Career Services Assignment 6 – SQL Flash Cards

Points possible: 50

Category	Criteria	% of Grade
Completeness	All requirements of the assignment are complete.	100

Instructions: Research common SQL interview questions online and create 20 flash cards from the information you find. Study your flash cards regularly to better prepare for interviews. Fill out the table below with the information you put on each of your flash cards.

Front of Card	Back of Card
What is Database?	A database is an organized collection of data, stored and retrieved digitally from a remote or local computer system. Databases can be vast and complex, and such databases are developed using fixed design and modeling approaches.
What is DBMS?	DBMS stands for Database Management System. DBMS is a system software responsible for the creation, retrieval, updating, and management of the database. It ensures that our data is consistent, organized, and is easily accessible by serving as an interface between the database and its end-users or application software.
What is RDBMS? How is it different from DBMS?	RDBMS stands for Relational Database Management System. The key difference here, compared to DBMS, is that RDBMS stores data in the form of a collection of tables, and relations can be defined between the common fields of these tables. Most modern database management systems like MySQL, Microsoft SQL Server, Oracle, IBM DB2, and Amazon Redshift are based on RDBMS.
What is SQL?	SQL stands for Structured Query Language. It is the standard language for relational database management systems. It is especially useful in handling organized data comprised

	of entities (variables) and relations between different entities of the data.
What is the difference between SQL and MySQL?	SQL is a standard language for retrieving and manipulating structured databases. On the contrary, MySQL is a relational database management system, like SQL Server, Oracle, or IBM DB2, that is used to manage SQL databases.
What are Tables and Fields?	A table is an organized collection of data stored in the form of rows and columns. Columns can be categorized as vertical and rows as horizontal. The columns in a table are called fields while the rows can be referred to as records.
What are Constraints in SQL?	Constraints are used to specify the rules concerning data in the table. It can be applied for single or multiple fields in an SQL table during the creation of the table or after creating using the ALTER TABLE command. The constraints are: NOT NULL - Restricts NULL value from being inserted into a column. CHECK - Verifies that all values in a field satisfy a condition. DEFAULT - Automatically assigns a default value if no value has been specified for the field. UNIQUE - Ensures unique values to be inserted into the field. INDEX - Indexes a field providing faster retrieval of records. PRIMARY KEY - Uniquely identifies each record in a table. FOREIGN KEY - Ensures referential integrity for a record in another table.
What is a Primary Key?	The PRIMARY KEY constraint uniquely identifies each row in a table. It must contain UNIQUE values and has an implicit NOT NULL constraint. A table in SQL is strictly restricted to have one and only one primary key, which is comprised of single or multiple fields (columns).

What is a UNIQUE constraint?	A UNIQUE constraint ensures that all values in a column are different. This provides uniqueness for the column(s) and helps identify each row uniquely. Unlike primary key, there can be multiple unique constraints defined per table. The code syntax for UNIQUE is quite like that of PRIMARY KEY and can be used interchangeably.
What is a Foreign Key?	A FOREIGN KEY comprises of single or collection of fields in a table that essentially refers to the PRIMARY KEY in another table. Foreign key constraint ensures referential integrity in the relation between two tables. The table with the foreign key constraint is labeled as the child table, and the table containing the candidate key is labeled as the referenced or parent table.
What is a Join? List its different types.	The SQL Join clause is used to combine records (rows) from two or more tables in a SQL database based on a related column between the two. There are four different types of JOINs in SQL: (INNER) JOIN: Retrieves records that have matching values in both tables involved in the join. This is the widely used join for queries. LEFT (OUTER) JOIN: Retrieves all the records/rows from the left and the matched records/rows from the right table. RIGHT (OUTER) JOIN: Retrieves all the records/rows from the right and the matched records/rows from the left table. FULL (OUTER) JOIN: Retrieves all the records where there is a match in either the left or right table.
What is a Self-Join?	A self-JOIN is a case of regular join where a table is joined to itself based on some relation between its own column(s). Self-join uses the INNER JOIN or LEFT JOIN clause, and a table alias is used to assign different names to the table within the query.

What is a Cross-Join?	Cross join can be defined as a cartesian product of the two tables included in the join. The table after join contains the same number of rows as in the cross-product of the number of rows in the two tables. If a WHERE clause is used in cross join, then the query will work like an INNER JOIN.
What is an Index? Explain its different types.	A database index is a data structure that provides a quick lookup of data in a column or columns of a table. It enhances the speed of operations accessing data from a database table at the cost of additional writes and memory to maintain the index data structure. There are different types of indexes that can be created for different purposes: Unique and Non-Unique Index: Unique indexes are indexes that help maintain data integrity by ensuring that no two rows of data in a table have identical key values. Once a unique index has been defined for a table, uniqueness is enforced whenever keys are added or changed within the index. Non-unique indexes, on the other hand, are not used to enforce constraints on the tables with which they are associated. Instead, non-unique indexes are used solely to improve query performance by maintaining a sorted order of data values that are used frequently. Clustered and Non-Clustered Index: Clustered indexes are indexing whose order of the rows in the database corresponds to the order of the rows in the index. Therefore, only one clustered index can exist in a given table, whereas multiple non-clustered indexes can exist in the table. The only difference between clustered and non-clustered indexes is that the database manager attempts to keep the data in the database in the same order as the corresponding keys appear in the clustered index.

	Clustering indexes can improve the performance of most query operations because they provide a linear-access path to data stored in the database.
What is the difference between Clustered and Non-clustered index?	As explained above, the differences can be broken down into three small factors: Clustered index modifies the way records are stored in a database based on the indexed column. A non-clustered index creates a separate entity within the table which references the original table. Clustered index is used for easy and speedy retrieval of data from the database, whereas, fetching records from the non-clustered index is relatively slower. In SQL, a table can have a single clustered index whereas it can have multiple non-clustered indexes.
What is Data Integrity?	Data Integrity is the assurance of accuracy and consistency of data over its entire life cycle and is a critical aspect of the design, implementation, and usage of any system which stores, processes, or retrieves data. It also defines integrity constraints to enforce business rules on the data when it is entered into an application or a database.
What is a Query?	A query is a request for data or information from a database table or combination of tables. A database query can be either a select query or an action query.
What is a Subquery? What are its types?	A subquery is a query within another query, also known as a nested query or inner query. It is used to restrict or enhance the data to be queried by the main query, thus restricting or enhancing the output of the main query respectively. For example, here we fetch the contact information for students who have enrolled for the math subject: There are two types of subqueries - Correlated and Non-Correlated. A correlated subquery cannot be considered as an independent query, but it can refer to the

	column in a table listed in the FROM of the main query. A non-correlated subquery can be considered as an independent query and the output of the subquery is substituted in the main query.
What is the SELECT statement?	SELECT operator in SQL is used to select data from a database. The data returned is stored in a result table, called the result-set.
What are some common clauses used with SELECT query in SQL?	Some common SQL clauses used in conjunction with a SELECT query are as follows: WHERE clause in SQL is used to filter records that are necessary, based on specific conditions. ORDER BY clause in SQL is used to sort the records based on some field(s) in ascending (ASC) or descending order (DESC). GROUP BY clause in SQL is used to group records with identical data and can be used in conjunction with some aggregation functions to produce summarized results from the database. HAVING clause in SQL is used to filter records in combination with the GROUP BY clause. It is different from WHERE, since the WHERE clause cannot filter aggregated records.