# Database Management Systems
# Practice Exam Questions

### Question 1 Query Optimization

Solution Sketch:

IndexScan E: Size of result 2 tuples

Cost = 2 (index pages) + 2 data pages = 4 blocks

TableScan D: Size of result of join: 2 tuples

Cost = 100 blocks (since outer is pipelined)

Cost to Sort (E $\bowtie$ D) is 0 IO's (fits in memory)

Cost of Sort-Merge is then just cost of reading P = 100 Blocks (since they are sorted).

Cost for projection is 0 since no duplicate elimination is needed.

Total cost is 204 IO's

Estimated size of result: two emp tuples will join with two projects to give two tuples in result.

2. Estimated size of result: two emp tuples will join with two projects to give two tuples in result.

For range query, we would estimate 1/10 of the employeed to match the selection or 1000 tuples, each would be estimated to have a single dept and a single project giving 1000 tuples in the result.  3. min is 0, max is 5,000

### Question 2 Transaction Management

1. serializable, 2PL,

2. serializable, 2PL,

3. serializable, 2PL,

4. serializable, 2PL, strict 2PL

### Question 3 1. Y, 2. N, 3. Y.