Week 1

**Day 1: Introduction to SQL**

∙ Understanding the significance of SQL in managing databases.

∙ Installing SQL and navigating its interface.

∙ Introduction to Database Management Systems (DBMS).

∙ Exploring SQL Data types and their application.

∙ Grasping SQL Syntax and crafting basic SQL statements.

∙ Utilizing SQL Operators for data manipulation.

∙ Basics of database management: Creating, modifying, and querying databases.

**Day 2: SQL Queries and Constraints**

∙ Crafting Basic SQL Queries to retrieve data.

∙ Performing Advanced SQL Queries, including Subqueries.

∙ Understanding Constraints in SQL: Primary keys, Foreign keys, and others. ∙ Database creation, Table creation, and Auto Increment usage for efficient data storage. ∙ Updating existing data using the Update Statement.

∙ Dropping and altering databases and tables.

**Day 3: SQL Clauses and Aggregate Functions**

∙ Creating Entity Relationship Diagrams (ERDs) for visualizing database structures. ∙ Exploring SQL Clauses: Where, Distinct, Order By, and Group By for advanced querying. ∙ Utilizing Aggregate Functions for data analysis and reporting.

∙ Mastering the Join Statement: Right, Left, Inner Join, and more.

∙ Implementing Conditional Expressions and Control Flow functions (IF, IFNULL, NULLIF, etc.) for  complex data manipulation.

**Day 4: SQL Views and Data Integration**

∙ Simplifying complex queries and improving data security with SQL Views.

∙ Using Case and Coalesce Statements for data transformation and handling NULL values. ∙ Introduction to Stored Procedures for efficient and reusable database operations. ∙ Exporting and Importing Databases for data backup and migration.

∙ Reviewing Week 1 concepts and preparing for the final project.

Week 2

**Day 5: SQL Transactions and Concurrency Control**

∙ Understanding SQL Transactions and ensuring data integrity.

∙ Implementing Concurrency Control to manage simultaneous user interactions.

**Day 6: Data Security in SQL**

∙ Exploring Data Security in SQL databases, including user privileges and access control. ∙ Implementing security measures to protect sensitive information.

**Day 7: Performance Optimization and Indexing**

∙ Optimizing SQL Queries for enhanced performance.

∙ Creating Indexes to expedite data retrieval operations.

**Day 8: Advanced SQL Concepts**

∙ Utilizing Cursor Management for advanced data manipulation.

∙ Working with Triggers for automated responses to database events.

∙ Introduction to Recursive SQL for handling hierarchical data structures.