Microsoft

Exam Questions 70-764

Administering a SQL Database Infrastructure (beta)
NEW QUESTION 1

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the text of the scenario is exactly the same in each question in this series.

You are a database administrator for a company that has an on-premises Microsoft SQL Server environment and Microsoft Azure SQL Database instances. The environment hosts several customer databases, and each customer uses a dedicated instance. The environments that you manage are shown in the following table.

<table>
<thead>
<tr>
<th>Customer</th>
<th>Cloud Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdventureWorks Cycles</td>
<td>Private</td>
<td>The environment includes a database named <strong>AdventureWorks</strong> that contains a single schema named ADVSchema. You must implement auditing for all objects in the ADVSchema schema. You must also implement auditing to record access to data that is considered sensitive by the company.</td>
</tr>
<tr>
<td>Tailspin Toys</td>
<td>Private</td>
<td>Tailspin Toys has a custom application that accesses a hosted database named <strong>TSpinDB</strong>. The application will monitor <strong>TSpinDB</strong> and capture information over time about which database objects are accessed and how frequently they are accessed.</td>
</tr>
<tr>
<td>Contoso, Ltd.</td>
<td>Private</td>
<td>The environment has a database named <strong>ConDB</strong> that was recently upgraded to Microsoft SQL Server 2016. Contoso reports that <strong>ConDB</strong> is slow to return results when the server is busy. You must modify the startup parameters to <strong>ConDB</strong> to optimize performance.</td>
</tr>
<tr>
<td>Wingtip Toys</td>
<td>Private</td>
<td>Wingtip Toys has a database named <strong>WingDB</strong>. All tables in the database have indexes. Users report system response time is slow during peak activity periods. You observe that the performance issues are related to locking. Wingtip Toys receives data updates from suppliers each week. You must implement a process for importing the data into <strong>WingDB</strong>. You must use minimal logging and minimized data loss during import process.</td>
</tr>
<tr>
<td>Wide World Importers</td>
<td>Public</td>
<td>The environment includes a database named <strong>WDWDB</strong>. Neither auditing nor statistics are configured for <strong>WDWDB</strong>. You must log any deletion of views and all database record update operations.</td>
</tr>
</tbody>
</table>

You need to configure the Contoso instance.

How should you complete the Transact-SQL statement? To answer, select the appropriate Transact-SQL segments in the answer area.
NEW QUESTION 2
You administer a Microsoft SQL Server 2016 database.
You want to make a full backup of the database to a file on disk. In doing so, you need to output the progress of the backup. Which backup option should you use?
A. STATS  
B. COMPRESSION  
C. CHECKSUM  
D. IN IT

Answer: A

Explanation: Box 1: show advanced options
Advanced configuration options are displayed by first setting show advanced option to 1. Box 2: max worker threads
SQL Server uses the native thread services of the operating systems so that one or more threads support each network that SQL Server supports simultaneously, another thread handles database checkpoints, and a pool of threads handles all users. The default value for max worker threads is 0. This enables SQL Server to automatically configure the number of worker threads at startup. The default setting is best for most systems.

NEW QUESTION 3
You are creating an application that will connect to the AgentPortal database by using a SQL login named AgentPortalUser. Stored procedures in the database will use sp_send_dbmail to send email messages.
You create a user account in the msdb database for the AgentPortalUser login.
You use the Database Mail Configuration Wizard to create a Database Mail profile. Security has not been configured for the Database Mail profile.
You need to ensure that AgentPortalUser can send email messages. What should you do?
A. In the Database Mail Configuration Wizard, configure the Database Mail profile as a private profile for the AgentPortalUser account.  
B. Disable the guest user in the msdb database.  
C. Use the sysmail_help_profileaccount_sp stored procedure to add accounts to the Database Mail profile.  
D. In the Database Mail Configuration Wizard, create an email account for each recipient's email address in the Database Mail profile.

Answer: A

Explanation: You enable and configure Database Mail using the Database Mail Configuration Wizard. Profiles are either public or private. A private profile is accessible only to specific users or roles.
References: https://docs.microsoft.com/en-us/sql/relational-databases/database-mail/configure-database-mail

NEW QUESTION 4
You have a database. The existing backups for the database and their corresponding files are listed in the following table.
You purchase a new server. You must restore the database to the new server. You need to restore the data to the most recent time possible. Which three files should you restore in sequence? To answer, move the appropriate files from the list of files to the answer area and arrange them in the correct order.

**Answer:**

**Explanation:**

Step 1: Full. Start with the full backup.

Step 2: Diff_20160503_1700.bak Followed by the most recent differential backup. Step 3: Log_20160503_1900.bak And finally the most recent log backup (the only log backup done after the most recent differential backup).

**References:**


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**NEW QUESTION 5**

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

You need to configure a Microsoft SQL Server instance to ensure that a user named Mail1 can send mail by using Database Mail. Does the solution meet the goal?

A. Yes
B. No

**Answer:** B

**Explanation:**

Database Mail is guarded by the database role DatabaseMailUserRole in the msdb database, not the tempdb database, in order to prevent anyone from sending arbitrary emails. Database users or roles must be created in the msdb database and must also be a member of DatabaseMailUserRole in order to send emails with the exception of sysadmin who has all privileges.

Note: Database Mail was first introduced as a new feature in SQL Server 2005 and replaces the SQL Mail feature found in previous versions.

**References:**

http://www.idevelopment.info/data/SQLServer/DBA_tips/Database_Administration/DBA_20.shtml

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**NEW QUESTION 6**
NEW QUESTION 7

Overview
You are a database administrator for a company named Litware, Inc. Litware is a book publishing house. Litware has a main office and a branch office. You are designing the database infrastructure to support a new web-based application that is being developed. The web application will be accessed at www.litwareinc.com. Both internal employees and external partners will use the application.

You have an existing desktop application that uses a SQL Server 2008 database named App1_DB. App1_DB will remain in production.

You plan to deploy a SQL Server 2014 instance that uses two databases named Database1 and Database2.

All database files will be stored in a highly available SAN. Database1 will contain two tables named Orders and OrderDetails. Database1 will also contain a stored procedure named usp_UpdateOrderDetails. The stored procedure is used to update order information. The stored procedure queries the Orders table twice each time the procedure executes. The rows returned from the first query must be returned on the second query unchanged along with any rows added to the table between the two read operations.

Database1 will contain a stored procedure named usp_UpdateInventory. Usp_UpdateInventory will manipulate a table that contains a self-join that has an unlimited number of hierarchies. All data in Database2 is recreated each day and does not change until the next data creation process. Data from Database2 will be accessed periodically by an external application named Application1. The data from Database2 will be sent to a database named Appl_Db1 as soon as changes occur to the data in Database2. Litware plans to use offsite storage for all SQL Server 2014 backups.

Business Requirements
You have the following requirements:
Costs for new licenses must be minimized.
Development effort must be minimized whenever possible.
The storage requirements for databases must be minimized.
System administrators must be able to run real-time reports on disk usage.
The databases must be available if the SQL Server service fails.
Application developers must be denied direct access to the database tables. Applications must be denied direct access to the tables.
You must encrypt the backup files to meet regulatory compliance requirements.
The encryption strategy must minimize changes to the databases and to the applications. You need to recommend a solution to improve the performance of usp_UpdateInventory.

The solution must minimize the amount of development effort. What should you include in the recommendation?

A. A table variable
B. A common table expression
C. A subquery
D. A cursor

Answer: A

Explanation: - Scenario: Database2 will contain a stored procedure named usp_UpdateInventory. Usp_UpdateInventory will manipulate a table that contains a self-join that has an unlimited number of hierarchies.
- A table variable can be very useful to store temporary data and return the data in the table format.
- Example: The following example uses a self-join to find the products that are supplied by more than one vendor. Because this query involves a join of the ProductVendor table with itself, the ProductVendor table appears in two roles. To distinguish these roles, you must give the ProductVendor table two different aliases (pv1 and pv2) in the FROM clause. These aliases are used to qualify the column names in the rest of the query. This is an example of the self-join Transact-SQL statement:
A Datum Corporation has offices in Miami and Montreal. The network contains a single Active Directory forest named adatum.com. The offices connect to each other by using a WAN link that has 5-ms latency. A. Datum standardizes its database platform by using SQL Server 2014 Enterprise edition. Databases

Each office contains databases named Sales, Inventory, Customers, Products, Personnel, and Dev. Servers and databases are managed by a team of database administrators. Currently, all of the database administrators have the same level of permissions on all of the servers and all of the databases. The Customers database contains two tables named Customers and Classifications. The following graphic shows the relevant portions of the tables:

```
USE AdventureWorks2008R2;
GO
SELECT DISTINCT pv1.ProductID, pv1.VendorID,
FROM Purchasing.ProductVendor pv1
INNER JOIN Purchasing.ProductVendor pv2
ON pv1.ProductID = pv2.ProductID
AND pv1.VendorID <> pv2.VendorID
ORDER BY pv1.ProductID
```

The following table shows the current data in the Classifications table:

<table>
<thead>
<tr>
<th>ID</th>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Platinum</td>
<td>Yearly sales over 1,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Gold</td>
<td>Yearly sales over 500,000</td>
</tr>
<tr>
<td>3</td>
<td>Silver</td>
<td>Yearly sales over 100,000</td>
</tr>
</tbody>
</table>

A full backup of the database currently takes three hours to complete. Stored Procedures

A stored procedure named USP_1 generates millions of rows of data for multiple reports. USP_1 combines data from five different tables from the Sales and Customers databases in a table named Table1. After Table1 is created, the reporting process reads data from Table1 sequentially several times. After the process is complete, Table1 is deleted.

A stored procedure named USP_2 is used to generate a product list. The product list contains the names of products grouped by category. USP_2 takes several minutes to run due to locks on the tables the procedure accesses. The locks are caused by USP_1 and USP_3.

A stored procedure named USP_3 is used to update prices. USP_3 is composed of several UPDATE statements called in sequence from within a transaction. Currently, if one of the UPDATE statements fails, the stored procedure fails. A stored procedure named USP_4 calls stored procedures in the Sales, Customers, and Inventory databases. Security checks are performed each time USP_5 calls a stored procedure. You suspect that the security checks are slowing down the performance of USP_5. All stored procedures accessed by user applications call nested stored procedures. The nested stored procedures are never called directly.

The nested stored procedures read tables from the Sales, Customers, and Inventory databases. USP_4 uses an EXECUTE AS clause. All nested stored procedures handle errors by using structured exception handling. A stored procedure named USP_5 calls several stored procedures in the same database. Security checks are performed each time USP_5 calls a stored procedure. You must be able to recover data from the Inventory database if a storage failure occurs. You have a Recovery Time Objective (RTO) of 5 minutes. You must be able to recover data from the Dev database if data is lost accidentally. You have a Recovery Point Objective (RPO) of one day. Classification Changes

You plan to change the way customers are classified. The new classifications will have four levels based on the number of orders. Classifications may be removed or added in the future. Management requests that historical data be maintained for the previous classifications. Security A group of junior database administrators must be able to manage security for the Sales database. The junior database administrators will not have any other administrative rights. A. Datum wants to track which users run each stored procedure.

Storage

A Datum has limited storage. Whenever possible, all storage space should be minimized for all databases and all backups. Error Handling

There is currently no error handling code in any stored procedure. You plan to log errors in called stored procedures and nested stored procedures. Nested stored procedures are never called directly.

You need to recommend a disaster recovery solution for the Dev database. What should you include in the recommendation?
NEW QUESTION 9
Overview
Application Overview
Contoso, Ltd., is the developer of an enterprise resource planning (ERP) application. Contoso is designing a new version of the ERP application. The previous version of the ERP application used SQL Server 2008 R2. The new version will use SQL Server 2014.

The ERP application relies on an import process to load supplier data. The import process updates thousands of rows simultaneously, requires exclusive access to the database, and runs daily.

You receive several support calls reporting unexpected behavior in the ERP application. After analyzing the calls, you conclude that users made changes directly to the tables in the database.

Tables
The current database schema contains a table named OrderDetails.
The OrderDetails table contains information about the items sold for each purchase order. OrderDetails stores the product ID, quantities, and discounts applied to each product in a purchase order.
The product price is stored in a table named Products. The Products table was defined by using the SQL_Latin1_General_CP1_CI_AS collation. A column named ProductName was created by using the varchar data type. The database contains a table named Orders.

Orders contains all of the purchase orders from the last 12 months. Purchase orders that are older than 12 months are stored in a table named OrdersOld.

The previous version of the ERP application relied on table-level security. Stored Procedures
The current version of the database contains stored procedures that change two tables. The following shows the relevant portions of the two stored procedures:

CREATE PROC Sales.Proc1
AS
BEGIN TRAN
UPDATE Sales.Table1 ...
UPDATE Sales.Table2 ...
COMMIT TRAN
GO

CREATE PROC Sales.Proc2
AS
BEGIN TRAN
UPDATE Sales.Table2 ...
UPDATE Sales.Table1 ...
COMMIT TRAN
GO

Customer Problems
Installation Issues
The current version of the ERP application requires that several SQL Server logins be set up to function correctly. Most customers set up the ERP application in multiple locations and must create logins multiple times.

Index Fragmentation Issues
Customers discover that clustered indexes often are fragmented. To resolve this issue, the customers defragment the indexes more frequently. All of the tables affected by fragmentation have the following columns that are used as the clustered index key:

<table>
<thead>
<tr>
<th>Column</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>uniqueidentifier</td>
</tr>
<tr>
<td>lastModified</td>
<td>datetime</td>
</tr>
<tr>
<td>modifiedBy</td>
<td>Varchar(200)</td>
</tr>
</tbody>
</table>

Backup Issues
Customers who have large amounts of historical purchase order data report that backup time is unacceptable. Search Issues
Users report that when they search product names, the search results exclude product names that contain accents, unless the search string includes the accent.
NEW QUESTION 10
Overview
You are a database administrator for a company named Litware, Inc. Litware is a book publishing house. Litware has a main office and a branch office. You are designing the database infrastructure to support a new web-based application that is being developed. The web application will be accessed at www.litwareinc.com. Both internal employees and external partners will use the application.

You have an existing desktop application that uses a SQL Server 2008 database named App1_DB. App1_DB will remain in production.

Requirements Planned Changes
You plan to deploy a SQL Server 2014 instance that will contain two databases named Database1 and Database2. All database files will be stored in a highly available SAN. Database1 will contain two tables named Orders and OrderDetails. Database1 will also contain a stored procedure named usp_UpdateOrderDetails. The stored procedure is used to update order information. The stored procedure queries the Orders table twice each time the procedure executes. The rows returned from the first query must be returned on the second query unchanged along with any rows added to the table between the two read operations. Database1 will contain several queries that access data in the Database2 tables. Database2 will contain a table named Inventory. Inventory will contain over 100 GB of data. The Inventory table will have two indexes: a clustered index on the primary key and a nonclustered index. The column that is used as the primary key will use the identity property. Database2 will contain a stored procedure named usp_UpdateInventory. usp_UpdateInventory will manipulate a table that contains a self-join that has an unlimited number of hierarchies. All data in Database2 is recreated each day and does not change until the next data creation process. Data from Database2 will be accessed periodically by an external application named Application1. The data from Database2 will be sent to a database named App1_DB as soon as changes occur to the data in Database2. Litware plans to use offsite storage for all SQL Server 2014 backups.

Business Requirements
You have the following requirements:
- Costs for new licenses must be minimized.
- Private information that is accessed by Application must be stored in a secure format.
- Development effort must be minimized whenever possible.
- The storage requirements for databases must be minimized.
- System administrators must be able to run real-time reports on disk usage.
- The databases must be available if the SQL Server service fails.
- Database administrators must receive a detailed report that contains allocation errors and data corruption.
- Application developers must be denied direct access to the database tables. Applications must be denied direct access to the tables.
- You must encrypt the backup files to meet regulatory compliance requirements.
- The encryption strategy must minimize changes to the databases and to the applications. You need to recommend a disk monitoring solution that meets the business requirements. What should you include in the recommendation?

A. a SQL Server Agent alert
B. a dynamic management view
C. a maintenance plan
D. an audit

Answer: B

Explanation: Dynamic Management Views and Functions (Transact-SQL)

NEW QUESTION 11
You are planning to deploy a database to Windows Azure SQL Database. You need to design a stored procedure to update rows. The stored procedure must meet the following requirements:
- If more than one row is updated, an error must be raised to the application and the update must be discarded.
- The stored procedure must be designed to maximize concurrency.
- What should you include in the design? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.
Answer:

Explanation: Note:
- Read Committed is SQL Server's default isolation level.
- @@ROWCOUNT returns the number of rows affected by the last statement.
- Using TRY...CATCH in a transaction

The following example shows how a TRY...CATCH block works inside a transaction. The statement inside the TRY block generates a constraint violation error.

```
BEGIN TRANSACTION;
BEGIN TRY
    SELECT *
    FROM Production.Product
    WHERE ProductID = 980;
END TRY
BEGIN CATCH
    SELECT ERROR_NUMBER() AS ErrorNumber,
           ERROR_SEVERITY() AS ErrorSeverity,
           ERROR_STATE() AS ErrorState,
           ERROR_PROCEDURE() AS ErrorProcedure,
           ERROR_LINE() AS ErrorLine,
           ERROR_MESSAGE() AS ErrorMessage;
    IF @@TRANCOUNT > 0
       ROLLBACK TRANSACTION;
    IF @@TRANCOUNT > 0
       COMMIT TRANSACTION;
END CATCH;
```

NEW QUESTION 12

You plan to create a database.

The database will be used by a Microsoft .NET application for a special event that will last for two days. During the event, data must be highly available. After the event, the database will be deleted.

What should you recommend? More than one answer choice may achieve the goal. Select the BEST answer.

A. SQL Server 2014 Enterprise
B. SQL Server 2014 Standard
NEW QUESTION 14
General Overview
You are the Senior Database Administrator (DBA) for a software development company named Leafield Solutions. The company develops software applications custom designed to meet customer requirements.
Requirements Leafield Solutions has been asked by a customer to develop a web-based Enterprise Resource Planning and Management application. The new application will eventually replace a desktop application that is currently using. The current application will remain in use while the users are trained to use the new web-based application.
You need to design the SQL Server and database infrastructure for the web-based application. Databases
You plan to implement databases named Customers, Sales, Products, Current_Inventory, and TempReporting. The Sales database contains a table named OrderTotals and a table named SalesInfo.
A stored procedure named SPUpdateSalesInfo reads data in the OrderTotals table and modifies data in the SalesInfo table.
The stored procedure then reads data in the OrderTotals table a second time and makes further changes to the information in the SalesInfo table.
The Current_Inventory database contains a large table named Inv_Current. The Inv_Current table has a clustered index for the primary key and a nonclustered index. The primary key column uses the identity property.
The data in the Inv_Current table is over 120GB in size. The tables in the Current_Inventory database are accessed by multiple queries in the Sales database. Another table in the Current_Inventory database contains a self-join with an unlimited number of hierarchies. This table is modified by a stored procedure named SPUpdate2.
An external application named ExternalApp1 will periodically query the Current_Inventory database to generate statistical information. The TempReporting database contains a single table named GenInfo.
A stored procedure named SPUpdateGenInfo combines data from multiple databases and generates millions of rows of data in the GenInfo table.
The GenInfo table is used for reports. When the information in GenInfo is generated, a reporting process reads data from the Inv_Current table and queries information in the GenInfo table based on that data.
The GenInfo table is deleted after the reporting process completes. The Products database contains tables named ProductNames and ProductTypes.
Current System
The current desktop application uses data stored in a SQL Server 2005 database named DesABCopAppDB.
This database will remain online and data from the Current_Inventory database will be copied to it as soon as data is changed in the Current_Inventory database.
SQL Servers
A new SQL Server 2012 instance will be deployed to host the databases for the new system. The databases will be hosted on a Storage Area Network (SAN) that provides highly available storage.
Design Requirements
Your SQL Server infrastructure and database design must meet the following requirements:
Confidential information in the Current_Inventory database that is accessed by ExternalApp1 must be securely stored.
Direct access to database tables by developers or applications must be denied.
The account used to generate reports must have restrictions on the hours when it is allowed to make a connection.
Deadlocks must be analyzed with the use of Deadlock Graphs.
In the event of a SQL Server failure, the databases must remain available.
Software licensing and database storage costs must be minimized.
Development effort must be minimized.
The Tempdb databases must be monitored for insufficient free space.
Failed authentication requests must be logged.
Every time a new row is added to the ProductTypes table in the Products database, a user defined function that validates the row must be called before the row is added to the table.
When SPUpdateSalesInfo queries data in the OrderTotals table the first time, the same rows must be returned along with any newly added rows when SPUpdateSalesInfo queries data in the OrderTotals table the second time.
You need to enable users to modify data in the database tables using UPDATE operations. You need to implement a solution that meets the design requirements.
What should you configure?
A. You should configure a server role.
B. You should configure a database role.
C. You should configure functions that use the EXECUTE AS statement.
D. You should configure stored procedures that use the EXECUTE AS statement.

NEW QUESTION 13
You have a SQL Server instance on a server named Server1. You need to recommend a solution to perform the following tasks every week:
Rebuild the indexes by using a new fill factor.
Run a custom T-SQL command.
Back up the databases.
What should you recommend? More than one answer choice may achieve the goal. Select the BEST answer.
A. A trigger
B. An alert
C. A maintenance plan
D. Windows PowerShell
E. A system policy

Answer: C
Explanation: Maintenance plans create a workflow of the tasks required to make sure that your database is optimized, regularly backed up, and free of inconsistencies.
NEW QUESTION 15
You are troubleshooting an application that runs a query.
The application frequently causes deadlocks. You need to identify the isolation level used by the query when a deadlock occurs.
What should you do? More than one answer choice may achieve the goal. Select the BEST answer.

A. Query the sys.dm_exec_requests dynamic management view.
B. Create a trace in SQL Server Profiler that contains the Deadlock graph event.
C. Query the sys.dm_exec_sessions dynamic management view.
D. Enable trace flag 1222, and then view the SQL Server error log.

Answer: C

Explanation:
- sys.dm_exec_sessions
Returns one row per authenticated session on SQL Server. sys.dm_exec_sessions is a serverscope view that shows information about all active user connections and internal tasks. Include the column:
  transaction_isolation_level smallint Transaction isolation level of the session. 0 = Unspecified
  1 = ReadUncommitted
  2 = ReadCommitted
  3 = Repeatable
  4 = Serializable
  5 = Snapshot Is not nullable.

NEW QUESTION 16
Background Corporate Information
Fabrikam, Inc. is a retailer that sells electronics products on the Internet. The company has a headquarters site and one satellite sales office. You have been hired as the database administrator, and the company wants you to change the architecture of the Fabrikam ecommerce site to optimize performance and reduce downtime while keeping capital expenditures to a minimum. To help with the solution, Fabrikam has decided to use cloud resources as well as on-premise servers.

Physical Locations
All of the corporate executives, product managers, and support staff are stationed at the headquarters office. Half of the sales force works at this location. There is also a satellite sales office. The other half of the sales force works at the satellite office in order to have sales people closer to clients in that area. Only sales people work at the satellite location.

Problem Statement
To be successful, Fabrikam needs a website that is fast and has a high degree of system uptime. The current system operates on a single server and the company is not happy with the single point of failure this presents. The current nightly backups have been failing due to insufficient space on the available drives and manual drive cleanup often needing to happen to get past the errors. Additional space will not be made available for backups on the HQ or satellite servers. During your investigation, you discover that the sales force reports are causing significant contention.

Configuration Windows Logins
The network administrators have set up Windows groups to make it easier to manage security. Users may belong to more than one group depending on their role. The groups have been set up as shown in the following table:

<table>
<thead>
<tr>
<th>Group</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>OurDomain\Management</td>
<td>All corporate executives</td>
</tr>
<tr>
<td>OurDomain\SalesStaff</td>
<td>All sales people</td>
</tr>
<tr>
<td>OurDomain\ProductionStaff</td>
<td>All product managers and support staff</td>
</tr>
<tr>
<td>OurDomain\AllUsers</td>
<td>Everyone</td>
</tr>
<tr>
<td>OurDomain\CustomerSupport</td>
<td>Customer support representatives</td>
</tr>
</tbody>
</table>

Server Configuration
The IT department has configured two physical servers with Microsoft Windows Server 2012 R2 and SQL Server 2014 Enterprise Edition and one Windows Azure Server. There are two tiers of storage available for use by database files only a fast tier and a slower tier. Currently the data and log files are stored on the fast tier of storage only. If a possible use case exists, management would like to utilize the slower tier storage for data files. The servers are configured as shown in the following table:

<table>
<thead>
<tr>
<th>Location</th>
<th>Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company headquarters</td>
<td>HQ_Server</td>
</tr>
<tr>
<td>Satellite sales office</td>
<td>Satellite_Server</td>
</tr>
<tr>
<td>Microsoft Windows Azure (cloud)</td>
<td>Cloud_File Server</td>
</tr>
</tbody>
</table>

Database
Currently all information is stored in a single database called ProdDB, created with the following script:

```
CREATE DATABASE ProdDB
GO
ALTER DATABASE ProdDB SET RECOVERY SIMPLE
GO
```

The Product table is in the Production schema owned by the ProductionStaff Windows group. It is the main table in the system so access to information in the Product table should be as fast as possible. The columns in the Product table are defined as shown in the following table:
The SalesOrderDetail table holds the details about each sale. It is in the Sales schema owned by the SalesStaff Windows group. This table is constantly being updated, inserted into, and read. The columns in the SalesOrderDetail table are defined as shown in the following table:

<table>
<thead>
<tr>
<th>Column</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProductID</td>
<td>INT</td>
</tr>
<tr>
<td>ProductName</td>
<td>VARCHAR(100)</td>
</tr>
<tr>
<td>ProductDescription</td>
<td>VARCHAR(MAX)</td>
</tr>
<tr>
<td>ProductPrice</td>
<td>SMALLMONEY</td>
</tr>
<tr>
<td>QuantityOnHand</td>
<td>INT</td>
</tr>
<tr>
<td>ProductCost</td>
<td>SMALLMONEY</td>
</tr>
<tr>
<td>ProductSupplierID</td>
<td>INT</td>
</tr>
</tbody>
</table>

Database Issues
The current database does not perform well. Additionally, a recent disk problem caused the system to go down, resulting in lost sales revenue. In reviewing the current system, you found that there are no automated maintenance procedures. The database is severely fragmented, and everyone has read and write access. Requirements Database
The database should be configured to maximize uptime and to ensure that very little data is lost in the event of a server failure. To help with performance, the database needs to be modified so that it can support in-memory data, specifically for the Product table, which the CIO has indicated should be a memory-optimized table. The auto-update statistics option is set off on this database. Only product managers are allowed to add products or to make changes to the name, description, price, cost, and supplier. The changes are made in an internal database and pushed to the Product table in ProdDB during system maintenance time. Product managers and others working at the headquarters location also should be able to generate reports that include supplier and cost information. Customer data access
Customers access the company's website to order products, so they must be able to read product information such as name, description, and price from the Product table. When customers place orders, stored procedures called by the website update product quantity-on-hand values. This means the product table is constantly updated at random times. Customer support data access
Customer support representatives need to be able to view and not update or change product information. Management does not want the customer support representatives to be able to see the product cost or any supplier information. Sales force data access
Sales people at both the headquarters office and the satellite office must generate reports that read from the Product and SalesOrderDetail tables. No updates or inserts are ever made by sales people. These reports are run at random times and there can be no reporting downtime to refresh the data set except during the monthly maintenance window. The reports that run from the satellite office are process-intensive queries with large data sets. Regardless of which office runs a sales force report, the SalesOrderDetail table should only return valid, committed order data; any orders not yet committed should be ignored.

Historical Data
The system should keep historical information about customers who access the site so that sales people can see how frequently customers log in and how long they stay on the site. The information should be stored in a table called Customer Access. Supporting this requirement should have minimal impact on production website performance.

Backups
The recovery strategy for Fabrikam needs to include the ability to do point in time restores and minimize the risk of data loss by performing transaction log backups every 15 minutes.

Database Maintenance
The company has defined a maintenance window every month when the server can be unavailable. Any maintenance functions that require exclusive access should be accomplished during that window.

Project milestones completed
Revoled all existing read and write access to the database, leaving the schema ownership in place.

Configured an Azure storage container secured with the storage account name MyStorageAccount with the primary access key StorageAccountKey on the cloud file server.

SQL Server 2014 has been configured on the satellite server and is ready for use.

On each database server, the fast storage has been assigned to drive letter F:\, and the slow storage has been assigned to drive letter D:\.

You need to write code that will allow the sales force to retrieve data for their reports with the least amount of effort. Which code should you use?
**Option A**

```
CREATE PROCEDURE Sales.usp_CustomerSalesReport
    WITH EXECUTE AS 'OurDomain\ProductionStaff'
AS
SELECT *
FROM Production.Product
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
```

**Option B**

```
CREATE VIEW Sales.vm_CustomerSalesReports
AS
SELECT *
FROM Production.Product
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
```

**Option C**

```
CREATE PROCEDURE Sales.usp_CustomerSalesReport
AS
SELECT *
FROM Production.Product
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
```

**Option D**

```
CREATE USER MyProxy WITHOUT LOGIN
GRANT SELECT
    ON Production.Product
TO MyProxy
GRANT SELECT
    ON Sales.SalesOrderDetail
TO MyProxy
CREATE PROCEDURE Sales.usp_CustomerSalesReport
AS
SELECT *
FROM Production.Product
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
```

**Answer:** A

**Explanation:**
- **Scenario:**
  - During your investigation, you discover that the sales force reports are causing significant contention.
  - Sales force data access sales people at both the headquarters office and the satellite office must generate reports that read from the `Product` and `SalesOrderDetail` tables. No updates or inserts are ever made by sales people. These reports are run at random times and there can be no reporting downtime to refresh the data set except during the monthly maintenance window. The reports that run from the satellite office are process-intensive queries with large data sets. Regardless of which office runs a sales force report, the `SalesOrderDetail` table should only return valid, committed order data; any orders not yet committed should be ignored.
NEW QUESTION 17
You use SQL Server 2014. You create a table within a database by using the following DDL:

```
CREATE TABLE OrderData
(
    OrderID INT IDENTITY(1,1) Primary Key Clustered,
    OrderDate SMALLDATETIME NOT NULL DEFAULT getdate(),
    CustomerID INT,
    IsTaxable INT,
    SubTotal SmallMoney DEFAULT (0),
    TaxAmount AS (CASE IsTaxable WHEN 1 THEN SubTotal * .0875 ELSE NULL END),
    Freight SmallMoney,
    OrderReturnedDate DATE,
    OrderReturnedCustReason TEXT,
    OrderReturnedEval Varchar(MAX)
)
```

The following table illustrates a representative sample of data:

<table>
<thead>
<tr>
<th>OrderID</th>
<th>OrderDate</th>
<th>CustomerID</th>
<th>IsTaxable</th>
<th>SubTotal</th>
<th>TaxAmount</th>
<th>Freight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11/13/2013 11:22</td>
<td>58465</td>
<td>NULL</td>
<td>$25.99</td>
<td>NULL</td>
<td>$5.40</td>
</tr>
<tr>
<td>2</td>
<td>11/15/2013 9:34</td>
<td>12588</td>
<td>NULL</td>
<td>$42.00</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>3</td>
<td>12/1/2013 14:34</td>
<td>85477</td>
<td>NULL</td>
<td>$23.99</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>4</td>
<td>12/17/2013 4:31</td>
<td>58742</td>
<td>NULL</td>
<td>$19.00</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>5</td>
<td>1/3/2014 8:22</td>
<td>12477</td>
<td>NULL</td>
<td>$13.50</td>
<td>NULL</td>
<td>$5.40</td>
</tr>
<tr>
<td>6</td>
<td>1/5/2014 18:39</td>
<td>63214</td>
<td>NULL</td>
<td>$5.69</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>7</td>
<td>1/15/2014 14:22</td>
<td>85471</td>
<td>NULL</td>
<td>$18.99</td>
<td>NULL</td>
<td>$7.85</td>
</tr>
<tr>
<td>8</td>
<td>1/19/2014 3:20</td>
<td>85412</td>
<td>NULL</td>
<td>$65.77</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>9</td>
<td>1/22/2014 13:44</td>
<td>12588</td>
<td>NULL</td>
<td>$22.38</td>
<td>NULL</td>
<td>$7.35</td>
</tr>
<tr>
<td>10</td>
<td>1/28/2014 10:14</td>
<td>85471</td>
<td>1</td>
<td>$24.99</td>
<td>$2.19</td>
<td>$5.40</td>
</tr>
</tbody>
</table>

The system is expected to handle 50 million orders a month over the next five years. You have been instructed by your Team Lead to follow best practices for storage and performance in the utilization of SPARSE columns. Which columns should you designate as SPARSE? To answer, mark each column as SPARSE or NOT SPARSE in the answer area.

<table>
<thead>
<tr>
<th>Column Names</th>
<th>Sparse</th>
<th>Not Sparse</th>
</tr>
</thead>
<tbody>
<tr>
<td>OrderID</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>OrderDate</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>CustomerID</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>IsTaxable</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>SubTotal</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>TaxAmount</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Freight</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

**Answer:**

**Explanation:** Sparse columns are ordinary columns that have an optimized storage for null values. Sparse columns reduce the space requirements for null values at the cost of more overhead to retrievenonnull values. Consider using sparse columns when the space saved is at least 20 percent to 40 percent.
NEW QUESTION 18
You are maintaining a Microsoft SQL Server database named DB1. The database uses the dbo schema. Tables in the database were created by running the following Transact-SQL statements:

```
CREATE TABLE Employees
    (EmployeeId INT IDENTITY(1,1) NOT NULL PRIMARY KEY,
     IsManager BIT NOT NULL,
     DatabasePrincipalId INT NOT NULL
    )

CREATE TABLE Sales
    (SalesId BIGINT IDENTITY(1,1) NOT NULL PRIMARY KEY,
     Amount DECIMAL (20,2) NULL,
     ManagerId INT NOT NULL FOREIGN KEY (ManagerId) REFERENCES Employees(EmployeeId),
     EmployeeId INT NOT NULL FOREIGN KEY (EmployeeId) REFERENCES Employees (EmployeeId)
    )
```

The Sales table has a column named ManagerId. This column is used to assign the manager for a sales transaction. You have read access to the Employees table. Other employees have read and write access to the Sales table but no access to the Employees table.

You need to implement row-level security (RLS) for the Sales table. The solution must meet the following requirements:

- Managers must only read and modify sales records that are assigned to them.
- Managers cannot assign sales data to another manager.

Which three Transact-SQL segments should you use to develop the solution? To answer, move the appropriate Transact-SQL segments from the list of Transact-SQL segments to the answer area and arrange them in the correct order.
NEW QUESTION 19
You have a database named DB1.
Users report that a database application that updates the data in DB1 is unresponsive. You need to identify which process prevents the application from responding.
What should you do?
A. Run DBCC INPUTBUFFER.
B. Query sys.dm_exec_session_wait_stats.
C. Run sp_autostats.
D. Run sp_who.

Answer: B

Explanation: Sys.dm_exec_session_wait_stats returns information about all the waits encountered by threads that executed for each session. You can use this view to diagnose performance issues with the SQL Server session and also with specific queries and batches.

References:
NEW QUESTION 20

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the text of the scenario is exactly the same in each question in this series.

Start of repeated scenario.

You have five servers that run Microsoft Windows 2012 R2. Each server hosts a Microsoft SQL Server instance. The topology for the environment is shown in the following diagram.

You have an Always On Availability group named AG1. The details for AG1 are shown in the following table.

<table>
<thead>
<tr>
<th>Instance</th>
<th>Node type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance1</td>
<td>Primary</td>
</tr>
<tr>
<td>Instance2</td>
<td>Synchronous readable secondary</td>
</tr>
<tr>
<td>Instance3</td>
<td>Asynchronous readable secondary</td>
</tr>
</tbody>
</table>

Instance1 experiences heavy read-write traffic. The instance hosts a database named OperationsMain that is four terabytes (TB) in size. The database has multiple data files and filegroups. One of the filegroups is read_only and is half of the total database size.
Instance4 and Instance6 are not part of AG1. Instance4 is engaged in heavy read-write I/O.
Instance5 hosts a database named StagedExternal. A nightly BULK INSERT process loads data into an empty table that has a rowstore clustered index and two nonclustered rowstore indexes.

You must minimize the growth of the StagedExternal database log file during the BULK INSERT operations and perform point-in-time recovery after the BULK INSERT transaction. Changes made must not interrupt the log backup chain.

You plan to add a new instance named Instance6 to a datacenter that is geographically distant from Site1 and Site2. You must minimize latency between the nodes in AG1.

All databases use the full recovery model. All backups are written to the network location \SQLBackup. A separate process copies backups to an offsite location. You should minimize both the time required to restore the databases and the space required to store backups. The recovery point objective (RPO) for each instance is shown in the following table.

<table>
<thead>
<tr>
<th>Instance</th>
<th>Recovery point objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance1</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Instance2</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Instance3</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Instance4</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Instance5</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

Full backups of OperationsMain take longer than six hours to complete. All SQL Server backups use the keyword COMPRESS.|ON.

You plan to deploy the following solutions to the environment. The solutions will access a database named DB1 that is part of AG1.

- **Reporting system:** This solution accesses data inDB1with a login that is mapped to a database user that is a member of the db_datareader role. The user has EXECUTE permissions on the database. Queries make no changes to the data. The queries must be load balanced over variable read-only replicas.

- **Operations system:** This solution accesses data inDB1with a login that is mapped to a database user that is a member of the db_datareader and db_datawriter roles. The user has EXECUTE permissions on the database. Queries from the operations system will perform both DDL and DML operations. The wait statistics monitoring requirements for the instances are described in the following table.
You need to reduce the amount of time it takes to back up OperationsMain. What should you do?

A. Modify the backup script to use the keyword NO_COMPRESSION in the WITH statement.
B. Modify the backup script to use the keywords INIT and SKIP in the WITH statement.
C. Run the following Transact-SQL statement for each file in OperationsMain: BACKUP DATABASE OperationsMain FILE […]
D. Run the following Transact-SQL statement: BACKUP DATABASE OperationsMain READ_WRITE_FILEGROUPS

**Answer:** D

**Explanation:** READ_WRITE_FILEGROUPS specifies that all read/write filegroups be backed up in the partial backup. If the database is read-only, READ_WRITE_FILEGROUPS includes only the primary filegroup.

**Scenario:** Full backups of OperationsMain take longer than six hours to complete. All SQL Server backups use the keyword COMPRESSION.

**NEW QUESTION 21**

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