

Database Development

Exam Information	Description
Exam number 860 Items 30 National Career Cluster Information Technology Certification available No, In Pilot Status	Database development is the process of creating, managing, and manipulating data using specialized software and techniques. In this course, candidates will learn the basics of database design, implementation, and query languages. Candidates will gain hands-on experience with SQL, a standard language for accessing and manipulating data in relational databases. This course will provide candidates with the necessary skills to pursue academic and professional opportunities in the field of database development.

Exam Blueprint and Performance Skills

Standard	Percentage of exam score
1. Database Fundamentals	9%
2. Understanding Structured Data	54%
3. Database Design	26%
4. Data Security And Stability	11%

*Includes performance skill evaluation

Standard 1 - Database Fundamentals

Objective 1 Data Storage Ethics

1. Identify ethical issues within the industry.
 - a. Personal Identifying Information (PII)
 - b. Proprietary data

Objective 2 History of Databases

1. Historical database systems
2. Understand what a relational database is.
3. Understand the need for relational data management systems (RDMS).

Objective 3 Opportunities

1. Identify career opportunities in the database industry (DBA (Database Administrator), programmer, reporting programmer, database designer, and database developer).

Standard 2 - Understanding Structured Data

SQL (Structured Query Language) languages subsets of database development

Objective 1 Data Query Language (DQL)

1. Demonstrate simple one table selects.
2. Limit results of a SELECT with WHERE
3. Check for NULL values.
4. Demonstrate joined tables using inner
5. Understand what a Cartesian product is and how to avoid creating one.
6. Demonstrate sorting with ORDER BY.
7. Demonstrate the use of standard functions.
8. Demonstrate grouping with aggregate functions.
9. Limit results with HAVING
10. Demonstrate outer joins

Objective 2 Data Definition Language (DDL)

1. Create a database.
2. Create objects in a database.
3. Maintenance of the database and objects.
4. Remove database objects.

Objective 3 Data Manipulation Language (DML)

1. Demonstrate inserting data into a table.
2. Demonstrate order when inserting into parent/child tables.
3. Demonstrate updating one row updates.
4. Demonstrate multiple rows to full table updates.
5. Demonstrate deleting one row.
6. Demonstrate deleting multiple rows to full table deletes.
7. Show understanding of the difference between truncate and delete.

Objective 4 Transaction Control Language (TCL)

1. Identify transaction points
2. Revert transactions
3. Lock transactions in

Objective 5 Data Control Language (DDL)

1. Grant rights to database objects.
2. Revoke rights to database objects.

Standard 3 - Database Design

Objective 1 Normalization

1. Identify the major steps of data normalization
 - a. Raw data
 - b. First Normal Form (1NF)
 - c. Second Normal Form (2NF)
 - d. Third Normal Form (3NF)
 - e. Boyce-Codd Normal Form (BCNF)
2. Understand each level and why 3NF is the standard for normalization

Objective 2 Table Design

1. Demonstrate knowledge of relationship types. (cardinality)
 - a. one to one
 - a. one to many
 - b. many to many
2. Demonstrate knowledge of data requirements (optionality)

3. Identify attributes for the entities.
4. Understand the reasons for keys in a database.
5. Understand choosing appropriate primary keys.
6. Understand selecting appropriate data types for keys.
7. Understand selecting appropriate fields for composite keys.
8. Understand the relationship between foreign and primary keys.

Objective 3 Table Creation

1. Create database tables using proper ANSI (American National Standards Institute) SQL syntax.
2. Define primary keys, foreign keys, unique keys, columns and rows.
3. Choose data types and understand why they are important for storage requirements.
4. Identify violations of data-integrity rules.

Standard 4 - Data Security And Stability

SQL (Structured Query Language) languages subsets of database development

Objective 1 Security Concepts

1. Understand database security concepts.
2. Understand the need to secure a database.
3. Understand what objects can be secured.
4. Understand what objects should be secured, user accounts, and roles.

Objective 2 Data Stability

1. Understand database backups and restore.
2. Understand various backup types, such as full and incremental.
3. Understand the importance of backups.
4. Understand how to restore a database.

