students

student_id	last_name	first_name	gender	date_of_birth
1234	Smith	Dave	M	2000-01-01
1235	Kay	Mary	F	1995-01-01

- Database: Organized collection of data
- Relational database: Data is stored in *relations* (tables).
- Table: Stores data of a particular type, e.g., **students**, **employees**, **products**
- Row: One instance of data in a table, e.g. a row for a student in the **students** table, a product item in the **products** table
- Column: One type of data in a row
- Field: The value of one column of data in a row; one or more fields make up a row

Let’s add another table..

enrollments

enrollment_id	student_id	course_code	course_name	semester
1	1234	CIT-236	SQL Programming	Spring
2	1235	CIT-129	Mobile App Development	Spring
3	1235	CIT-236	SQL Programming	Spring
	…			

What does this tell us?

- Dave (student_id 1234) is enrolled in CIT-236 for the Spring semester.
- Mary (student_id 1235) is enrolled in CIT-129 and CIT-236 in the Spring.

Examine the data types in these tables

students

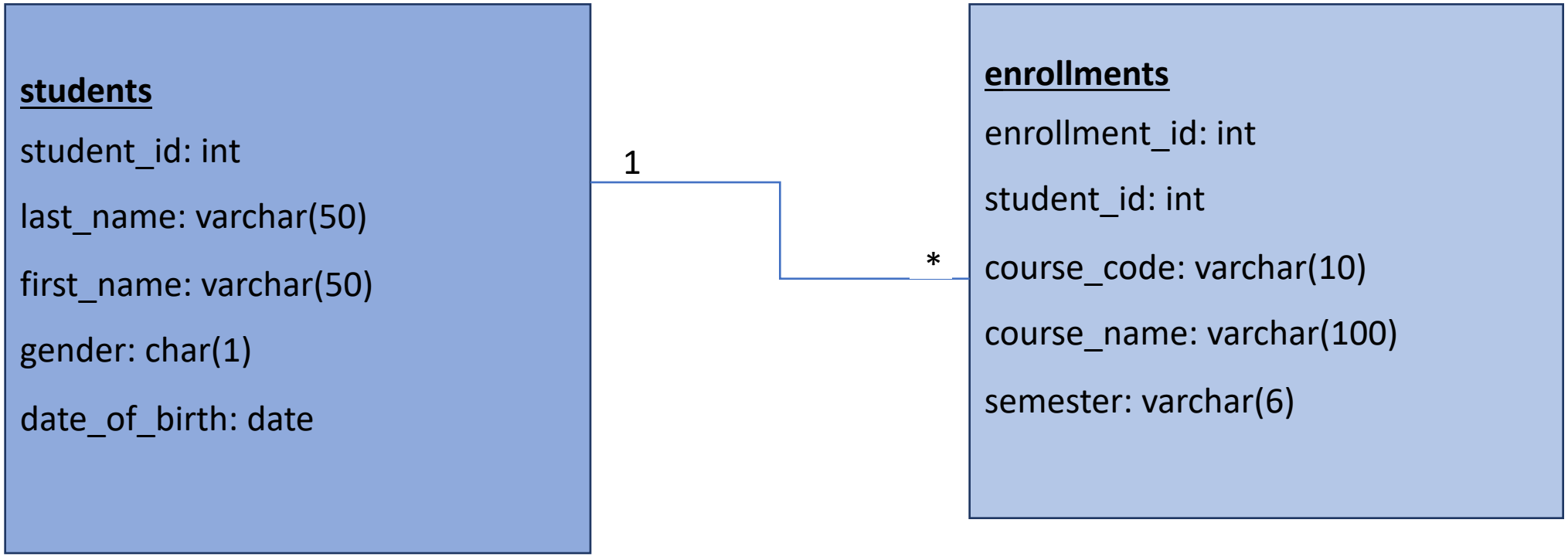
- student_id: int
- last_name: varchar(50) (a string of characters, max length 50)
- first_name: varchar(50)
- gender: char(1) (one character)
- date_of_birth: date

enrollments

- enrollment_id: int
- student_id: int
- course_code: varchar(10)
- course_name: varchar(100)
- semester: varchar(6)

students.student_id is unique of each student, it is a **PRIMARY KEY**
enrollments.student_id references students.student_id, it is a **FOREIGN KEY**

A database diagram



A one-to-many relationship

Fetching data from tables

SELECT * FROM students;

id	last_name	first_name	gender	date_of_birth
1234	Smith	Dave	M	2000-01-01
1235	Kay	Mary	F	1995-01-01

SELECT last_name, first_name FROM students;

last_name	first_name
Smith	Dave
Kay	Mary

SELECT * FROM students
WHERE first_name = 'Dave';

id	last_name	first_name	gender	date_of_birth
1234	Smith	Dave	M	2000-01-01

SQL

- Structured Query Language
- SELECT is a query to fetch data
- Using SQL, you can also:
  - Update data
  - Insert new data
  - Delete data
  - Create and alter the structure of database tables
  - …

Readings

- Access the course page on Moodle, read the syllabus document in detail.
- Overview of the MySQL database system
- Introduction to MySQL Workbench
- Database Design (2nd Edition): Chapters 1 & 2