For all queries, provide documentation and label all output columns appropriately. Use the stock prices schema we have used in class (it is included on the last page for your convenience). **MAKE NO ASSUMPTIONS ABOUT THE DATA!** Unless otherwise specified in the question, all answers should be a single SQL query.

1. Using join predicates in the where clause, find the name of all customers who sold a stock with the symbol ‘QQQQ’ on a day when the closing price was above 100. Also return the day of the transaction. (10)

2. Answer Question 1 using the JOIN operator and NO join predicates in the where clause. (10)
3. Using derived relations, find the names of all customers who have sold more shares of a stock than they have bought. Include the stockid in the result. Remember that a customer selling stock without buying it should be in the result.
4. Every customer named Casey Customer bought 100 shares of Microsoft Corp stock on September 24, 2009 at the closing price. The commission was 2%. Update the stockprices table to represent this purchase.

5. Casey Customer turned out to be a fraud! Delete him and all of his transactions from the database. You may use multiple SQL statements, but do not violate any consistency constraints.
6. List all states where every customer from that state has made at least 3 transactions.
7. Why is it good practice to close Connection, Statement, and ResultSet objects even though they are automatically closed? (3)

8. What is the default behavior for MySQL for returning results after executing a query in a JDBC program? (3)

9. According to the Java API, how is the boolean value returned by the ResultSet method next() determined? (4)
10. Let table $T$ have only 1 attribute, $A$. Let table $S$ have only 1 attribute, also $A$. In table $T$, there are 5 rows and in table $S$ there are 3 rows. Every row in every table has the value 7. How many rows are returned for each query? Each part is worth 1 point.

(a) \((\text{Select } A \text{ from } T) \text{ EXCEPT (Select } A \text{ from } S)\)

(b) \((\text{Select } A \text{ from } T) \text{ EXCEPT ALL (Select } A \text{ from } S)\)

(c) \((\text{Select } A \text{ from } T) \text{ INTERSECT (Select } A \text{ from } S)\)

(d) \((\text{Select } A \text{ from } T) \text{ INTERSECT ALL (Select } A \text{ from } S)\)

(e) \((\text{Select } A \text{ from } T) \text{ UNION (Select } A \text{ from } S)\)

(f) \((\text{Select } A \text{ from } T) \text{ UNION ALL (Select } A \text{ from } S)\)

11. If the query

\[
\text{Select } * \text{ From table1, table1;}
\]

returns 100 rows, the query

\[
\text{Select } * \text{ from table1 Natural Join table1;}
\]

returns how many rows?