

Quiz 1

Databases

25 February 2026

Full name:

You have 10 minutes to answer this quiz, directly on this sheet of paper. No electronic devices or material of any kind is allowed. Do not forget to add your name above. Every question amounts to 2 points; the quiz is graded out of 10 points.

Questions

Q1. Which of the following is **not** a typical responsibility of a DBMS?

- a. Guaranteeing durability after a committed transaction.
- b. Optimizing queries automatically.
- c. Writing the application's business logic in place of the programmer.
- d. Ensuring logical integrity through constraints.

Q2. Which statement about ACID properties is correct?

- a. Atomicity means that a transaction is either fully executed or fully canceled.
- b. Consistency means that the database never changes.
- c. Durability means that concurrent transactions are always executed in parallel.
- d. Isolation means that committed data may be lost after a crash.

Q3. In the relational model, what is the difference between a *schema* and an *instance*?

- a. The schema describes the structure of relations; the instance is the current set of tuples.
- b. The schema is stored on disk; the instance is stored in memory.
- c. The schema is the current content of the tables; the instance is their names.
- d. There is no formal difference between schema and instance.

Q4. Which of the following best describes a *foreign key* constraint?

- a. A rule that prevents duplicate tuples in a database.
- b. A set of attributes in one relation whose values must appear as values of attributes in another relation.
- c. A constraint that restricts attribute values to be positive.
- d. A set of attributes that uniquely identifies each tuple in a relation.

Q5. Consider the following relation schema:

`Enrollment(student, course, semester, grade)`

which describes which student (referenced by his or her student identifier) is enrolled in which course (referenced by a course identifier) for a given semester (of the form “Y-*Sn*” where *Y* is the year and *n* either 1 or 2), and the grade he or she obtained for that course (if any).

Assume that:

- A student can enroll in several courses in the same semester.
- A course is offered every semester.
- A student cannot enroll twice in the same course in the same semester.

Which of the following sets of attributes is a *key* of this relation?

- a. {course, semester}
- b. {student, grade}
- c. {student}
- d. {student, course, semester}