PRECISION EXAMS

Database Development

(This exam is in PILOT status for the 19-20 school year. No certificate is available.)

EXAM INFORMATION

Exam Number
860
Items
30
Points
38
Prerequisites
INFORMATION TECHNOLOGY FUNDAMENTALS
COMPUTER SCIENCE PRINCIPLES
Recommended Course Length
ONE YEAR

National Career Cluster
INFORMATION TECHNOLOGY

Performance Standards
INCLUDED (OPTIONAL)

Certificate Available
NO

DESCRIPTION

This course is designed to teach the fundamentals of database and to prove introductory knowledge of and skills with databases, including relational databases using SQL.

EXAM BLUEPRINT

STANDARD	PERCENTAGE OF EXAM
1- Understanding Database Concepts	10%
2- Understanding Structured Data	10%
3- Creating Database Objects	26%
4- Manipulating Data	41%
5- Constructing Queries	13%

STANDARD 1
STUDENTS WILL UNDERSTAND DATABASE CONCEPTS

Objective 1 Understand relational database concepts.
1. Understand what a relational database is.
2. Understand the need for relational data management systems (RDMS).
3. Describe the database development process.
4. Create a conceptual data model including entities, attributes, relationships, key constraints and structural constraints.

Objective 2 Understand Data Definition Language (DDL).
1. Understand what DML is and its role in databases.

Objective 3 Understand Data Manipulation Language (DML).
1. Understand how T-SQL can be used to create database objects such as tables and views.

STANDARD 2
STUDENTS WILL UNDERSTAND STRUCTURED DATA

Objective 1 Understand the reasons for normalization.
1. Understand the five most common levels of normalization.
2. Understand how to normalize a database to third normal form.

Objective 2 Understand how data is stored in tables.
1. Understand the purpose of tables.
2. Describe the structure of a table including columns/fields and records/rows.
3. Understand how to create and modify associations between table rows.

Objective 3 Understand primary, foreign, and composite keys.
1. Understand the reasons for keys in database.
2. Understand choosing appropriate primary keys.
3. Understand selecting appropriate data types for keys.
4. Understand selecting appropriate fields for composite keys.
5. Understand the relationship between foreign and primary keys.

STANDARD 3
STUDENTS WILL CREATE DATABASE OBJECTS

Objective 1 Create database tables.
1. Create database tables using proper ANSI 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.

Objective 2 Create views.
1. Understand when to use views.
2. Create a view for a query using T-SQL or another graphical designer.

Objective 3 Create indexes.
1. Understand clustered and non-clustered indexes.
2. Add, delete and manage indexes for fast access to table rows and enforcing certain constraints.
3. Explain benefits and costs of using indexes.

STANDARD 4
STUDENTS WILL MANIPULATE DATA

Objective 1 Students will construct simple queries.
1. Utilize SELECT statements to extract data from one table.
2. Modify the way data is displayed.
3. Perform calculations using arithmetic expressions and operators.
4. Apply the correct syntax to restrict rows and groups.
5. Check for NULL values.

Objective 2 Students will use correct syntax to modify data within a table.
1. Understand how data is inserted into the database.
2. Utilize INSERT statements to insert data into a table.

Objective 3 Students will use correct syntax to update data within a table.
1. Understand how data is updated in a database.
2. Utilize UPDATE statements to update data in a table.

Objective 4 Students will use correct syntax to delete data within a table.
1. Delete data from single or multiple tables.
2. Ensure data and referential integrity by using transactions.

STANDARD 5
STUDENTS WILL CONSTRUCT QUERIES INVOLVING ONE OR MORE TABLES

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

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

Standard 5 Performance Evaluation included below (Optional)

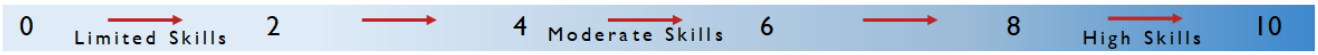
Database Development Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name_____

Class_____

PERFORMANCE RATING SCALE



STANDARD 5 Constructing Queries

Score:

- ☐ Students will demonstrate skills such as:
  - Backups and restores (including system databases).
  - How to identify poor queries
  - General maintenance (index rebuilds, consistency checks, etc.).
  - Security and how to manage it.

PERFORMANCE STANDARD AVERAGE SCORE:

Evaluator Name _____

Evaluator Title _____

Evaluator Signature _____

Date _____