



IBM DB2 for z/OS Application Developer Certification

Professional Certification Exam



What does it involve?

- IBM DB2 for z/OS Application Developer certification, candidates must pass one test
- Test - C2090-313: DB2 11 Application Developer for z/OS
- Test information:
 - Number of questions: 60
 - Time allowed in minutes: 75
 - Required passing score: 63%



IBM Certification Exam

- Test consists of 10 sections containing a total of 60 multiple-choice questions
 - Database Objects (13%)
 - Data Retrieval & Manipulation (12%)
 - Distributed Access to DB2 (8%)
 - Coding SQL in Application Programs (10%)
 - Processing Options that affect program design (8%)
 - Performance Considerations (7%)
 - Units of work, concurrency, and checkpoint/restart (10%)
 - Application Design & Lifecycle (8%)
 - Access to Non-Structured Data (8%)
 - Advanced Programming Topics (15%)



Getting Prepared

- To assess your current skill level and readiness for
 - Test C2090-313 - DB2 11 Application Developer for z/OS
 - You can take a Web-based assessment test
- Passing this assessment test does not result in achieving a credential
 - It is designed to provide diagnostic feedback on the Examination Score Report, correlating back to the test objectives, showing how you scored on each section of the test.
- Web Based Assessment Test Fee: \$30
- Pearson VUE on-line testing system
- <http://www.ibm.com/links/?prompt=1&url=http://pearsonvue.com/ibm>
 - You will need to create a Pearson VUE account associated with IBM



IDUG Conference

- IDUG offers complimentary Db2 Certifications at conferences
- Each test:
 - Contains questions requiring single and multiple answers. For multiple-answer questions, you need to choose all required options to get the answer correct. You will be advised how many options make up the correct answer.
 - Designed to provide diagnostic feedback on the **Examination Score Report**, correlating back to the **test objectives**, informing the test taker how he or she did on each section of the test. As a result, to maintain the integrity of each test, questions and answers are not distributed
- IDUG offers Certification Crammer classes on Sunday before the conference for a fee



Assessment Test

- To access the assessment test, you will need to
 - [create a Pearson VUE account associated with IBM](#), and then
- Test Selection
- Sign into your account at [Pearson VUE](#)(link resides outside of ibm.com)
- Click on the blue "View Online Exams" button
- Under Section Assessment: IBM Analytics - Platform Analytics
- Select Assessment: DB2 11 Application Developer for z/OS from the list
- Verify you selected the correct assessment test, click on the blue "Register for this Exam" button
 - If the test is offered in multiple languages, select your language and click the "Next" button
- From this "My Order" page, verify the test information and fee due - click on the blue "Proceed to Checkout" button
- Follow the steps indicated which include payment - you will be able to use vouchers or promotion codes during payment
- Click on the blue "Begin Exam" button to launch the exam



Things to think about

- Familiarity with:
 - z/OS, TSO/ISPF, CICS, Application Server (e.g. WebSphere, etc.),
 - IBM Data Studio, Visual Explain, Eclipse, z/OS Management Framework, SPUFI, DB2I, WLM, Performance Tuning, DB2 Objects
- Proficient with:
 - DB2 for z/OS, IBM Data Server Client, SQL & SQLPL, Stored Procedures
- The 60 multiple-choice questions do not appear in 'section' order
 - They are random from each section
 - You can have questions with one answer (four options) or two answers (five options)



Let's look into each objective

- Database Objects (13%)
- Data Retrieval & Manipulation (12%)
- Distributed Access to DB2 (8%)
- Coding SQL in Application Programs (10%)
- Processing Options that affect program design (8%)
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Database Objects (13%)

- Create and alter database demonstrating knowledge of database attributes
- Create and alter tables demonstrating knowledge of table attributes
- Demonstrate knowledge of types, attributes, and purpose of indexes
- Create table columns demonstrating knowledge and application of various data types
- Apply constraints to database tables and columns
- Correctly apply encoding schemes to tables
- Manage sequences and identities on tables
- Create views and understand the best practices for the use of those views



Data Retrieval & Manipulation (12%)

- Create table joins using best practices
- Merge / select from data change table reference
- Demonstrate knowledge of when to use truncate versus delete
- Create functions & expressions
- Apply knowledge of best practices for grouping, aggregation, and uniqueness
- Apply knowledge of best practices for inserts, updates & deletes
- Apply knowledge of best practices for Predicates (BETWEEN, IN, LIKE)



Distributed Access to DB2 (8%)

- Manage connections to optimize performance
- Identify what makes a cursor ambiguous
- Determine whether limited fetch or optimize clause should be used in a query
- Use best practices to determine generic program options
- Set up a data source (dot net, java, odbc)



Coding SQL in Application Programs(10%)

- Manage the use of cursors within a program
- Apply best practices for error handling
- Demonstrate knowledge of when to use dynamic versus static SQL
- Demonstrate knowledge of multi-row syntax
- Understand when and how to use DCLGEN
- Understand how to prepare the program for execution



Processing Options that affect program design (8%)

- Understand when and how to use precompile options
- Understand when and how to use Bind Options & Connection Settings
- Understand when and how to use Special Registers & Built-in Global Variables
- Understand when and how to use options at the statement level



Performance Considerations (7%)

- Identify examples of accounting trace usage
- Understand the use of explain data and IBM Data Studio
- Identify differences in DB2 access paths
- Identify Stage 1 versus Stage 2 Predicates
 - *See CBI SQL Reference Card*



Units of work, concurrency, and checkpoint/restart (10%)

- Ability to use Isolation Levels & bind release options
- Identify the differences between COMMIT, ROLLBACK, and SAVEPOINTS
- Ability to recognize and code basic Units of Work
- Ability to recognize and code Data Currency options
- Knowledge of best practices and restrictions for Autonomous Transactions
- Applies Process control and Checkpoint / Restart processing



Application Design & Lifecycle (8%)

- Ability to validate execution results are correct
- Ability to test connections and stored procedures
- Ability to work with DB2 LOAD and UNLOAD utilities
- Ability to troubleshoot application performance
- Ability to properly utilize DB2 Performance Features



Access to Non-Structured Data (8%)

- Ability to work with native XML data
- Ability to work with JSON data
- Ability to perform schema Validation for XML
- Ability to work with XML Built-In Functions
- Ability to access Hadoop Data



Advanced Programming Topics (15%)

- Ability to work with Stored Procedures
- Ability to make use of UDF's
- Ability to use Triggers
- Ability to manage relationships between tables using Referential Integrity
- Ability to work with Temporal and Archive Tables
- Ability to work with MQTs
- Ability to work with Temporary Tables
- Ability to work with Data Masking techniques



SQL Questions

- What are the 3 types of predicate classifications?
 - Indexable, Stage 1, Stage 2
- What is the difference between clustered and non-clustered indexes?
 - One table can have only one clustered index but multiple nonclustered indexes. Clustered indexes store data 'physically' in order in the table.
- What is the difference between DROP and TRUNCATE?
 - TRUNCATE removes all rows from the table, DROP removes the entire table from the database.



Questions

- How are Stored Procedures used?
 - A stored procedure is a collection of SQL statements which can be used as a function to access the database
 - We can create these stored procedures previously before using it and can execute these them wherever we require and also apply some conditional logic to it
 - Stored procedures are also used to reduce network traffic and improve the performance



Questions

- Define Nested Triggers?
 - Triggers may implement data modification logic by using INSERT, UPDATE, and DELETE statement
 - Triggers that contain data modification logic and find other triggers for data modification are called Nested Triggers
- How do you add a column to a table?
 - To add another column in the table use the ALTER command
 - ALTER TABLE table_name ADD (column_name);



Questions

- What are the types of joins and what are the differences?
 - Inner Join, Left Join, Right Join, Full Join and Cartesian product (cross join)
- Why do we use EXPLAIN in DB2?
 - Use EXPLAIN to analyze the access paths that Db2 chooses to process your SQL statements
 - By analyzing the access path that Db2 uses to access the data for an SQL statement, you can discover potential problems
 - You can use this information to modify your statement to perform better



Questions

- What makes a cursor ambiguous in DB2?
 - A cursor is considered *ambiguous* if DB2 cannot tell whether it is used for update or read-only purposes
 - It is a good programming technique to eliminate the ambiguity by declaring the cursor with either the FOR FETCH ONLY or the FOR UPDATE clause



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Certification Summary

- Use your knowledge to gain your IBM certification/s
- You can take a Web-based assessment test, find any weak points
- Take a couple of testing topics a week you may need to brush up on
- Certification is just around the corner!
- How about a crammer class?
- Thanks !





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