

## **70-765 case**

Number: 70-765  
Passing Score: 800  
Time Limit: 120 min  
File Version: 1.0

## Testlet 1

### TESTLET OVERVIEW

Title: **Case Study**

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### Leaffield Solutions

#### General Overview

You are the Senior Database Administrator (DBA) for a software development company named Leaffield Solutions.

The company develops software applications custom designed to meet customer requirements.

### Requirements

#### Requirements

Leaffield 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 the customer 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

#### 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**

### **Current System**

The current desktop application uses data stored in a SQL Server 2005 database named DesABCOppAppDB.

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**

### **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**

### **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.

## **QUESTION 1**

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.

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 2**

The performance of the SPUpdate2 stored procedure needs to be improved.

Your solution must meet the design requirements.

What should your solution include?

- A. A common table expression.
- B. A derived table.
- C. A Cursor.
- D. A table variable.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 3**

You need to ensure that the account used to generate reports can only connect during certain hours.

What should you configure?

- A. A CHECK constraint.
- B. Windows Server Resource Manager (WSRM).
- C. Logon Triggers.
- D. Login Auditing.

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 4**

You need to configure a synchronization solution to copy data from the Current\_Inventory database the DesABCopAppDB database.

What should you configure?

- A. Transactional Replication.
- B. Database Mirroring.
- C. Snapshot Replication.
- D. Incremental Backups

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 5**

You need to plan the SQL Server 2012 deployment that meets the design requirements.

Which of the following steps should you perform?

(Choose all that apply)

- A. Upgrade the existing SQL Server 2005 server to SQL Server 2012.
- B. Install one new server running SQL Server 2012.
- C. Install two new servers running SQL Server 2012
- D. Configure Failover Clustering
- E. Configure AlwaysOn

**Correct Answer:** ABE

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 6**

You need to ensure that the account used to generate reports can only connect during certain hours.

What should you configure?

- A. A CHECK constraint.
- B. Windows Server Resource Manager (WSRM).
- C. Logon Triggers.
- D. Login Auditing.

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 7**

You need to meet the design requirement for the ProductTypes table in the Product database.

Which of the following would be the best solution?

- A. A PRIMARY KEY constraint.
- B. A CHECK constraint.
- C. A UNIQUE constraint.
- D. A Data Definitions Language (DDL) trigger.
- E. A FOREIGN KEY constraint.

**Correct Answer:** B

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 8**

You need to recommend a solution to meet the design requirement of logging all failed authentication requests. What should you recommend?

- A. Object Access Auditing
- B. C2 Audit Mode
- C. Logon Triggers.
- D. Login Auditing.

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

## Testlet 1

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### General overview

#### Case Study 1: A Datum

##### Overview

##### General Overview

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 a 5-ms latency.

A. Datum standardizes its database platform by using SQL Server 2012 Enterprise edition.

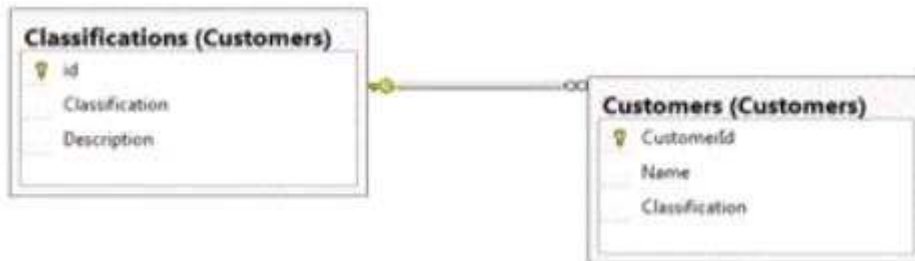
### Databases

#### 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:



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

id	Classification	Description
1	Platinum	Yearly sales over 1,000,000
2	Gold	Yearly sales over 500,000
3	Silver	Yearly sales over 100,000

The Inventory database is updated frequently.  
The database is often used for reporting.

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

## **Stored Procedures**

### **Stored Procedures**

A stored procedure named sp1 generates millions of rows of data for multiple reports. Sp1 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 a table1 sequentially several times. After the process is complete, Table1 is deleted.

A stored procedure named sp2 is used to generate a product list. The product list contains the names of products grouped by category. Sp2 takes several minutes to run due to locks on the tables the procedure accesses. The locks are caused by sp1 and sp3.

A stored procedure named sp3 is used to update prices. Sp3 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 sp4 calls stored procedures in the Sales, Customers, and Inventory databases. The nested stored procedures read tables from the Sales, Customers, and Inventory databases. Sp4 uses an EXECUTE AS clause. All nested stored procedures handle errors by using structured exception handling.

A stored procedure named sp5 calls several stored procedures in the same database. Security checks are performed each time sp5 accesses a database.

You suspect that the security checks are slowing down the performance of sp5.

All stored procedures accessed by user applications call nested stored procedures. The nested stored procedures are never called directly.

## **Design Requirements**

### **Design Requirements**

#### **Data Recovery**

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.

#### **QUESTION 1**

You need to recommend a solution to minimize the amount of time it takes to execute sp1.  
With what should you recommend replacing Table1?

- A. a table variable
- B. a function
- C. a view
- D. a temporary table

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 2**

You need to recommend a disaster recovery strategy for the Dev database.  
What should you include in the recommendation?

- A. The simple recovery model and full backups.
- B. The full recovery model, full backups, and transaction log backups.
- C. The full recovery model, full backup, and differential backups.
- D. The bulk-logged recovery model and full backups.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 3**

You need to recommend a solution to minimize the amount of time it takes to execute sp5.  
With what should you include in the recommendation?

- A. Use the EXECUTE AS clause in sp5.
- B. Enable cross-database chaining.
- C. Use a server role to group all logins.
- D. Copy sp5 to each database.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 4**

You need to recommend a solution to allow application users to perform UPDATE operations on the database

tables.

The solution must meet the business requirements. What should you recommend?

- A. Create stored procedures that use EXECUTE AS clauses.
- B. Create a Policy-Based Management Policy.
- C. Create functions that use EXECUTE AS clauses.
- D. Create a user-defined database role and add users to the role.

**Correct Answer: A**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 5**

You need to recommend a solution to ensure that sp4 adheres to the security requirements. What should you include in the recommendation?

- A. Configure data manipulation language (DML) triggers.
- B. Enable SQL Server Audit.
- C. Enable C2 audit tracing.
- D. Enable trace flags.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 6**

You need to recommend a disaster recovery strategy for the Inventory database. What should you include in the recommendation?

- A. Log shipping
- B. AlwaysOn availability groups
- C. Peer-to-peer replication
- D. SQL Server Failover Clustering

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 7**

You need to recommend a solution to meet the security requirements of the junior database administrators. What should you include in the recommendation?

- A. a database role
- B. a credential
- C. a shared login
- D. a server role

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 8**

You need to recommend a change to sp3 to ensure that the procedure continues to execute even if one of the UPDATE statements fails.

Which change should you recommend?

- A. Set the XACT\_ABORT option to off.
- B. Set the XACT\_ABORT option to on.
- C. Set the IMPLICIT\_TRANSACTIONS option to on.
- D. Set the IMPLICIT\_TRANSACTIONS option to off.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 9**

You need to recommend a solution for the planned changes to the customer classifications.

What should you recommend? (Each correct answer presents part of the solution. Choose all that apply.)

- A. Add a row to the Customers table each time a classification changes.
- B. Add a table to track any changes made to the classification of each customer.
- C. Add columns for each classification to the Customers table.
- D. Add a column to the Classifications table to track the status of each classification.
- E. Implement change data capture.

**Correct Answer:** BE

**Section:** [none]

**Explanation**

**Explanation/Reference:**

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### Overview

#### Litware, inc Case B

##### 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](http://www.litwareinc.com).  
Both internal employees and external partners will use the application.

You have an existing desktop application that uses a SQL Server 2005 database named App1\_DB.  
App1\_DB will remain in production.

### Planned changes

#### Planned Changes

You plan to deploy a SQL Server 2012 instance that will contain two databases named Database1 and Database2.

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.  
Each query against the Orders table must return the same data.  
All statements in the stored procedure run in a single transaction.

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 several small data sets of up to 100 rows each.  
Each data set will be used multiple times.

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\_Db1 as soon as changes occur to the data in Database2.

Litware plans to use offsite storage for all SQL Server 2012 backups.

## Business requirements

### Business Requirements

You have the following requirements:

- Costs for new equipment must be minimized.
- External access to databases must be encrypted.
- Development effort must be minimized whenever possible.
- 
- System administrators must be notified when disk space falls below a certain threshold.
- The databases must be available if the SQL Server service or the storage solution 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.

### QUESTION 1

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 cursor
- B. a subquery
- C. a table variable
- D. a common table expression

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

### QUESTION 2

You need to recommend a feature to support your backup solution.

What should you include in the recommendation?

- A. Column level encryption
- B. Transparent Data Encryption (TDE)
- C. An NTFS file permission
- D. A Secure Sockets Layer (SSL)

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

### QUESTION 3

You need to recommend a solution for the deployment of SQL Server 2012.

The solution must meet the business requirements.

What should you include in the recommendation?

- A. Install a new instance of SQL Server 2012 on the server that hosts the SQL Server 2005 instance. Deploy a new server that has SQL Server 2012 installed. Implement AlwaysOn.
- B. Upgrade the existing SQL Server 2005 instance to SQL Server 2012. Deploy a new server that has SQL Server 2012 installed. Implement AlwaysOn.
- C. Deploy two servers that have SQL Server 2012 installed and implement Failover Clustering.
- D. Deploy two servers that have SQL Server 2012 installed. Implement AlwaysOn AvailabilityGroups on both servers.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### QUESTION 4

You need to recommend a solution to synchronize Database2 to App1\_Db1.  
What should you recommend?

- A. Snapshot replication
- B. Change data capture
- C. Transactional replication
- D. Master Data Services

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### QUESTION 5

You need to recommend a disk monitoring solution that meets the business requirements.  
What should you include in the recommendation?

- A. an audit
- B. a maintenance plan
- C. a policy
- D. a SQL Server Agent alert

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### QUESTION 6

You need to recommend an isolation level for usp\_UpdateOrderDetails.  
Which isolation level should recommend?

- A. repeatable read
- B. read uncommitted

- C. read committed
- D. serializable

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

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### General Overview

#### A Datum

#### General Overview

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 a 5-ms latency.

A. Datum standardizes its database platform by using SQL Server 2012 Standard edition.

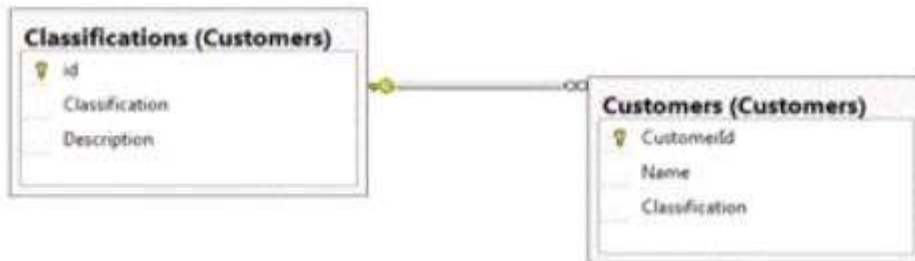
### Databases

#### 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:



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

id	Classification	Description
1	Platinum	Yearly sales over 1,000,000
2	Gold	Yearly sales over 500,000
3	Silver	Yearly sales over 100,000

The Inventory database is used mainly for reports.

The database is recreated every day.

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



## **Stored procedures**

### **Stored Procedures**

A stored procedure named sp1 generates millions of rows of data for multiple reports. Sp1 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 a table in the Products database and searches for information in Table1 based on input from the Products table. After the process is complete, Table1 is deleted.

A stored procedure named sp2 is used to generate a product list. Sp2 takes several minutes to run due to locks on the tables the procedure accesses.

A stored procedure named sp3 is used to update prices. Sp3 is composed of several UPDATE statements called in sequence from within a transaction. Currently, if one of the UPDATE statements fails, the stored procedure continues to execute.

A stored procedure named sp4 calls stored procedures in the Sales, Customers, and Inventory databases. The nested stored procedures read tables from the Sales, Customers, and Inventory databases. Sp4 uses an EXECUTE AS clause.

A stored procedure named sp5 changes data in multiple databases. Security checks are performed each time sp5 accesses a database.

You suspect that the security checks are slowing down the performance of sp5.

All stored procedures accessed by user applications call nested stored procedures. The nested stored procedures are never called directly.

## **Design Requirements**

### **Design Requirements**

#### **Data Recovery**

You must be able to recover data from the Inventory database if a storage failure occurs. You have a Recovery Point Objective (RPO) of one hour.

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 view the server state of the SQL Server instance that hosts the Sales database. The junior database administrators will not have any other administrative rights.

### **QUESTION 1**

You need to recommend a disaster recovery strategy for the Inventory database. What should you include in the recommendation?

- A. SQL Server Failover Clustering
- B. AlwaysOn Availability Groups

- C. Peer-to-peer replication
- D. Log shipping

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

## QUESTION 2

You need to recommend a solution to minimize the amount of time it takes to execute sp1.

With what should you recommend replacing Table1?

- A. a temporary table
- B. a function
- C. a view
- D. a table variable

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

## QUESTION 3

You need to recommend a change to sp3 to ensure that the procedure completes only if all of the UPDATE statements complete.

Which change should you recommend?

- A. Set the XACT\_ABORT option to on.
- B. Set the IMPLICIT\_TRANSACTIONS option to off.
- C. Set the IMPLICIT\_TRANSACTIONS option to on.
- D. Set the XACT\_ABORT option to off.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

## QUESTION 4

You need to recommend a solution to meet the security requirements of the junior database administrators.

What should you include in the recommendation?

- A. a database role
- B. a server role
- C. a shared login
- D. a credential

**Correct Answer:** B

**Section: [none]**

**Explanation**

**Explanation/Reference:**

or a database role

#### **QUESTION 5**

**Question**

You need to recommend a solution for the planned changes to the customer classifications.

What should you recommend? (Each correct answer presents part of the solution. Choose all that apply.)

- A. Add a table to track any changes made to the classification of each customer.
- B. Add columns for each classification to the Customers table.
- C. Implement change data capture.
- D. Add a row to the Customers table each time a classification changes
- E. Add a column to the Classifications table to track the status of each classification.

**Correct Answer: AC**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 6**

You need to recommend a solution to ensure that sp4 adheres to the security requirements.

What should you include in the recommendation?

- A. Configure data manipulation language (DML) triggers.
- B. Enable SQL Server Audit.
- C. Enable trace flags.
- D. Enable C2 audit tracing

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 7**

You need to recommend a change to sp3 to ensure that the procedure continues to execute even if one of the UPDATE statements fails.

Which change should you recommend?

- A. Set the IMPLICIT\_TRANSACTIONS option to on.
- B. Set the IMPLICIT\_TRANSACTIONS option to off.
- C. Set the XACT\_ABORT option to off.
- D. Set the XACT\_ABORT option to on.

**Correct Answer: C**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

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### General Overview

#### Fairstone Manufacturing Inc.

##### General Overview

You are the Senior Database Administrator (DBA) for a manufacturing company named Fairstone Manufacturing.

Fairstone Manufacturing is based in the New York area.

The company has two offices:

a main office in the city and a branch office just outside the city.

The company has four factories where their products are manufactured.

Two factories are in the New York area and the other two factories are in Washington.

##### Network Connectivity

The two offices are connected by a 10 Mbps dedicated WAN link.

##### SQL Server Environment

The main office has four SQL Server 2012 Standard Edition servers named MainDB1, MainDB2, MainDB3 and MainDB4.

The branch office has two SQL Server 2012 Standard Edition servers named BranchDB1 and BranchDB2.

The main office has a Development department.

All databases used by the Development department are hosted on MainDB3 and MainDB4.

MainDB1 and MainDB2 host the following databases:

- Products
- Manufacturing
- Sales
- HR
- Customers
- DailyReportsTemp
- 

BranchDB1 and BranchDB2 host the same databases as MainDB1 and MainDB2.

The DailyReportsTemp database is a temporary database that is recreated every day and used for reporting purposes.

One of the tables in the Customer database lists all the customers.

Another table linked to the customers table contains a list of classifications for the customers.

The classifications are Hot, Warm and Cold based on the number of orders placed by the customers in the last year.

The customers are classified according to the following criteria:

- Hot – Over 100 orders placed in a year.

- Warm – Between 50 and 100 orders placed in a year.
- Cold – Under 50 orders placed in a year.

### **Stored Procedures**

Three tables in the Manufacturing database are modified by a stored procedure named ManProc1.

A segment of code from ManProc1 is as follows:

```
CREATE PROCEDURE Manufacturing.ManProc1
AS
BEGIN TRANSACTION
    UPDATE Manufacturing.Type ...
    UPDATE Manufacturing.Version ...
    UPDATE Manufacturing.Revision ...
COMMIT TRANSACTION
GO
```

The same three tables are also modified by a stored procedure named ManProc2.

A segment of code from ManProc2 is as follows:

```
CREATE PROCEDURE Manufacturing.ManProc2
AS
BEGIN TRANSACTION
    UPDATE Manufacturing.Revision ...
    UPDATE Manufacturing.Type ...
    UPDATE Manufacturing.Version ...
COMMIT TRANSACTION
GO
```

A product list in the Products database is updated using information from tables in the Manufacturing database by a stored procedure named ProductUpdateProc.

Locks on tables in the Manufacturing database often cause ProductUpdateProc to take a long time to complete.

A list of manufacturing processes required to create each product is stored in tables in the Manufacturing database and updated by a stored procedure named ProcessUpdateProc.

The ProcessUpdateProc stored procedure contains several UPDATE statements.

The UPDATE statements are configured to be called in a specific order.

The ProcessUpdateProc stored procedure continues to run in the event of a failure of one of the UPDATE statements. This can cause inaccurate results in the manufacturing process list.

### **Sales Director Statement:**

#### **Sales Director Statement:**

The Sales Director has made the following observations about the current database design:

The current customer classification system needs to be changed.

Currently the customers are classified by the number of orders placed in the last year.

This information is an unreliable guide as it does not take in to account the size of the orders.

I would suggest a trial run of a classification system based on the revenue generated by the orders placed in the last year.

We may add more than the current three classification types in future.

We should have a method of recording changes to the classifications.

### **IT Manager Statement:**

#### **IT Manager Statement:**

The IT Manager has listed the following requirements for the SQL Server and database environment:

We need to provide a group of users from the IT and Manufacturing departments the minimum administrative rights to view database information and server state for the Manufacturing database on MainDB1.

The Sales database takes too long to back up due to the large amount of historical sales order data in the database. We need to reduce the backup time for this database.

The DailyReportsTemp database takes four hours to back up.  
We need to be able to recover the DailyReportsTemp database in less than one hour if the database storage hardware fails.

We need to be able to immediately return the Manufacturing database to its previous state if the ProcessUpdateProc stored procedure fails to update the process information correctly.

I also want the ProcessUpdateProc stored procedure to stop running in the event of a failure of one of the UPDATE statements.

IT Administrators need to be able to monitor the disk space used on the SQL Servers by running real-time reports on the disk usage.

The Developers would like to install second instances of SQL Server on MainDB3 and MainDB4. They would like to assign each instance to specific processors on the SQL Servers.

#### **QUESTION 1**

You need to provide a group of users from the IT and Manufacturing departments the minimum administrative rights to view database information and server state for the Manufacturing database on MainDB1.

What should you do?

- A. You should configure a Database Role.
- B. You should configure a Server Role.
- C. You should configure a Shared SQL Server Login.
- D. You should configure a Local Security Group.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 2**

You need to enable the Developers to assign SQL Server instances on MainDB3 and MainDB4 to specific processors on the servers.

What should you configure?

- A. Windows System Resource Manager (WSRM)
- B. Resource Governor
- C. A Maintenance Plan
- D. Processor Affinity

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 3**

You need to recommend a solution to meet the recovery requirements for the manufacturing database. Your solution must minimize costs.

What should you recommend?

- A. Database snapshots
- B. Transaction log backups
- C. Differential backups
- D. SQL Server Failover Clustering
- E. Peer-to-peer replication

**Correct Answer: A**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 4**

You need to address the Sales Director's requirements regarding the customer classification.

You need to recommend a solution for changing the classifications.

What should you recommend?

- A. Add each classification change to a new row in the Customers table.
- B. Record each change to the classification of each customer in a new row in the Customers table.
- C. Add a new row to the Customers table for each new classification.
- D. Record each change to the classification of each customer in a new table in the Customers database.

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 5**

You need to address the requirements for disc usage monitoring for the SQL Servers.

What should you do?

- A. You should configure disc quotas.
- B. You should configure a Dynamic Management View.
- C. You should configure alerts sent by the SQL Server Agent.
- D. You should configure a SQL Server Maintenance Plan.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**



## Testlet 1

### TESTLET OVERVIEW

#### Title: **Case Study**

The following testlet will present a Case Study followed by [count] multiple choice question(s), [count] create a tree question(s), [count] build list and reorder question(s) and [count] drop and connect question(s).

You will have [count] minutes to complete the testlet.

For help on how to answer the questions, click the **Instructions** button on the question screen.

#### **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](http://www.litwareinc.com). Both internal employees and external partners will use the application.

You have an existing desktop application that uses a SQL Server 2005 database named App1\_DB. App1\_DB will remain in production.

#### **Planned Changes**

You plan to deploy a SQL Server 2012 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 Appl\_Dbl as soon as changes occur to the data in Database2.

Litware plans to use offsite storage for all SQL Server 2012 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.

#### **QUESTION 1**

You need to recommend an isolation level for usp\_UpdateOrderDetails.

Which isolation level should recommend?

- A. Repeatable read
- B. Read uncommitted
- C. Serializable
- D. Read committed

**Correct Answer: A**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 2**

You need to recommend a solution for the deployment of SQL Server 2012.  
The solution must meet the business requirements.

What should you include in the recommendation?

- A. Deploy two servers that have SQL Server 2012 installed and implement database mirroring.
- B. Create a new instance of SQL Server 2012 on the server that hosts the SQL Server 2005 instance.
- C. Upgrade the existing SQL Server 2005 instance to SQL Server 2012. Deploy a new server that has SQL Server 2012 installed. Implement AlwaysOn
- D. Deploy two servers that have SQL Server 2012 installed and implement Failover Clustering.

**Correct Answer: C**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 3**

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 subquery

- B. a cursor
- C. a common table expression
- D. a table variable

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Could be "a table variable"

#### **QUESTION 4**

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

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 5**

You need to recommend a solution for Application1 that meets the security requirements. What should you include in the recommendation?

- A. Encrypted columns
- B. Certificate Authentication
- C. Secure Socket Layer (SSL)
- D. Signed stored procedures

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### **QUESTION 6**

You need to recommend a feature to support your backup solution. What should you include in the recommendation?

- A. Column-level encryption
- B. A Secure Sockets Layer (SSL)
- C. An NTFS file permission
- D. Transparent Data Encryption (TDE)

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 7**

You need to recommend a solution to allow application users to perform UPDATE operations on the database tables. The solution must meet the business requirements.

What should you recommend?

- A. Create stored procedures that use EXECUTE AS clauses.
- B. Create a user-defined database role and add users to the role.
- C. Create functions that use EXECUTE AS clauses.
- D. Create a Policy-Based Management Policy.

**Correct Answer: A**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 8**

You need to recommend a solution to synchronize Database2 to App1\_Db1. What should you recommend?

- A. Change data capture
- B. Snapshot replication
- C. Transactional replication
- D. Master Data Services

**Correct Answer: C**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

## Testlet 1

### TESTLET OVERVIEW

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You will have [count] minutes to complete the testlet.

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### 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 2012.

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

#### 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.

```

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

```

## Stored Procedures and Issues

### 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:

### 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:

Column	Data type
id	uniqueidentifier
lastModified	datetime
modifiedBy	varchar(200)

#### 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.

#### Missing Data Issues

Customers report that when they make a price change in the Products table, they cannot retrieve the price that the item was sold for in previous orders.

### **Query Performance Issues**

Customers report that query performance degrades very quickly. Additionally, the customers report that users cannot run queries when SQL Server runs maintenance tasks.

### **Import Issues**

During the monthly import process, database administrators receive many supports call from users who report that they cannot access the supplier data. The database administrators want to reduce the amount of time required to import the data.

### **Requirements**

#### **Data Recovery Requirements**

If the import process fails, the database must be returned to its prior state immediately.

#### **Security Requirements**

You must provide users with the ability to execute functions within the ERP application, without having direct access to the underlying tables.

#### **Concurrency Requirements**

You must reduce the likelihood of deadlocks occurring when Sales.Prod and Sales.Proc2 execute.

### **QUESTION 1**

You need to recommend a solution that addresses the index fragmentation and index width issue.

What should you include in the recommendation? (Each correct answer presents part of the solution. Choose all that apply.)

- A. Change the data type of the modifiedBy column to tinyint.
- B. Change the data type of the lastModified column to smalldatetime.
- C. Remove the id column from the clustered index.
- D. Remove the modifiedBy column from the clustered index.
- E. Change the data type of the id column to bigint.
- F. Remove the lastModified column from the clustered index.

**Correct Answer:** DF

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### **QUESTION 2**

You need to recommend a solution that addresses the backup issue. The solution must minimize the amount of development effort.

What should you include in the recommendation?

- A. Filegroups
- B. Table partitioning
- C. Indexed views
- D. Indexes

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 3**

You need to recommend a solution that addresses the concurrency requirement.

What should you recommend?

- A. Make calls to Sales.Proc1 and Sales.Proc2 synchronously.
- B. Modify the stored procedures to update tables in the same order for all of the stored procedures.
- C. Call the stored procedures in a Distributed Transaction Coordinator (DTC) transaction.
- D. Break each stored procedure into two separate procedures, one that changes Sales.Table1 and one that changes Sales.Table2.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 4**

You need to recommend a solution that meets the data recovery requirement.

What should you include in the recommendation?

- A. a differential backup
- B. snapshot isolation
- C. a transaction log backup
- D. a database snapshot

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 5**

You need to recommend changes to the ERP application to resolve the search issue.

The solution must minimize the impact on other queries generated from the ERP application.

What should you recommend changing?

- A. the data type of the ProductName column
- B. the collation of the Products table
- C. the collation of the ProductName column
- D. the index on the ProductName column

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**