

Course Details**Course Code:** 55377A**Duration:** 3 days**Notes:**

- This course syllabus should be used to determine whether the course is appropriate for the students, based on their current skills and technical training needs.
- Course content, prices, and availability are subject to change without notice.
- Terms and Conditions apply

Elements of this syllabus are subject to change.

About this course

Skillable has reimaged this popular SQL Databases course using our modern challenge-centric instructional design model. Live hands-on labs are at the forefront of this course allowing learners to learn while doing and include additional reference materials and post class access to Skillable's Challenge Labs to further promote and enable continuous learning. In this course, learners will validate their introductory skills related to SQL Databases including data modelling, relationships, aggregation, and database objects.

Audience Profile

This course is intended learners that are seeking introduction to data bases and data base technologies.

At Course Completion

- Explain Databases and Storage
- Demonstrate Data and Relationship Modelling
- Examine the differences of Normalization and Denormalization
- Plan for Relationships
- Understand Performance using Index
- Implement Data Aggregation Best Practices
- Execute Data Modification Best Practices

Prerequisites

As this is an introductory level course, and although not required, it is recommended that learners have basic computer literacy and skills.

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Module 1: Introduction to Databases

In this hands-on adaptive module, learners will explore and query a Microsoft SQL Server database. First, query data from a single table in Transact-SQL. Next, filter data in Transact-SQL, and then limit query results in Transact-SQL.

Lessons

- Introduction to Databases

Lab 1: Introduction to Databases

- Query Data from a Single Table in Transact-SQL
- Filter Data in Transact-SQL
- Sort and Limit Query Results in Transact-SQL

After completing this module, students will be able to:

- Describe the characteristics of relational databases.
- Describe other types of database and storage methods.
- Describe the data analysis process.
- Describe SQL server languages.

Module 2: Data Modelling

In this hands-on adaptive module, learners will design and model a Microsoft SQL Server database. First, create a database, and then a database diagram for data modelling. Next, create tables by using a database diagram and finally, create relationships by using a database diagram.

Lessons

- Data Modelling

Lab 1: Data Modelling

- Create a database diagram
- Create tables by using a database diagram
- Create relationships by using a database diagram

After completing this module, students will be able to:

- Describe data modelling techniques.
- Understand the three levels of the ANSI-SPARC Database Model.
- Understand the entity relationship model.

Module 3: Normalization

In this hands-on adaptive module, learners will normalize a Microsoft SQL Server database. First, understand the benefits of Normalization to ensure a standardized database schema. Next, normalize a database diagram to the three most widely accepted Normal Forms.

Lessons

- Normalization

Lab 1: Normalization

- Normalize to the First Normal Form
- Normalize to the Second Normal Form
- Normalize to the Third Normal Form

After completing this module, students will be able to:

- Describe the benefits of normalization.
- Outline the levels of normal form.
- Explain the benefits of denormalization and describe techniques for achieving it.

Module 4: Relationships

In this hands-on adaptive module, the learner will create a database diagram to show relationships for an existing database. Next, develop queries that include joining multiple tables by using relationships. Finally, develop more specific queries that include joining multiple tables by using outer joins.

Lessons

- Relationships

Lab 1: Relationships

- Create a database diagram
- Join multiple tables by using relationships
- Join multiple tables by using outer joins

After completing this module, students will be able to:

- Understand how to implement relationships in a SQL database
- Describe how to establish referential integrity in a SQL Server database

Module 5: Performance

In this hands-on adaptive module, learners will enable Query Store, and then analyse query performance by using a clustered index. Next,

analyse query performance by using a non-clustered index, and then analyse query performance by using a covering index.

Lessons

- Performance

Lab 1: Performance

- Analyse Query Performance by Using a Clustered Index
- Analyse Query Performance by Using a Non-clustered Index
- Analyse Query Performance by Using a Covering Index

After completing this module, students will be able to:

- Understand the performance effects of database design.
- Discuss the implications of indexing, query performance, and concurrency.

Module 6: Data Aggregation

In this hands-on adaptive module, learners will explore and aggregate by using a Microsoft SQL Server database. First, develop queries that return data by using aggregate functions. Next, develop queries that summarize data by using the GROUP BY clause, and then, explore queries that filter data by using the HAVING clause.

Lessons

- Data Aggregation

Lab 1: Data Aggregation

- Validate Aggregate Functions
- Summarize and Group Data
- Aggregate and Filter Data

After completing this module, students will be able to:

- List the built-in aggregate functions provided by SQL Server.
- Write queries that use aggregate functions in a SELECT list.
- Describe the of the DISTINCT option in aggregate functions.
- Write queries using aggregate functions that can manage the presence of NULLS.

Module 7: Modify Data

In this hands-on adaptive module, learners will modify data. First, explore and modify a Microsoft SQL Server database by using Transact-SQL and then, insert data into a table. Next, update data in a table, delete data from a table, and finally, you will copy data from a source table to a new target table by using the SELECT - INTO clause.

Lessons

- Modify Data

Lab 1: Modify Data

- Insert Data into a Table
- Update and Delete Data in a Table
- Copy Data into a New Target Table

After completing this module, students will be able to:

- Write queries that use aggregate functions in a SELECT list
- Describe the of the DISTINCT option in aggregate functions

Write queries using aggregate functions that can manage the presence of NULLS

Module 8: Database Objects

In this hands-on adaptive module, learners will on database objects. First, create objects in a Microsoft SQL Server database by using Transact-SQL. Next, create a table by selecting appropriate data types. and create a view for security. Finally, create a basic stored procedure, and then create a stored procedure that uses an input parameter.

Lessons

- Database Objects

Lab 1: Database Objects

- Create a Table
- Create a View
- Create Stored Procedures

After completing this module, students will be able to:

- Create tables and use data types.
- Use constraints to ensure integrity.
- Create and use views.

- Create and use stored procedures, functions, and triggers.