

# Week 14 Exercises:

## Phantoms and Predicate Locking and Eventual Consistency

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**Question 14.1:** Transactions operating on an empty table do not run into the phantom problem. (true/false)

**Question 14.2:** If index locking is not possible, predicate locking can be implemented by locking the entire relations involved with the transaction query. (true/false)

**Question 14.3:** Suppose that we have the following table

Students(id, name, score)

With a B+-tree index on id, and a B+-tree index on score.

Which of the following queries can have predicate locking optimized by index locking?

- A. SELECT id FROM students WHERE score = 0
- B. SELECT id FROM students WHERE name = "Adam"
- C. SELECT id FROM students WHERE id <> 1 AND score > 5
- D. SELECT id FROM students WHERE id = 1 OR score = 5

**Question 14.4:** Requiring consensus to guarantee consistency is expensive, since it limits the number of queries possible per second by the latency of consensus. (true/false)

**Question 14.5:** Under eventual consistency, one cannot tune R and W in a way such that there are no conflicts. (true/false)

**Question 14.6:** Dynamo's algorithm requires the client to resolve conflicts manually. (true/false)