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## Introduction to DB2 11 for z/OS

**T**his chapter will address the job responsibilities of the DB2 system administrator, what to expect on the *IBM DB2 11 System Administrator for z/OS* certification exam (exam 317), and the basic prerequisites required for the reader of this book.

### **Purpose of the Book**

This certification study guide for the *IBM DB2 11 System Administrator for z/OS* certification test (exam 317) will lead you through the responsibilities, tasks, and methods used by a DB2 11 for z/OS system administrator. It will cover all the objectives of the exam, as well as provide sample exam questions and comprehensive answers to test your knowledge.

We will define a broad understanding of a DB2 z/OS system administrator's responsibilities, give you examples of daily work requirements, show you techniques to assist you in your work, and provide you with details on how to develop your skill sets.

### **Certification Exam 317—DB2 11 System Administrator for z/OS**

The IBM exam certifies that the candidate has the skills, knowledge, and abilities to administer the processes and can describe the architecture required to plan, install, manage, and tune secure DB2 for z/OS environments.

To obtain this certification, you must pass two exams:

1. Test 610—*DB2 10.1 Fundamentals*, or Test 320—*DB2 11 Fundamentals for z/OS*
2. Test 317—*DB2 11 System Administrator for z/OS*

Test 317 is 90 minutes long and has 58 questions. The passing score is 65 percent. The test is divided into six sections; each section contains questions and some scenarios to evaluate.

Here are the six objectives of this test.

- Section 1, Installation and Migration, comprises 20 percent of the test.
- Section 2, Security and Auditing, covers protecting the DB2 resources; this is 12 percent of the test.
- Section 3, System Operation and Maintenance, represents 17 percent of the test, and covers the management of DB2 components, commands, monitoring, and threads.
- Section 4, Backup and Recovery, comprises 17 percent of the exam. This section tests your knowledge of the procedures for system-level backup, recovery from system failures, and disaster recovery processes.
- Section 5, Performance and Tuning, is 22 percent of the exam. You will be given scenarios and asked to analyze the performance. You will be tested on your knowledge of buffer pools, DSNZPARMS, statistics, traces, and tools, as well as how to efficiently use memory and workload manager settings for DB2.
- Section 6, Troubleshooting, comprises 13 percent of the exam; it tests your ability to solve problems (i.e., troubleshooting). This section tests your knowledge of operator commands and traces, identifying contention problems, and diagnostics in dealing with utilities and resolving and identifying data-sharing problems.

The IBM Certification website provides a list of resources to help you prepare for the exam, a sample assessment test, and information about the testing centers worldwide. Take the time to visit the website ([www-03.ibm.com/certify/](http://www-03.ibm.com/certify/)), and become familiar with the resources.

The sample assessment test for exam 317 is a good place to start. This is a way to practice taking the exam—but remember, passing the sample test does not result in credentials. It does, however, give you information about how well you scored on each section of the test, which you can use to evaluate your strengths and weaknesses.

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The Sample/Assessment tab for exam 317, at [www-03.ibm.com/certify/tests/eduC2090-317.shtml](http://www-03.ibm.com/certify/tests/eduC2090-317.shtml), provides instructions on how to access the Web-based assessment test.

## **DB2 System Administration**

### **Requirements**

In working as a DB2 11 for z/OS system administrator, you need a strong background in DB2 for z/OS. As an example, if you are presently a database administrator with a couple of years of experience, or if you have several years as a DB2 advanced programming lead, you would have the baseline to start working on your system administration skill sets and your certification.

### **Basics You Should Know**

#### **Knowledge of DB2**

Your understanding and background should include the DB2 architecture:

- DB2 catalog tables, DB2 directory, and bootstrap data sets (BSDS)
- DB2 active and archive logging, and DB2 virtual buffer pools (buffer pools)
- Structured Query Language (SQL) query writing, EXPLAIN, and troubleshooting
- Data Definition Language (DDL) and physical structures in DB2
- DB2 data sharing system operation and maintenance
- IBM DB2 Administration Tools
- IBM or other vendor DB2 utilities—COPY, LOAD, RUNSTATS, and others

#### **System z Architecture**

Your z/OS skill sets should include how to do the following:

- Write Job Control Language (JCL) to execute a job in z/OS.
- Work with Interactive System Productivity Facility/Program Development Facility (ISPF/PDF) utilities to edit data sets.
- Display data set lists or define a data set as an example.
- Use System Display and Search Facility (SDSF) and/or Interactive Output Facility (IOF) to find job execution information.

- Work with System Modification Program Extended (SMP/E) and its basic functions.
- Use Workload Manager (WLM) and its basic functions.

Familiarity with other software products—such as CICS, WebSphere, Data Studio, and non-IBM vendor products—is also helpful. Throughout the book, we will build on DB2, z/OS, and product skills.

The IBM website for DB2 11 for z/OS at [www-01.ibm.com/software/data/db2/zos/family/db211/](http://www-01.ibm.com/software/data/db2/zos/family/db211/) provides downloads, product documentation, and product support. Take time to become familiar with the website.

## Review Questions

1. What two types of logs does DB2 use, and what is the purpose of each?
  2. What are virtual buffer pools, and what are they used for?
  3. Describe the SQL commands used to establish objects in DB2.
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## Answers

1. DB2 uses an active log and archive log. Events are recorded in the logs to reflect the activity against the data. The active logs are automatically archived when they fill. Archives can be disk or tape, but active logs must be disk. Active logs and archive logs are defined as dual copies to provide fallback, and we have multiple sets of active logs. Active logs sets are a wrap-around process, so when we fill a log set, we move to the next set, and so on. When the last set of logs is filled in the active log set, we wrap back to the first set, provided that first set of logs has been properly archived. If this is not the case, DB2 will stop.
2. Data that is read, modified, or must be held is maintained in virtual buffer pools. These buffer pools' names and sizes are defined by systems or database administrators based on the workload in DB2. The names of the buffer pools are explicit in DB2 for z/OS (e.g., BPO, BP1, BP32k).
3. To establish objects in DB2, use DDL statements containing CREATE, ALTER, or DROP commands.