CS348 Midterm Review Chapter 5

SQL aspects:

The Data Manipulation Language(DML): to insert, delete, modify rows

The Data Definition Language(DDL): creation, deletion, and modification of definitions for tables and views. No discuss indexes, commercial implementations create and delete indexes.

Integrity constraints: defined on tables, either when the table is created or later.

triggers: actions executed by the DBMS whenever changes to the database meet conditions specified in the trigger.

Embedded and Dynamic SQL: Embedded SQL allow code to be called from a host language such as C. Dynamic SQL allow a query to be constructed at run-time.

Client-Server Execution and Remote Database Access: Commands control how a client application program can connect to an SQL database server.

Transaction Management: commands allow a user to explicitly control aspects of how a transaction is to be executed.

Security: control users' access to data objects such as tables and views.

conceptual evaluation strategy: a way to evaluate the query that is intended to be easy to understand rather than efficient.

multiset: it is an unordered collection of elements, but the number of copies is different for some elements is another set.

Query: a relation which is a multiset of rows in SQL

WHEN COMPARE STRINGS: SQL supports a general concept of a collation for a character set.

LIKE operator: pattern matching. %.
For example: '_AB%'

Set-Comparison Operators:
Three operations: UNION(default eliminate duplicates), UNION ALL(not eliminate duplicates), INTERSECT, EXCEPT, EXCEPT ALL
IN(check if an element is in a given set) (can be prefixed by NOT)

op ANY/ALL(compare a value with the elements in a given set, using comparison operator op) (S.rating > ANY… must return true)
EXISTS(check if a set is empty) (can be prefixed by NOT)
UNIQUE, NOT UNIQUE

IN equivalent to = ANY
NOT IN equivalent to <> ALL

Nested Query:
- a query that has another query embedded within it.
- the embedded query is called a subquery(appear within the **WHERE**, FROM, HAVING, etc).
- not available in relational algebra, but can be translated into algebra (inner subquery can be independent or dependent of the outer query)

Correlated Nested Queries:
- inner subquery dependent of the outer query

Aggregate Operators:
- computing aggregate values such as MIN and SUM
- COUNT([DISTINCT] A): the number of (unique) values in the A column
- SUM([DISTINCT] A): the sum of all (unique) values in the A column
- AVG([DISTINCT] A): the average of all (unique) values in the A column
- MAX(A): the maximum value in the A column
- MIN(A): the minimum value in the A column
*MAX比ALL好，MIN比ANY好

- GROUP BY
- HAVING: whether an answer row is to be generated for a given group.(也可以nested)

NULL values: (need to read again)
- when the column value is either unknown or inapplicable
- must define AND, OR, NOT using three-value logic for true, false or unknown.

Complex integrity constraints:

- CHECK conditional-expression: if it evaluates to false, the command is rejected.
- CREATE DOMAIN: define a new domain, uses CHECK constraints.
- ASSERTION

Triggers:(need to read again)
- procedure that is automatically invoked by the DBMS in response to specified changes to the database.
Three Parts:
- Event: A change to the database that activates the trigger
- Condition: A query or test that is run when the trigger is activated
- Action: A procedure that is executed when the trigger is activated and its condition is true