timetable_code	VARCHAR(10)

staff_member

PK	staff_id	SERIAL
FK	dept_id	INT
FK	role_id	INT
FK	**emer_id**	**INT**
FK	add_id	INT
	staff_head	BOOLEAN
	staff_title	VARCHAR(10)
	staff_first_name	VARCHAR(50)
	staff_mid_name	**VARCHAR(50)**
	staff_last_name	VARCHAR(50)
	staff_email	VARCHAR(100)
	staff_phone_number	VARCHAR(15)
	staff_date_of_birth	DATE
	staff_qualifications	VARCHAR(150)

student

PK	stu_id	SERIAL
FK	course_id	INT
FK	**emer_id**	**INT**
FK	add_id	INT
	stu_first_name	VARCHAR(50)
	stu_mid_name	**VARCHAR(50)**
	stu_last_name	VARCHAR(50)
	stu_email	VARCHAR(150)
	stu_phone_number	VRCHAR(15)
	stu_date_of_birth	DATE
	stu_enrollment_year	SMALLINT
	stu_academic_level	VARCHAR(2)

staff_session

PK/FK	staff_id	INT
PK/FK	session_id	INT

session

PK	session_id	SERIAL
FK	subject_id	INT
	session_date	DATE

department

PK	dept_id	SERIAL
	dept_name	VARCHAR(50)
	dept_description	**TEXT**

subject

PK	subject_id	SERIAL
	subject_name	VARCHAR(50)
	subject_description	**TEXT**

address

PK	add_id	SERIAL
	add_line_1	VARCHAR(50)
	add_line_2	**VARCHAR(50)**
	add_city	VARCHAR(30)
	add_postcode	VARCHAR(8)

emergency_contact

PK	emer_id	SERIAL
FK	add_id	INT
	emer_first_name	VARCHAR(50)
	emer_mid_name	**VARCHAR(50)**
	emer_last_name	VARCHAR(50)
	emer_email	VARCHAR(100)
	emer_phone_number	VARCHAR(15)

course_subject

PK/FK	course_id	INT
PK/FK	subject_id	INT

course

PK	course_id	SERIAL
FK	subject_id	INT
FK	dept_id	INT
	course_name	VARCHAR(100)
	course_description	**TEXT**

3. Assumptions

- A staff member can be a part of one department, but a department can have multiple staff members be appointed to it.
- Some subjects may be exclusive to one course, and some subjects can be shared between multiple courses.
- A teaching session can only teach one subject at a time; however, a subject can be taught in multiple different teaching sessions.
- Students can be enrolled in multiple different teaching sessions, but they can only be in one session at any given time.
- Multiple students can be present in the same teaching session.
- A teacher session can appear on multiple different timetables.
- A student can only have one timetable at any given time.
- We've assumed that Staff HR/Payroll details are kept in a different database, such as Workday. The same assumption has been made for the finance database, used by the Accounts department.
- Teaching sessions are timetable for an hour.
- Teaching sessions run from 0800 till 1800. This means timetabled start times must start from 0800 and end in 1700, with timetabled end times shifting by an hour to 0900 and 1800 to accommodate the 1-hour session length. Sessions can be longer if needed, but must stay in between these times (e.g., a 2-hour session must start at 1600 to finish on time).
- An emergency contact can be shared by multiple members of staff, and multiple students, or vice versa. This is to accommodate two siblings attending the school, in which case their emergency contact may be their mother or father, of which the details would stay the same. Another scenario this accommodates is one in which a staff member has a son/daughter attending the school as a student, in which sae they may have the same emergency contact.
- An address can be shared by emergency contacts, students, and staff members. This is to accommodate a parent and offspring attending the school as a student, and the parent working in the school. An emergency contact can have the same address as the other two to accommodate the other parent being the emergency contact.
- Not everyone has a middle name.
- Postcode can be 6-8 characters, this is to accommodate some postcodes being RE1 ADT and SO14 WTX.

4. Data Dictionary

				student		
Attribute_Name	KEY	INDEX	Data Type & Size	Domains & Constraints	FK Reference	Description
stu_id	PK		SERIAL			-
course_id	FK		INT	NOT NULL	course.course_id	The course the student is enrolled on.
emer_id	FK		INT		emergency_contact.emer_id	-
add_id	FK		INT	NOT NULL	address.add_id	-
stu_first_name			VARCHAR(50)	NOT NULL		-
stu_mid_name			VARCHAR(50)			-
stu_last_name			VARCHAR(50)	NOT NULL		-
stu_email			VARCHAR(150)	NOT NULL; UNIQUE		The student's educational email address.
stu_phone_number			VARCHAR(15)	NOT NULL; UNIQUE		-
stu_date_of_birth			DATE	NOT NULL		-
stu_enrollment_year			SMALLINT	NOT NULL		The year the student has enrolled on the course.
stu_academic_level			VARCHAR(2)	NOT NULL		The level of the student's study.

			staff_member			

Attribute_Name	KEY	INDEX	Data Type & Size	Domains & Constraints	FK Reference	Description
staff_id	PK		SERIAL			-
dept_id	FK		INT	NOT NULL	department.dept_id	The department the staff member belongs to.
role_id	FK		INT	NOT NULL	role.role_id	The employed role of the staff member.
emer_id	FK		INT		emergency_contact.emer_id	-
add_id	FK		INT	NOT NULL	address.add_id	-
staff_head			BOOLEAN	NOT NULL		Whether the staff member is a head of department, or not.
staff_title			VARCHAR(10)	NOT NULL		The honorific prefix of the staff member.
staff_first_name			VARCHAR(50)	NOT NULL		-
staff_mid_name			VARCHAR(50)			-
staff_last_name			VARCHAR(50)	NOT NULL		-
staff_email			VARCHAR(100)	NOT NULL, UNIQUE		The staff member's educational email address.
staff_phone_number			VARCHAR(15)	NOT NULL, UNIQUE		-
staff_date_of_birth			DATE	NOT NULL		-
staff_qualifications			VARCHAR(150)	NOT NULL		All the qualifications the staff member holds.

role						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
role_id	PK		SERIAL			-
role_name			VARCHAR(50)	NOT NULL		The name of the employable role.
role_description			TEXT			The description of what the role involves.

department						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
dept_id	PK		SERIAL			-
dept _name			VARCHAR(50)	NOT NULL		The name of the academic department.
dept _description			TEXT			A description of the department's area of research and study.

session						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
session_id	PK		SERIAL			-
subject_id	FK		INT	NOT NULL	subject.subject_id	-
session_date			DATE	NOT NULL		The date of the teaching session.

timetable						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
timetable_id	PK		SERIAL			-
subject_id	FK		INT	NOT NULL	subject.subject_id	-
staff_id	FK		INT	NOT NULL	staff_member.staff_id	-
timetable_date			VARCHAR(9)	NOT NULL		The date of the timetable.
timetable_start_time			TIME	NOT NULL, CHECK "08:00" <= timetable_start_time <= "17:00"		The start time of the session on the timetable.
timetable_end_time			TIME	NOT NULL, CHECK "09:00" <= timetable_end_time <= "18:00"		The end time of the session on the timetable.
Timetable_building_name			VARCHAR(30)	NOT NULL		The name of the building holding the session.
timetable_room_number			VARCHAR(6)	NOT NULL		The room number of the session.
timetable_code			VARCHAR(10)	NOT NULL		The group code of the teaching session.

course						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
course_id	PK		SERIAL			-
subject_id	FK		INT	NOT NULL	subject.subject_id	-
dept_id	FK		INT	NOT NULL	department.dept_id	-
course_name			VARCHAR(100)	NOT NULL		The name of the course.
course_description			TEXT			The description of what the course aims to teach.

subject						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
subject_id	PK		SERIAL			-
subject_name			VARCHAR(50)	NOT NULL		The name of the module the student is taking/being taught.
subject_description			TEXT			A description of what the subject aims to teach.

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course_subject						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
course_id	PK/FK		INT	NOT NULL	course.course_id	-
subject_id	PK/FK		INT	NOT NULL	subject.subject_id	-

staff_session						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
staff_id	PK/FK		INT	NOT NULL	staff.staff_id	-
session_id	PK/FK		INT	NOT NULL	session.session_id	-

emergency_contact						
Attribute_Name	*KEY*	*INDEX*	*Data Type & Size*	*Domains & Constraints*	*FK Reference*	*Description*
emer_id	PK		SERIAL			-
add_id	FK		INT	NOT NULL	address.addr_id	-
emer_first_name			VARCHAR(50)	NOT NULL		-
emer_mid_name			VARCHAR(50)			-
emer_last_name			VARCHAR(50)	NOT NULL		-

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emer_email			VARCHAR(100)	NOT NULL, UNIQUE		-
emer_phone_number			VARCHAR(15)	NOT NULL, UNIQUE		-

address						
Attribute_Name	KEY	INDEX	Data Type & Size	Domains & Constraints	FK Reference	Description
add_id	PK		SERIAL			-
add_line_1			VARCHAR(50)	NOT NULL		-
add_line_2			VARHCAR(50)			-
add_city			VARHCAR(30)	NOT NULL		-
add_postcode			VARHCAR(8)	NOT NULL		-