High-Level ER Diagram
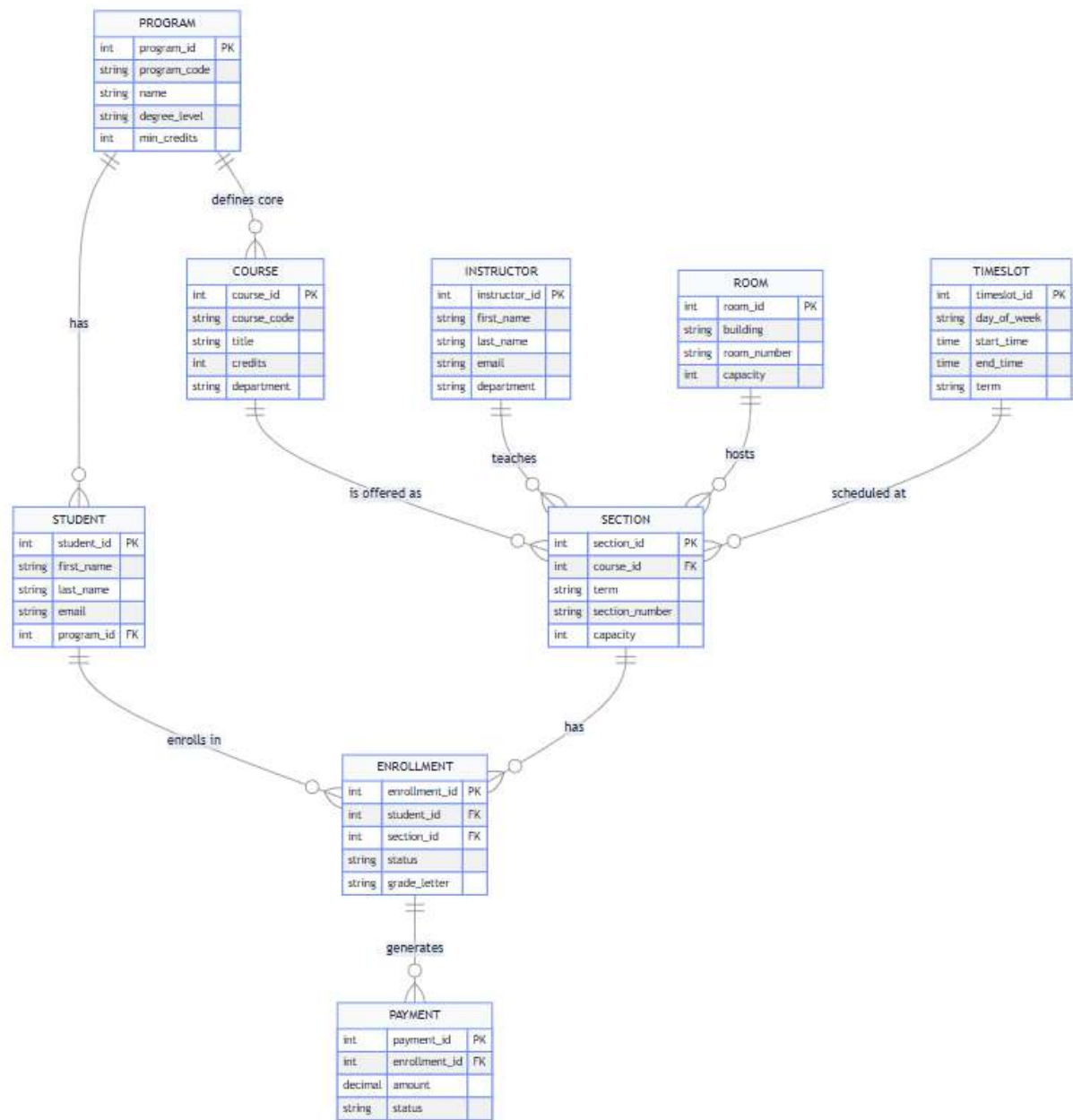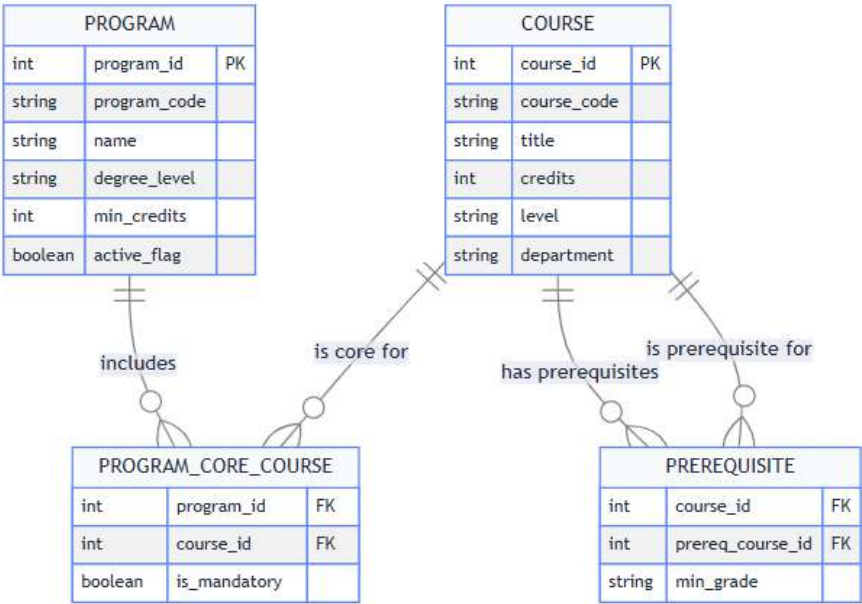
Complete overview of the University Course Registration & Timetabling System entities and their relationships.
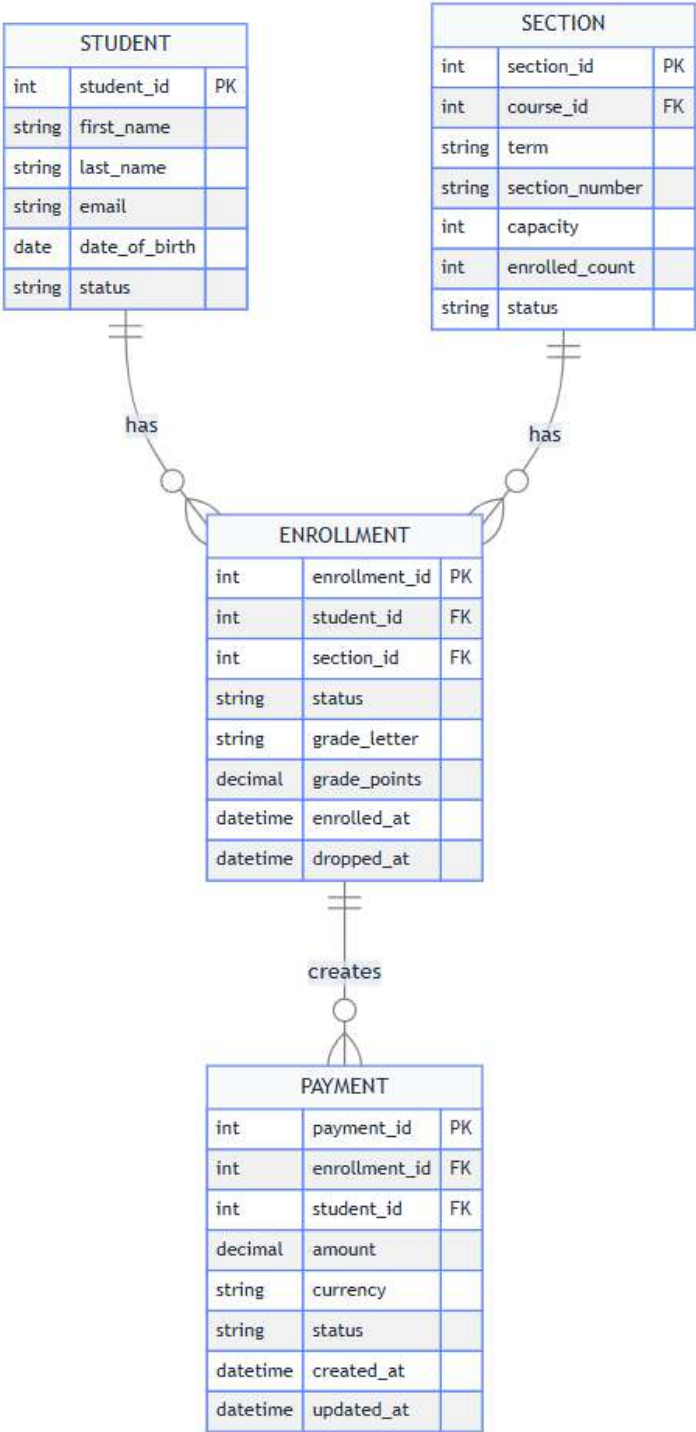
PROGRAM

int	program_id	PK
string	program_code	
string	name	
string	degree_level	
int	min_credits	

defines core

has

COURSE

int	course_id	PK
string	course_code	
string	title	
int	credits	
string	department	

INSTRUCTOR

int	instructor_id	PK
string	first_name	
string	last_name	
string	email	
string	department	

ROOM

int	room_id	PK
string	building	
string	room_number	
int	capacity	

TIMESLOT

int	timeslot_id	PK
string	day_of_week	
time	start_time	
time	end_time	
string	term	

teaches

hosts

is offered as

scheduled at

STUDENT

int	student_id	PK
string	first_name	
string	last_name	
string	email	
int	program_id	FK

SECTION

int	section_id	PK
int	course_id	FK
string	term	
string	section_number	
int	capacity	

enrolls in

has

ENROLLMENT

int	enrollment_id	PK
int	student_id	FK
int	section_id	FK
string	status	
string	grade_letter	

generates

PAYMENT

int	payment_id	PK
int	enrollment_id	FK
decimal	amount	
string	status	

Program & Prerequisites ER

Focus on academic programs, core courses, and course prerequisite chains.

PROGRAM

int	program_id	PK
string	program_code	
string	name	
string	degree_level	
int	min_credits	
boolean	active_flag	

COURSE

int	course_id	PK
string	course_code	
string	title	
int	credits	
string	level	
string	department	

includes

is core for

has prerequisites

is prerequisite for

PROGRAM_CORE_COURSE

int	program_id	FK
int	course_id	FK
boolean	is_mandatory	

PREREQUISITE

int	course_id	FK
int	prereq_course_id	FK
string	min_grade	

Enrollment & Payments ER

Student enrollment process, section registration, and payment tracking.

STUDENT

int	student_id	PK
string	first_name	
string	last_name	
string	email	
date	date_of_birth	
string	status	

SECTION

int	section_id	PK
int	course_id	FK
string	term	
string	section_number	
int	capacity	
int	enrolled_count	
string	status	

has

has

ENROLLMENT

int	enrollment_id	PK
int	student_id	FK
int	section_id	FK
string	status	
string	grade_letter	
decimal	grade_points	
datetime	enrolled_at	
datetime	dropped_at	

creates

PAYMENT

int	payment_id	PK
int	enrollment_id	FK
int	student_id	FK
decimal	amount	
string	currency	
string	status	
datetime	created_at	
datetime	updated_at	

PROGRAM

Column	Type	Constraints
⚷ program_id	INT	PK
program_code	VARCHAR(20)	UNIQUE NOT NULL
name	VARCHAR(100)	NOT NULL
degree_level	VARCHAR(20)	NOT NULL
min_credits	INT	NOT NULL
active_flag	BOOLEAN	NOT NULL

STUDENT

Column	Type	Constraints
⚷ student_id	INT	PK
first_name	VARCHAR(50)	
last_name	VARCHAR(50)	
email	VARCHAR(100)	UNIQUE
date_of_birth	DATE	
⚮ program_id	INT	FK → PROGRAM(program_id)
admit_term	VARCHAR(20)	
status	ENUM('ACTIVE','INACTIVE','GRADUATED')	
created_at	DATETIME	

COURSE

Column	Type	Constraints
⚷ course_id	INT	PK
course_code	VARCHAR(20)	UNIQUE NOT NULL
title	VARCHAR(100)	NOT NULL
credits	TINYINT	NOT NULL
level	VARCHAR(20)	
department	VARCHAR(50)	
active_flag	BOOLEAN	

PROGRAM_CORE_COURSE

Column	Type	Constraints
⚷ program_id	INT	PK FK → PROGRAM(program_id)
⚷ course_id	INT	PK FK → COURSE(course_id)
is_mandatory	BOOLEAN	

PREREQUISITE

⚷ course_id	INT	PK	FK → COURSE(course_id)
⚷ prereq_course_id	INT	PK	FK → COURSE(course_id)
min_grade	CHAR(2)		

ROOM

⚷ room_id	INT	PK
building	VARCHAR(50)	
room_number	VARCHAR(20)	
capacity	INT	
room_type	VARCHAR(50)	

TIMESLOT

⚷ timeslot_id	INT PK
day_of_week	ENUM('MON','TUE','WED','THU','FRI','SAT')
start_time	TIME
end_time	TIME
term	VARCHAR(20)

INSTRUCTOR

⚷ instructor_id	INT	PK
first_name	VARCHAR(50)	
last_name	VARCHAR(50)	
email	VARCHAR(100)	UNIQUE
department	VARCHAR(50)	

SECTION

⚷ section_id	INT	PK
⚬ course_id	INT	FK → COURSE(course_id)
term	VARCHAR(20)	
section_number	VARCHAR(10)	
⚬ room_id	INT	FK → ROOM(room_id)
⚬ timeslot_id	INT	FK → TIMESLOT(timeslot_id)
⚬ instructor_id	INT	FK → INSTRUCTOR(instructor_id)
capacity	INT	
waitlist_capacity	INT	
enrolled_count	INT	
status	ENUM('PLANNED','OPEN','CLOSED','CANCELLED')	

ENROLLMENT

⚷ enrollment_id	INT	PK
⚬ student_id	INT	FK → STUDENT(student_id)
⚬ section_id	INT	FK → SECTION(section_id)
status	ENUM('ENROLLED','WAITLISTED','DROPPED','COMPLETED')	
grade_letter	CHAR(2)	
grade_points	DECIMAL(3,2)	
enrolled_at	DATETIME	
dropped_at	DATETIME	

PAYMENT

⚷ payment_id	INT	PK
⚮ enrollment_id	INT	FK → ENROLLMENT(enrollment_id)
⚮ student_id	INT	FK → STUDENT(student_id)
amount	DECIMAL(10,2)	
currency	CHAR(3)	
status	ENUM('HOLD','CAPTURED','FAILED','REFUNDED')	
created_at	DATETIME	
updated_at	DATETIME	