8. Databases

Starter Quiz ·

University Computer Science Name: _____ Score: _____

1. A many-to-many relationship becomes –

   ☐ a foreign key column

   ☐ a view

   ☐ nothing

   ☐ its own junction table

2. The operator that keeps columns is –

   ☐ selection

   ☐ union

   ☐ join

   ☐ projection

3. Changing a course title in 14 enrollment rows is –

   ☐ an update anomaly

   ☐ correct behaviour

   ☐ an insert anomaly

   ☐ a delete anomaly

4. A fan-out-100 B-tree of height 3 covers – keys

   ☐ 10 000

   ☐ 100 million

   ☐ 300

   ☐ 1 000 000

5. The A in ACID stands for –

   ☐ availability

   ☐ audit

   ☐ atomicity

   ☐ async

6. A release has quasi-identifier groups of sizes 6, 4, 9, 2 and 5. For which k is it k-anonymous?

7. A model has 4 entities, 3 one-to-many relationships and 2 many-to-many relationships. How many tables does it need?

8. On the sample schema (6 courses, 2 with no enrollment), how many rows does an inner join of Course and Enrollment grouped by course return?

9. A BCNF decomposition always preserves every functional dependency.

   ☐ True ☐ False

10. A B-tree has fan-out 1000. How many levels does it need to index one billion keys?

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Answers ·

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1. **its own junction table**

   The junction table holds the foreign-key pairs; neither end can hold the other.

2. **projection**

   Projection pi keeps the chosen columns; selection sigma keeps rows.

3. **an update anomaly**

   One fact stored many times: the update anomaly.

4. **1 000 000**

   m to the h: 100 cubed is a million - 3 reads per lookup.

5. **atomicity**

   All or nothing: the transaction commits completely or not at all.

6. **2**

   k is the smallest group size: 2.

7. **6**

   One table per entity plus one junction table per many-to-many: $4 + 2 = 6$.

8. **4**

   The inner join keeps only the 4 courses with enrollments, one group each.

9. **False**

   BCNF is always lossless but can lose a dependency; 3NF can always keep both.

10. **3**

    1000^3 = 10^9, so three levels suffice.