SingleStore Certified Developer
Exam Guide

Awarded Credentials

Candidates who pass this exam receive SingleStore Certified Developer certification. This certification is active for one year.

SingleStore Certified Developer Badge

Target Audience

Candidates for this certification are working as software developers or database developers responsible for the schema design, and development of applications that load, query, update, and delete data in SingleStoreDB.

See the Domain Objectives section for a description of the testing scope.

What does this exam measure?

This exam measures a candidate's knowledge and skills related to:

- The SingleStoreDB architecture
- Efficient schema design
- Development and use of the SingleStoreDB
- Ingestion of data into the SingleStoreDB

We also expect that candidates taking this exam have 6-12 months of experience regularly using SingleStoreDB.

What is not included in this exam?

While this exam expects candidates to have strong working SQL knowledge, it does not specifically test for general SQL knowledge and should not be used to assess general SQL proficiency.

Exam Guide Disclosure

This document describes the structure of the exam and includes practical information on how to prepare to take an online, proctored exam. It also includes suggestions on how to prepare for the exam. This exam guide alone will not prepare you for the exam and should not be considered an exhaustive list of content covered in the exam.

Learning Resources

There are many ways to prepare for this exam, including:

- Regular use of SingleStoreDB.
- Taking an instructor-led class from a SingleStore instructor or a third-party instructor. For information on instructor-led classes, visit singlestore.com/training
- Consuming the self-paced SingleStore training available on the company's site. Visit training.singlestore.com and create an account.
- Reviewing the following topics in SingleStore Documentation:
  - SQL Reference
  - Load Data

Exam Format

Time Limit:	80 minutes
Check-in for Exam:	10 minutes before or up to 20 minutes after scheduled time
Question Format:	Multiple choice, Multiple response, Matching
Number of Questions:	50, plus up to 5 additional unscored items
Scoring:	Pass/Fail based on an overall score. Candidates will see percentage results for each domain area.
Language(s) Offered:	English
Exam Delivery Provider:	Kryterion
Exam Delivery Method:	All exams are delivered in an online, proctored environment

For information about the online, proctored experience, review the videos here:
Online Proctored Exams

System Preparation and Technical Requirements

We recommend that you ensure your computer, network, and physical environment are prepared for the exam.

Review system requirements

Online Testing Requirements: What You Need to Know

Troubleshoot issues related to the exam experience

Go to Support and click the **Chat with an Expert** button (shown below) located in the bottom right corner of the page.

Content Outline

Domain	% of Exam Content
Understand SingleStore Architecture	30%
Design an Efficient Schema	20%
Develop and Use SingleStore	30%
Ingesting Data into SingleStore	20%

When you receive your exam results, you can see the percentage you got correct for each domain. These percentages are provided so you will know where you might need to improve if you fail the exam, but note that each domain has a different weight in the final score (see above). A lower score in a domain that makes up a higher percentage of the exam content can outweigh higher scores in domains with a lower percentage of content.

Exam Guide Disclosure

This is not a comprehensive list of content for the exam.

1. **Understand SingleStore Architecture**
   1.1. **Explain storage concepts**
      1.1.1. Universal storage tables concepts, use, and features
      1.1.2. Rowstore tables concepts and use
      1.1.3. Reference tables concepts and use
   1.2. **Create and use tables**
   1.3. **Use partitions**
      1.3.1. Choose appropriate number of partitions
      1.3.2. Set the number of partitions in a database
      1.3.3. Repartitioning a database
      1.3.4. Explain partitioning concepts
   1.4. **Explain sharding and shard keys**
      1.4.1. Explain how sharding works

        1.4.2.   Understanding data skew (finding and addressing)

  1.5.   **Explain Singlestore hosts and nodes**

        1.5.1.   Explain what aggregators do

        1.5.2.   Explain what leaves do

2. Design an efficient schema

  2.1.   **Use indexes**

        2.1.1.   Describe, implement, and explain use cases for different index types

        2.1.2.   Select a shard key

        2.1.3.   Select a sort key

  2.2.   **Use the query tuning process (visual explain)**

        2.2.1.   Explain what different query operations are

        2.2.2.   Make changes to schema based on visual profile

        2.2.3.   Make changes to queries based on visual profile

        2.2.4.   Use table statistics

        2.2.5.   Explain the types of queries in SingleStore

        2.2.6.   Explain database performance terms

        2.2.7.   Describe what Explain and Profile do

3. Develop and use your SingleStoreDB

  3.1.   **Use procedural SQL in S2**

        3.1.1.   Explain S2SQL control flow syntax

        3.1.2.   Create data manipulation code

        3.1.3.   Write DDL statements

        3.1.4.   Write DML statements

  3.2.   **Work with different data types**

        3.2.1.   Explain how geospatial data is supported in S2

        3.2.2.   Explain how JSON data is supported in S2

        3.2.3.   Explain how time-series data is supported in S2

        3.2.4.   Explain how text data is supported in S2

        3.2.5.   Explain how vector data is supported in S2

4. Ingesting Data into SingleStore DB

  4.1.   **Use LOAD DATA to:**

        4.1.1.   Load CSV

        4.1.2.   Load JSON

4.1.3.   Load .gz

4.2.   Explain and use S2 pipelines

4.2.1.   Explain S2 native pipelines

4.2.2.   Explain pipeline parallelism

4.2.3.   Explain "exactly once" semantics

4.2.4.   Create S2 pipelines

4.2.5.   Use pipeline functions

4.2.6.   Use pipelines with transforms

4.2.7.   Create stored procedures to receive pipeline data

4.3.   Use INSERT statements

4.3.1.   Use transactions

4.3.2.   Use START

4.3.3.   Use COMMIT

4.3.4.   Use ROLLBACK

4.3.5.   Use trancount session variable

4.4.   Describe different connection options and how they work with S2

4.4.1.   Language connectivity (for example: python, c#)

4.4.2.   JDBC and ODBC

4.4.3.   Spark connector

4.4.4.   MySQL connector with S2

4.5.   Egress

4.5.1.   SELECT OUT

Exam Structure

The SingleStore Developer exam includes questions from each of the four domains. These questions are presented in random order. Candidates will get the opportunity to review all questions before final submission of the exam. Candidates can mark specific questions for review, although all questions can be reviewed. Questions marked for review display with an asterisk (*).

Item Types

Multiple Choice: Select only one answer to a question.

Multiple Response: Select two or more answers to a question.

Matching: Select from a set of answers the item that best matches an item in another set. For example, a term to a definition, or an action to an outcome.

Sample Questions

The following questions are typical of what you might see on the exam. Correct answers are located at the end of this document.

1. **Given the following user defined function:**

```
DELIMITER //
CREATE FUNCTION my_function(n BIGINT NOT NULL) returns BIGINT AS
  BEGIN
    IF n <= 1 THEN
      RETURN FALSE;
    END IF;
    FOR i IN 2 .. (n-1) LOOP
      EXIT WHEN i * i > n;
      IF n % i != 0 THEN
        CONTINUE;
      END IF;
      RETURN FALSE;
    END LOOP;
    RETURN TRUE;
  END //
DELIMITER ;
```

Which of the following will be the result of executing this function using 21 as the parameter?

   a. 0
   b. FALSE
   c. 1
   d. TRUE
   e. Race condition

2. **Which two of the following are the correct syntax when using a TRANSFORM with a PIPELINE?**
   Choose TWO (2).

   a. ```
   WITH TRANSFORM('http://memsql.com/my-transform-tarball.tar.gz',
   'my-transform.py', '-arg1 -arg1')
   ```

   b. ```
   WITH TRANSFORM('http://memsql.com/my-transform-tarball.tar.gz',
   'my-transform.py', '-arg1','-arg1')
   ```

   c. ```
   WITH TRANSFORM('http://memsql.com/my-transform.py','','')WITH
   TRANSFORM('http://memsql.com/my-transform-tarball.tar.gz', '', '')
   ```

   d. ```
   WITH TRANSFORM('', '', '')
   ```

3. **Given a table with the following** `CREATE TABLE` **statement:**

   ```
   CREATE TABLE my_table(
        id BIGINT,
        name VARCHAR(255),
        email VARCHAR(255)
   );
   ```

   and this `CREATE LINK` **statement:**

   ```
   CREATE LINK my_link AS S3
     CREDENTIALS
   '{"aws_access_key_id":"","aws_secret_access_key":""}'
     CONFIG '{"region":"us-east-1"}';
   ```

   Which of the following statements would export the entire
   `my_table` **table to an S3 bucket named** `my_bucket` **using** `my_link`**?**

   a. ```
   SELECT FROM my_table
   INTO LINK 'my_bucket/my_table/';
   ```

   b. ```
   SELECT * FROM my_table
   INTO my_link 'my_bucket/my_table/';
   ```

   c. ```
   SELECT * FROM my_table
   INTO LINK my_link 'my_bucket/my_table/';
   ```

   d. ```
   SELECT * FROM my_table
   ```

```
        INTO LINK my_link;
```

e.
```
SELECT * FROM my_table
INTO my_link 'my_bucket/my_table/';
```

General Exam FAQs

Exam Prep

How do I know if I am ready for the exam?
Only you can know for sure if you are ready, but a successful candidate will likely have done some training or self-study to get started and will have been using the product regularly for at least 6 months. Even candidates who are relatively new to SingleStoreDB will probably have database development skills and experience from other products.

Taking the Exam

Why is this exam timed?
Completing a task effectively and efficiently is a standard expected by organizations. Our exam is timed as a means to demonstrate this competency.

I passed the exam. What's next?
After you pass the exam, you will receive your Credly badge, which you can share on social media platforms such as LinkedIn.

What happens if I fail the exam?
You are not limited on number of retakes, but each attempt requires a waiting period between exams:
- 10 days after first attempt
- 30 days after second attempt
- 60 days after third and subsequent attempts

Each retake requires an exam fee.

What is an "unscored item?"
We include unscored items in some exams so we can collect data on how these items perform. Unscored items are not included in your final score–that is, it does not matter if you answer them correctly or incorrectly. You will not know which items are unscored, but the allotted time for the exam allows for you to answer additional questions.

Can I get information on the questions I got wrong?
We do not provide specific information about questions you missed, but we do provide information on your performance in each domain, which will help guide your study for a later attempt.

Exam Feedback

Where can I share feedback about a question?
We want feedback on the exam experience and about questions. Direct your comments on questions, the exam experience, or any other certification issues to: certification@singlestore.com.

Sample question answers:

1. A
2. A, C
3. D
4. C