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# Microsoft

## 70-459 PRACTICE EXAM

**Transition Your MCITP: Database Administrator 2008 or MCITP: Database Developer 2008 to MCSE: Data Platform**

## TOTAL QUESTIONS: 115/10 Case Study

### **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.

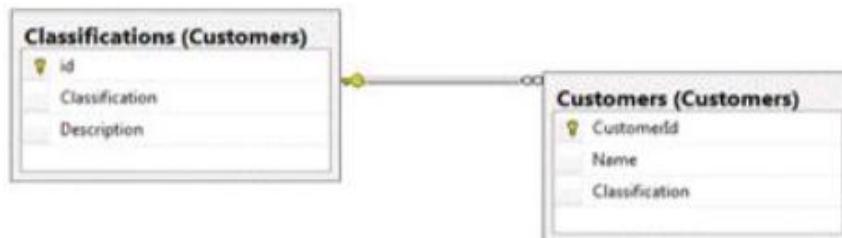
A. Datum standardizes its database platform by using SQL Server 2012 Standard edition.

##### **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:



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

<b>id</b>	<b>Classification</b>	<b>Description</b>
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**

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**

#### **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.

#### **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.

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### **Question: 1**

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

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**Answer: C, D**

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### **Question: 2**

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

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**Answer: D**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188792.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188317.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187807.aspx>

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### **Question: 3**

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

---

**Answer: D**

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### **Question: 4**

You need to recommend a solution to minimize the amount of time it takes to execute USP\_1.  
With what should you recommend replacing Table1?

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

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**Answer: C**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms175503.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190174.aspx>

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### **Question: 5**

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

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

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**Answer: A**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/cc645993.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187103.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190640.aspx>

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### **Question: 6**

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You need to recommend a solution to ensure that USP\_4 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.

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**Answer: B**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms178110.aspx>  
<http://msdn.microsoft.com/en-us/library/cc280386.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188396.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187634.aspx>

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### **Question: 7**

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

---

**Answer: B**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188792.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188317.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187807.aspx>

## **Case Study: 2**

### **Contoso Ltd**

#### **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 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**

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\_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:

<b>Column</b>	<b>Data type</b>
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.

### **Design Requirements**

#### **File Storage Requirements**

The ERP database stores scanned documents that are larger than 2 MB. These files must only be accessed through the ERP application. File access must have the best possible read and write performance.

#### **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.Proc1 and Sales.Proc2 execute.

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### **Question: 1**

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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.

---

**Answer: B**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms191242%28v=SQL.105%29.aspx>

<http://msdn.microsoft.com/en-us/library/bb677357.aspx>

<http://msdn.microsoft.com/en-us/library/ms378149.aspx>

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### **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. indexed views
- C. table partitioning
- D. indexes

---

**Answer: A**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms187048.aspx>

<http://msdn.microsoft.com/en-us/library/ms189563.aspx>

<http://msdn.microsoft.com/en-us/library/ms190174.aspx>

<http://msdn.microsoft.com/en-us/library/ms190787.aspx>

<http://msdn.microsoft.com/en-us/library/ms175049.aspx>

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### **Question: 3**

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.)

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

---

**Answer: B, E**

Explanation:

Scenario: 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)

#### Question: 4

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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

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**Answer: D**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms175158.aspx>  
<http://msdn.microsoft.com/en-us/library/ms378149.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187048.aspx>

#### Question: 5

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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

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**Answer: C**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ff848763.aspx>  
<http://msdn.microsoft.com/en-us/library/ms143726.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190920.aspx>

#### Case Study: 3

##### Litware, Inc

##### 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.

## **Requirements**

### **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 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**

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.

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### **Question: 1**

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

- A. repeatable read
- B. serializable
- C. read uncommitted
- D. read committed

---

**Answer: A**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms378149.aspx>  
<http://msdn.microsoft.com/en-us/library/ms173763.aspx>

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### **Question: 2**

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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. Signed stored procedures
- D. Secure Socket Layer (SSL)

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**Answer: C**

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Explanation:

Scenario:

/ Data from Database2 will be accessed periodically by an external application named Application1  
/ Application developers must be denied direct access to the database tables. Applications must be denied direct access to the tables.

Tutorial: Signing Stored Procedures with a Certificate

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### **Question: 3**

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

---

**Answer: C**

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#### **Question: 4**

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

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

---

**Answer: D**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188754.aspx>  
<http://msdn.microsoft.com/en-us/library/cc280386.aspx>  
<http://msdn.microsoft.com/en-us/library/ms180982.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187658.aspx>

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#### **Question: 5**

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

---

**Answer: B**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188354.aspx>  
<http://msdn.microsoft.com/en-us/library/ms189121.aspx>  
<http://msdn.microsoft.com/en-us/library/ms131287.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186755.aspx>  
<http://msdn.microsoft.com/en-us/library/ms191320.aspx>  
<http://msdn.microsoft.com/en-us/library/bb510667.aspx>

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#### **Question: 6**

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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. Implement AlwaysOn Availability Groups on both servers.
- 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. 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.
- D. Deploy two servers that have SQL Server 2012 installed and implement Failover Clustering.

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**Answer: B**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb677622.aspx>  
<http://msdn.microsoft.com/en-us/library/ff877884.aspx>

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### **Question: 7**

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

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**Answer: C**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ee633752.aspx>  
<http://msdn.microsoft.com/en-us/library/ms151198.aspx>  
<http://msdn.microsoft.com/en-us/library/cc645937.aspx>

### **Case Study: 4**

#### **Application Scenario**

#### **Application Information**

You have two servers named SQL1 and SQL2. SQL1 has SQL Server 2012 Enterprise installed. SQL2 has SQL Server 2008 Standard installed.

You have an application that is used to manage employees and office space.

Users report that the application has many errors and is very slow.

You are updating the application to resolve the issues.

You plan to create a new database on SQL1 to support the application. The script that you plan to use to create the tables for the new database is shown in Tables.sql. The script that you plan to use to create the stored procedures for the new database is shown in StoredProcedures.sql. The script that you plan to use to create the indexes for the new database is shown in Indexes.sql.

A database named DB2 resides on SQL2. DB2 has a table named EmployeeAudit that will audit changes to a table named Employees.

A stored procedure named usp\_UpdateEmployeeName will be executed only by other stored procedures. The stored procedures executing usp\_UpdateEmployeeName will always handle transactions.

A stored procedure named usp\_SelectEmployeesByName will be used to retrieve the names of employees. Usp\_SelectEmployeesByName can read uncommitted data.

A stored procedure named usp\_GetFutureOfficeAssignments will be used to retrieve office assignments that will occur in the future.

### StoredProcedures.sql

```
01 CREATE PROCEDURE usp_UpdateEmployeeName
02     @EmployeesInfo EmployeesInfo READONLY
03 AS
04
05 BEGIN TRY
06
07 UPDATE Employees
08 SET LastName = ei.LastName
09 FROM Employees e
10    INNER JOIN @EmployeesInfo ei ON e.EmployeeID = ei.EmployeeID;
11
12 INSERT INTO SQL2.DB2.dbo.EmployeeAudit(EmployeeID, LastName)
13 SELECT EmployeeID, LastName
14 FROM @EmployeesInfo;
15
16 END TRY
17 BEGIN CATCH
18
19 END CATCH;
20
21 GO
22
23 CREATE PROCEDURE usp_SelectEmployeesByName
24     @LastName nvarchar(100)
25 AS
26 SELECT EmployeeID,
27     FirstName,
28     LastName
29 FROM Employees
30 WHERE LastName LIKE @LastName + '%'
```

```
31
32 GO
33
34 CREATE PROCEDURE usp_UpdateOffice
35     @OfficeID int,
36     @EmployeeID int
37 AS
38 SET TRANSACTION ISOLATION LEVEL SNAPSHOT
39 BEGIN TRANSACTION;
40
41 SELECT OfficeID,
42     OfficeName
43 FROM Offices
44 WHERE EmployeeID = @EmployeeID;
45
46 UPDATE Offices
47 SET EmployeeID = @EmployeeID,
48     StartDate = GETDATE()
49 WHERE OfficeID = @OfficeID;
50
51 COMMIT TRANSACTION;
52
53 CREATE PROCEDURE usp_GetFutureOfficeAssignments
54 AS
55 SELECT EmployeeID,
56     OfficeID,
57     StartDate
58 FROM Offices
59 WHERE StartDate > GETDATE();
60 GO
61
```

**Indexes.sql**

```
01 CREATE INDEX IX_Offices ON Offices
02 (EmployeeID, StartDate)
03 INCLUDE (OfficeID)
04
05 GO
06
07 CREATE INDEX IX_Employees ON Employees
08 (LastName);
09 GO
10
```

**Tables.sql**

```
01 CREATE DATABASE HumanResources;
02 GO
03
04 ALTER DATABASE HumanResources
05 SET ALLOW_SNAPSHOT_ISOLATION ON;
06 GO
07
08 USE HumanResources
09 GO
10
11 CREATE TABLE Employees
12 (
13     EmployeeID int IDENTITY(1,1) NOT NULL,
14     FirstName nvarchar(100) NOT NULL,
15     LastName nvarchar(100) NOT NULL,
16
17 );
18 GO
19
20 CREATE TABLE Offices
21 (
22     OfficeID int IDENTITY(1,1) NOT NULL,
23     EmployeeID int NOT NULL,
24     OfficeName nvarchar(100) NOT NULL,
25     StartDate datetime NOT NULL
26 );
27 GO
```

---

### Question: 1

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You need to provide referential integrity between the Offices table and Employees table.

Which code segment or segments should you add at line 27 of Tables.sql? (Each correct answer presents part of the solution. Choose all that apply.)

- A. `ALTER TABLE dbo.Offices ADD CONSTRAINT  
PK_Offices_EmployeeID PRIMARY KEY (EmployeeID);`
- B. `ALTER TABLE dbo.Employees ADD CONSTRAINT  
FK_Employees_Offices FOREIGN KEY (OfficeID)  
REFERENCES dbo.Offices (OfficeID);`
- C. `ALTER TABLE dbo.Employees ADD CONSTRAINT  
PK_Employees_EmployeeID PRIMARY KEY (EmployeeID);`
- D. `ALTER TABLE dbo.Offices ADD CONSTRAINT  
FK_Offices_Employees FOREIGN KEY (EmployeeID)  
REFERENCES dbo.Employees (EmployeeID);`

- A. Option A
- B. Option B
- C. Option C
- D. Option D

---

**Answer: C, D**

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Explanation:

Explanation:

<http://msdn.microsoft.com/en-us/library/ms189049.aspx>

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### **Question: 2**

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You execute `usp_SelectEmployeesByName` multiple times, passing strings of varying lengths to `@LastName`. You discover that `usp_SelectEmployeesByName` uses inefficient execution plans. You need to update `usp_SelectEmployeesByName` to ensure that the most efficient execution plan is used. What should you add at line 31 of `StoredProcedures.sql`?

- A. OPTION (ROBUST plan)
- B. OPTION (OPTIMIZE FOR UNKNOWN)
- C. OPTION (KEEP PLAN)
- D. OPTION (KEEPFIXED PLAN)

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**Answer: B**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms181714.aspx>

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### **Question: 3**

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You need to create the object used by the parameter of `usp_UpdateEmployeeName`. Which code segment should you use?

- A. CREATE XML SCHEMA COLLECTION EmployeesInfo
- B. CREATE TYPE EmployeesInfo AS Table
- C. CREATE TABLE EmployeesInfo
- D. CREATE SCHEMA EmployeesInfo

---

**Answer: B**

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Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms175010.aspx>  
<http://msdn.microsoft.com/en-us/library/ms174979.aspx>  
<http://msdn.microsoft.com/en-us/library/ms189462.aspx>  
<http://msdn.microsoft.com/en-us/library/ms176009.aspx>

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#### **Question: 4**

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You need to add a new column named Confirmed to the Employees table. The solution must meet the following requirements:

Have a default value of TRUE.  
Minimize the amount of disk space used.  
Which code segment should you use?

- A. ALTER TABLE Employees  
ADD Confirmed bit DEFAULT 0;
- B. ALTER TABLE Employees  
ADD Confirmed char(1) DEFAULT "1";
- C. ALTER TABLE Employees  
ADD Confirmed char(1) DEFAULT '0';
- D. ALTER TABLE Employees  
ADD Confirmed bit DEFAULT 1;

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms177603.aspx>  
<http://msdn.microsoft.com/en-us/library/ms176089.aspx>

---

#### **Question: 5**

---

You need to modify usp\_SelectEmployeesByName to support server-side paging. The solution must minimize the amount of development effort required.

What should you add to usp\_SelectEmployeesByName?

- A. An OFFSET-FETCH clause
- B. A recursive common table expression
- C. A table variable
- D. The ROWNUMBER keyword

---

**Answer: A**

---

Explanation:

References:

<http://www.mssqltips.com/sqlservertip/2696/comparing-performance-for-different-sql-server-paging-methods/>  
<http://msdn.microsoft.com/en-us/library/ms188385.aspx>  
<http://msdn.microsoft.com/en-us/library/ms180152.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186243.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186734.aspx>  
[http://www.sqlserver-training.com/how-to-use-offset-fetch-option-in-sql-server-order-by-clause/-](http://www.sqlserver-training.com/how-to-use-offset-fetch-option-in-sql-server-order-by-clause/)  
[http://www.sqlservercentral.com/blogs/juggling\\_with\\_sql/2011/11/30/using-offset-and-fetch/](http://www.sqlservercentral.com/blogs/juggling_with_sql/2011/11/30/using-offset-and-fetch/)

#### **Case Study: 5**

#### **Manufacturing Company**

#### **Application Information**

You are a database administrator for a manufacturing company.

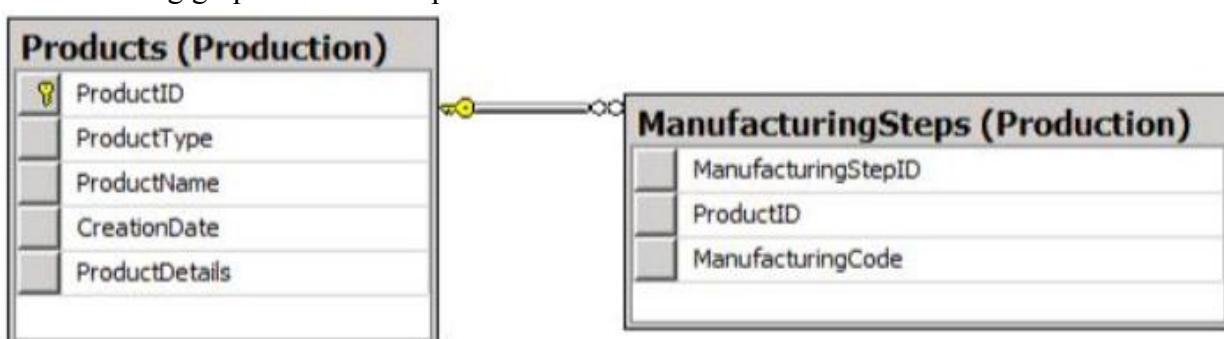
You have an application that stores product data. The data will be converted to technical diagrams for the manufacturing process.

The product details are stored in XML format. Each XML must contain only one product that has a root element named Product. A schema named Production.ProductSchema has been created for the products xml. You develop a Microsoft .NET Framework assembly named ProcessProducts.dll that will be used to convert the XML files to diagrams. The diagrams will be stored in the database as images. ProcessProducts.dll contains one class named ProcessProduct that has a method name of Convert(). ProcessProducts.dll was created by using a source code file named ProcessProduct.es. All of the files are located in C:\Products\.

The application has several performance and security issues.

You will create a new database named ProductsDB on a new server that has SQL Server 2012 installed. ProductsDB will support the application.

The following graphic shows the planned tables for ProductsDB:



You will also add a sequence named Production.ProductID\_Seq.

You plan to create two certificates named DBCert and ProductsCert. You will create ProductsCert in master. You will create DBCert in ProductsDB.

You have an application that executes dynamic T-SQL statements against ProductsDB. A sample of the queries generated by the application appears in Dynamic.sql.

### **Application Requirements**

The planned database has the following requirements:

- All stored procedures must be signed.
- The amount of disk space must be minimized.
- Administrative effort must be minimized at all times.
- The original product details must be stored in the database.
- An XML schema must be used to validate the product details.
- The assembly must be accessible by using T-SQL commands.
- A table-valued function will be created to search products by type.
- Backups must be protected by using the highest level of encryption.
- Dynamic T-SQL statements must be converted to stored procedures.
- Indexes must be optimized periodically based on their fragmentation.
- Manufacturing steps stored in the Manufacturing Steps table must refer to a Product by the same

### **ProductDetails\_Insert.sql**

```

01 CREATE PROCEDURE Production.ProductDetails_Insert @XML nvarchar(1000)
02 AS
03 DECLARE @handle INT;
04 DECLARE @document nvarchar(1000);
05 SET @document = @XML;
06
07 EXEC sp_xml_preparedocument @handle OUTPUT, @document;
08
09 INSERT INTO PRODUCTSDB.Production.Invoices (
10     ProductID,
11     ProductDetails,
12     ProductType,
13     ProductName,
14     CreationDate
15 )
16 SELECT (NEXT VALUE FOR Production.ProductID_Seq),
17     @XML, * FROM OPENXML (@handle, '/Invoice',2)
18     WITH (
19         ProductType nvarchar(11) 'ProductType/ID',
20         ProductName nvarchar(50) '@ProductName',
21         CreationDate date 'CreationDate'
22     );
23
24 EXEC sp_xml_removedocument @handle;

```

**Product.xml**

All product types are 11 digits. The first five digits of the product id reference the category of the product and the remaining six digits are the subcategory of the product.

The following is a sample customer invoice in XML format:

```

01 <?xml version="1.0"?>
02 <Product ProductName="Widget">
03     <ProductType ID="00156590099" />
04     <CreationDate>2011-08-05</CreationDate>
05 </Invoice>

```

**ProductsByProductType.sql**

```

01 (SELECT ProductID,
02     ProductType,
03     CreationDate
04     FROM Production.Products
05     WHERE ProductType=@ProductType);

```

**Dynamic.sql**

```

01 DECLARE @tsql AS nvarchar(500);
02 DECLARE @ProductType AS varchar(11), @CreationDate AS date;
03
04 SET @sqlstring=N'SELECT ProductID, ProductType, CreationDate
05     FROM Production.Product
06     WHERE ProductID=@ProductID AND CreationDate > @CreationDate;';
07
08 EXEC sys.sp_executesql
09     @statement=@sqlstring,
10     @params=N'@ ProductType AS varchar(11), @CreationDate AS date',
11     @ProductType=00125061246, @Total='2012-05-10';

```

**CategoryFromType.sql**

```

01 CREATE FUNCTION CategoryFromType (@Type varchar(11)) RETURNS nvarchar(20)
02 AS
03 BEGIN
04     DECLARE @Category AS varchar(20);
05     SET @Category = LEFT(@Category,5);
06     SELECT @Category = CASE @Type
07         WHEN '00001'
08             THEN 'Bikes'
09         WHEN '00002'
10             THEN 'Wheels'
11         ...
12     ELSE 'Other'
13 END;
14 RETURN @Category;
15 END;

```

**IndexManagement.sql**

```

01 DECLARE @IndexTable TABLE (
02     TableName varchar(100), IndexName varchar(100), Fragmentation int, RowNumber int
03 );
04 DECLARE @TableName sysname, @IndexName sysname, @Fragmentation int,
05     @RowNumber int, @sqlcommand varchar(1000);
06
07 INSERT INTO @IndexTable (TableName, IndexName, Fragmentation, Rownumber)
08     SELECT OBJECT_NAME(i.Object_id),
09         i.name AS IndexName,
10         indexstats.avg_fragmentation_in_percent,
11         ROW_NUMBER() OVER(ORDER BY i.name DESC) AS 'RowNumber'
12     FROM sys.dm_db_index_physical_stats(DB_ID(), NULL, NULL, NULL, 'DETAILED')
13     AS indexstats INNER JOIN sys.indexes AS i
14     ON i.OBJECT_ID = indexstats.OBJECT_ID AND i.index_id = indexstats.index_id;
15
16 DECLARE @counter int = 0;
17
18 WHILE @counter < (SELECT RowNumber FROM @indextable)
19     BEGIN
20         SET @counter = @counter + 1;
21         WITH t AS (
22             SELECT TableName, IndexName, Fragmentation
23             FROM @IndexTable WHERE RowNumber = @counter
24         )
25         SELECT
26             @TableName= TableName,
27             @IndexName = IndexName,
28             @Fragmentation = Fragmentation
29         FROM t;
30
31         IF @Fragmentation <= 30
32             BEGIN
33                 SET @sqlCommand =
34                     N'ALTER INDEX '+@indexName+N' ON '+@TableName+N' REORGANIZE';
35                 EXEC sp_executesql @sqlCommand;
36             END;
37         ELSE
38             BEGIN
39                 SET @sqlCommand=N'ALTER INDEX '+@indexName+N' ON '+@TableName+N' REBUILD';
40                 EXEC sp_executesql @sqlCommand;
41             END;
42     END;

```

**Question: 1**

You need to modify Production.ProductDetails\_Insert to comply with the application requirements.  
Which code segment should you execute?

- A. ADD SIGNATURE TO Production.ProductDetails\_Insert  
BY CERTIFICATE PRODUCTSCERT;
- B. OPEN DBCERT;  
ALTER PROCEDURE Production. ProductDetails\_Insert  
WITH ENCRYPTION;  
CLOSE D3CERT;
- C. ADD SIGNATURE TO Production.ProductDetails\_Insert  
BY CERTIFICATE DBCERT;
- D. OPEN PRODUCTSCERT;  
ALTER PROCEDURE Production. ProductDetails\_Insert  
WITH ENCRYPTION;  
CLOSE PRODUCTSCERT;

---

**Answer: C**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb669102.aspx>

---

## Question: 2

---

You need to create a function that will use a SELECT statement in ProductsByProductType.sql.  
Which code segment should you use to complete the function?

- A. CREATE FUNCTION Production.fnProductsByProductType (@ProductType varchar(11))  
RETURNS @TblInvoices TABLE (ProductID bigint, ProductType varchar(11), CreationDate  
date)  
AS
  - B. CREATE FUNCTION Production.fnProductsByProductType (@ProductType varchar(11))  
RETURNS xml  
AS  
RETURN
  - C. CREATE FUNCTION Production.fnProductsByProductType (@ProductType varchar(11))  
RETURNS @tblInvoices TABLE (ProductID bigint, ProductType varchar(11), CreationDate  
date)  
AS  
INSERT INTO @tblInvoices
  - D. CREATE FUNCTION Production.fnProductsByProductType (@ProductType varchar(11))  
RETURNS TABLE  
AS  
RETURN
- A. Option A
  - B. Option B
  - C. Option C
  - D. Option D

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms191320.aspx>

<http://msdn.microsoft.com/en-us/library/ms186755.aspx>

---

### **Question: 3**

---

You are planning the ManufacturingSteps table.

You need to define the ProductID column in the CREATE TABLE statement.

Which code segment should you use?

- A. 

```
ProductID bigint FOREIGN KEY REFERENCES
Production.Product(ProductID) NOT NULL,
```
- B. 

```
ProductID bigint
DEFAULT (NEXT VALUE FOR Production.ProductID_Seq) NOT NULL,
```
- C. 

```
ProductID bigint DEFAULT
((NEXT VALUE FOR Production.ProductID_Seq OVER
(ORDER BY ManufacturingStepID)))
NOT NULL FOREIGN KEY REFERENCES
Production.Product(ProductID),
```
- D. 

```
ProductID bigint DEFAULT
((NEXT VALUE FOR Production.ProductID_Seq OVER
(ORDER BY ManufacturingStepID))) NOT NULL,
```

A. Option A

B. Option B

C. Option C

D. Option D

---

**Answer: A**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms189049.aspx>

<http://msdn.microsoft.com/en-us/library/ms179610.aspx>

<http://msdn.microsoft.com/en-us/library/ff878370.aspx>

---

### **Question: 4**

---

You need to prepare the database to use the .NET Framework ProcessProducts component.

Which code segments should you execute? (Each correct answer presents part of the solution. Choose all that apply.)

- A. CREATE PROCEDURE Production.ProcessProduct(  
    @ProductID int, @ProductType varchar(11)  
    )  
    AS EXTERNAL NAME ProductionAssembly.ProcessProducts.Process;
  - B. EXEC sp\_recompile @objname = 'Production.ProcessProduct';
  - C. RECONFIGURE;
  - D. Exec SP\_CONFIGURE 'clr enabled', '1';
  - E. CREATE ASSEMBLY ProductionAssembly FROM 'C:\Products\ProcessProducts.DLL'
  - F. CREATE ASSEMBLY ProductionAssembly FROM 'C:\Products\ProcessProducts.cs';
  - G. CREATE TYPE Production.ProcessProduct  
    EXTERNAL NAME ProductionAssembly.ProcessProductss.Process;
- A. Option A  
B. Option B  
C. Option C  
D. Option D  
E. Option E  
F. Option F  
G. Option G

---

**Answer: A, C, D, E**

Explanation:

Explanation:

<http://msdn.microsoft.com/en-us/library/ms131048.aspx>  
<http://msdn.microsoft.com/en-us/library/ms131052.aspx>  
<http://msdn.microsoft.com/en-us/library/ms189524.aspx>  
<http://msdn.microsoft.com/en-us/library/ms345106.aspx>  
<http://msdn.microsoft.com/en-us/library/ms131107.aspx>

---

### **Question: 5**

An administrator provides a digital certificate named ServerCert.  
You need to implement Transparent Data Encryption (TDE) on ProductsDB.  
Which code segment should you use?

- A. USE PRODUCTSDB;  
GO  
CREATE DATABASE ENCRYPTION KEY WITH ALGORITHM = TRIPLE\_DES\_3KEY  
ENCRYPTION BY SERVER CERTIFICATE DBCERT;  
GO  
ALTER DATABASE PRODUCTSDB SET ENCRYPTION ON;  
GO
- B. USE PRODUCTSDB;  
GO  
CREATE DATABASE ENCRYPTION KEY WITH ALGORITHM = TRIPLE\_DES\_3KEY  
ENCRYPTION BY SERVER CERTIFICATE PRODUCTSCERT;  
GO  
ALTER DATABASE PRODUCTSDB SET ENCRYPTION ON;  
GO
- C. USE PRODUCTSDB;  
GO  
CREATE DATABASE ENCRYPTION KEY WITH ALGORITHM = AES\_256  
ENCRYPTION BY SERVER CERTIFICATE PRODUCTSCERT;  
GO  
ALTER DATABASE PRODUCTSDB SET ENCRYPTION ON;  
GO
- D. USE PRODUCTSDB;  
GO  
CREATE DATABASE ENCRYPTION KEY WITH ALGORITHM = AES\_256  
ENCRYPTION BY SERVER CERTIFICATE DBCERT;  
GO  
ALTER DATABASE PRODUCTSDB SET ENCRYPTION ON;  
GO

- A. Option A  
B. Option B  
C. Option C  
D. Option D

---

**Answer: C**

---

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/bb934049.aspx>

### **Case Study: 6**

#### **Database Application Scenario**

#### **Application Information**

You have two servers named SQL1 and SQL2 that have SQL Server 2012 installed.

You have an application that is used to schedule and manage conferences.

Users report that the application has many errors and is very slow.

You are updating the application to resolve the issues.

You plan to create a new database on SQL1 to support the application. A junior database administrator has created all the scripts that will be used to create the database. The script that you plan to use to create the tables for the new database is shown in Tables.sql. The script that you plan to use to create the stored procedures for the new database is shown in StoredProcedures.sql. The script that you plan to use to create the indexes for the new database is shown in Indexes.sql. (Line numbers are included for reference only.) A database named DB2 resides on SQL2. DB2 has a table named SpeakerAudit that will audit changes to a table named Speakers.

A stored procedure named usp\_UpdateSpeakersName will be executed only by other stored procedures. The stored procedures executing usp\_UpdateSpeakersName will always handle transactions.

A stored procedure named usp\_SelectSpeakersByName will be used to retrieve the names of speakers. Usp\_SelectSpeakersByName can read uncommitted data.

A stored procedure named usp\_GetFutureSessions will be used to retrieve sessions that will occur in the future.

### **Procedures.sql**

```
01 CREATE PROCEDURE usp_UpdateSpeakerName
02     @SpeakerID int,
03     @LastName nvarchar(100)
04 AS
05
06 BEGIN TRY
07
08 UPDATE Speakers
09 SET LastName = @LastName
10 WHERE SpeakerID = @SpeakerID;
11
12 INSERT INTO SQL2.DB2.dbo.SpeakerAudit(SpeakerID, LastName)
13 VALUES (@SpeakerID, @LastName);
14
15 END TRY
16 BEGIN CATCH
17
18 END CATCH;
19
20 GO
21
22 CREATE PROCEDURE usp_SelectSpeakersByName
23     @LastName nvarchar(100)
24 AS
25 SELECT SpeakerID,
26     FirstName,
27     LastName
28 FROM Speakers
29 WHERE LastName LIKE @LastName + '%'
30
31 GO
32
33 CREATE PROCEDURE usp_InsertSessions
34     @SessionData SessionDataTable READONLY
35 AS
36 INSERT INTO Sessions
37     (SpeakerID, Title, Absract, DeliveryTime, TitleAndSpeaker)
38 SELECT SpeakerID, Title, Absract, DeliveryTime, TitleAndSpeaker
39 FROM @SessionData;
40 GO
41
42 CREATE PROCEDURE usp_UpdateSessionRoom
43     @RoomID int,
44     @SpeakerID int
45 AS
46 SET TRANSACTION ISOLATION LEVEL SNAPSHOT
47 BEGIN TRANSACTION;
48
49 SELECT SessionID,
50     Title
```

```
51 FROM Sessions
52 WHERE SpeakerID = @SpeakerID;
53
54 UPDATE Sessions
55 SET RoomID = @RoomID
56 WHERE SpeakerID = @SpeakerID;
57
58 COMMIT TRANSACTION;
59
60 CREATE PROCEDURE usp_AttendeesReport
61   @LastName varchar(100)
62 AS
63 SELECT FirstName + ' ' + LastName AS FullName
64 FROM Attendees
65 WHERE LastName = @LastName;
66 GO
67
68 CREATE PROCEDURE usp_GetFutureSessions
69 AS
70 SELECT SpeakerID,
71   RoomID,
72   DeliveryTime
73 FROM Sessions
74
75 GO
76
77 CREATE PROCEDURE usp_TestSpeakers
78 AS
79 EXECUTE usp_SelectSpeakersByName 'a';
80 EXECUTE usp_SelectSpeakersByName 'an';
81 EXECUTE usp_SelectSpeakersByName 'and';
82 EXECUTE usp_SelectSpeakersByName 'ander';
83 EXECUTE usp_SelectSpeakersByName 'anderson';
84 EXECUTE usp_SelectSpeakersByName 'b';
85 EXECUTE usp_SelectSpeakersByName 'bi';
86 ...
87 EXECUTE usp_SelectSpeakersByName 'zzz';
88 GO
```

**Indexes.sql**

```
01 CREATE INDEX IX_Sessions ON Sessions
02 (SessionID, DeliveryTime)
03 INCLUDE (RoomID)
04
05 GO
06
07 CREATE INDEX IX_Speakers ON Speakers
08 (LastName);
09 GO
10
11 CREATE INDEX IX_Attendees_Name ON Attendees
12 (FirstName, LastName);
13
14 GO
15
16 CREATE INDEX IX_Attendees_Confirmed ON Attendees
17 (Confirmed);
18 GO
```

**Tables.sql**

```

01 CREATE DATABASE Conference;
02 GO
03
04 ALTER DATABASE Conference
05 SET READ_COMMITTED_SNAPSHOT ON;
06 GO
07
08 CREATE TABLE Attendees
09 (
10     AttendeeID int IDENTITY (1,1) NOT NULL,
11     FirstName nvarchar(100) NOT NULL,
12     LastName nvarchar(100) NOT NULL,
13     EmailAddress nvarchar(100) NOT NULL,
14
15     CONSTRAINT PK_Attendees_AttendeeID PRIMARY KEY (AttendeeID)
16 );
17 GO
18
19 CREATE TABLE Speakers
20 (
21     SpeakerID int IDENTITY(1,1) NOT NULL,
22     FirstName nvarchar(100) NOT NULL,
23     LastName nvarchar(100) NOT NULL,
24     Photo varbinary(max),
25     CONSTRAINT PK_Speakers_SpeakerID PRIMARY KEY (SpeakerID)
26 );
27 GO
28
29 CREATE TABLE Sessions
30 (
31     SessionID uniqueidentifier NOT NULL
32     CONSTRAINT DF_SessionID DEFAULT (NEWID()),
33     SpeakerID int NOT NULL,
34     Title nvarchar(100) NOT NULL,
35     Abstract nvarchar(max) NOT NULL,
36     DeliveryTime datetime NOT NULL,
37     TitleAndSpeaker nvarchar(200)
38
39 );
40 GO
41
42 CREATE TABLE Rooms
43 (
44     RoomID uniqueidentifier NOT NULL CONSTRAINT DF_RoomID DEFAULT (NEWID()),
45     Location varchar(100) NOT NULL
46 );

```

---

**Question: 1**

---

You need to provide referential integrity between the Sessions table and Speakers table.

Which code segment should you add at line 47 of Tables.sql?

Which code segment should you add at line 47 of Tables.sql?

- A. `ALTER TABLE dbo.Sessions ADD CONSTRAINT  
FK_Sessions_Speakers FOREIGN KEY (SessionID)  
REFERENCES dbo.Speakers (SpeakerID);`
- B. `ALTER TABLE dbo.Sessions ADD CONSTRAINT  
FK_Sessions_Speakers FOREIGN KEY (SpeakerID)  
REFERENCES dbo.Speakers (SpeakerID);`
- C. `ALTER TABLE dbo.Speakers ADD CONSTRAINT  
FK_Speakers_Sessions FOREIGN KEY (SpeakerID)  
REFERENCES dbo.Sessions (SessionID);`
- D. `ALTER TABLE dbo.Speakers ADD CONSTRAINT  
FK_Speakers_Sessions FOREIGN KEY (SessionID)  
REFERENCES dbo.Sessions (SessionID);`

- A. Option A
- B. Option B
- C. Option C
- D. Option D

---

**Answer: B**

---

Explanation:

Explanation:

<http://msdn.microsoft.com/en-us/library/ms189049.aspx>  
<http://msdn.microsoft.com/en-us/library/ms179610.aspx>  
<http://msdn.microsoft.com/en-us/library/ff878370.aspx>

---

## **Question: 2**

---

You need to add a new column named Confirmed to the Attendees table. The solution must meet the following requirements:

Have a default value of false.  
Minimize the amount of disk space used.  
Which code block should you use?

- A. `ALTER TABLE Attendees  
ADD Confirmed bit DEFAULT 0;`
- B. `ALTER TABLE Attendees  
ADD Confirmed char(1) DEFAULT '0';`
- C. `ALTER TABLE Attendees  
ADD Confirmed char(1) DEFAULT '1';`
- D. `ALTER TABLE Attendees  
ADD Confirmed bit DEFAULT 1;`

---

**Answer: A**

---

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/ms177603.aspx>

---

### **Question: 3**

---

You are evaluating the table design.

You need to recommend a change to Tables.sql that reduces the amount of time it takes for usp\_AttendeesReport to execute.

What should you add at line 14 of Tables.sql?

- A. FullName nvarchar(100) NOT NULL CONSTRAINT DF\_FullName DEFAULT (dbo.CreateFullName (FirstName, LastName)),
- B. FullName AS (FirstName +''+ LastName),
- C. FullName nvarchar(100) NOT NULL DEFAULT (dbo.CreateFullName (FirstName, LastName)).
- D. FullName AS (FirstName +''+ LastName) PERSISTED,

---

**Answer: D**

---

Explanation:

Explanation:

<http://msdn.microsoft.com/en-us/library/ms188300.aspx>

<http://msdn.microsoft.com/en-us/library/ms191250.aspx>

---

### **Question: 4**

---

You need to modify usp\_SelectSpeakersByName to support server-side paging. The solution must minimize the amount of development effort required.

What should you add to usp\_SelectSpeakersByName?

- A. a table variable
- B. an OFFSET-FETCH clause
- C. the ROWNUMBER keyword
- D. a recursive common table expression

---

**Answer: B**

---

Explanation:

References:

<http://www.mssqltips.com/sqlservertip/2696/comparing-performance-for-different-sql-server-paging-methods/>  
<http://msdn.microsoft.com/en-us/library/ms188385.aspx>  
<http://msdn.microsoft.com/en-us/library/ms180152.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186243.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186734.aspx>  
<http://www.sqlserver-training.com/how-to-use-offset-fetch-option-in-sql-server-order-by-clause/>  
[http://www.sqlservercentral.com/blogs/juggling\\_with\\_sql/2011/11/30/using-offset-and-fetch/](http://www.sqlservercentral.com/blogs/juggling_with_sql/2011/11/30/using-offset-and-fetch/)

---

### **Question: 5**

---

You execute usp\_TestSpeakers.

You discover that usp\_SelectSpeakersByName uses inefficient execution plans.

You need to update usp\_SelectSpeakersByName to ensure that the most efficient execution plan is used.

What should you add at line 30 of Procedures.sql?

- A. OPTION (FCRCESCAN)
- B. OPTION (OPTIMIZE FOR UNKNOWN)
- C. OPTION (OPTIMIZE FOR (@LastName = 'Anderson'))
- D. OPTION (FORCESEEK)

---

**Answer: B**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms181714.aspx>

### Case Study: 7

#### Invoice Schema Scenario

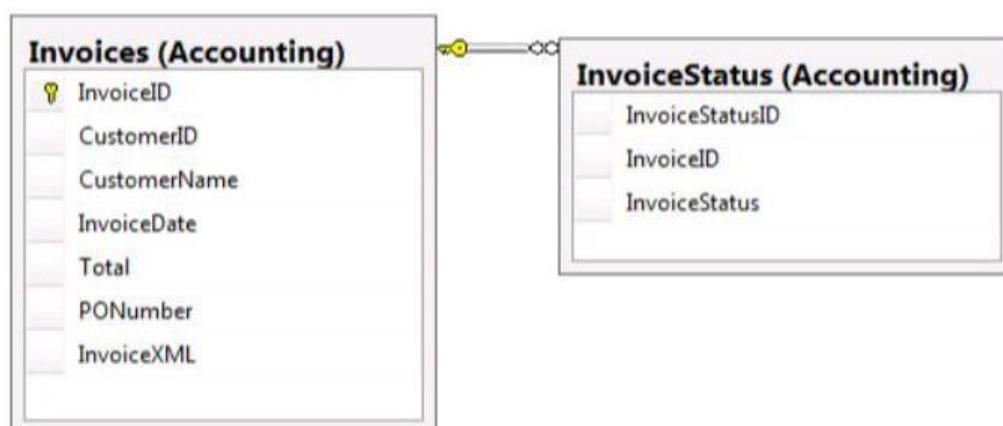
#### Application Information

Your company receives invoices in XML format from customers. Currently, the invoices are stored as files and processed by a desktop application. The application has several performance and security issues. The application is being migrated to a SQL Server-based solution. A schema named InvoiceSchema has been created for the invoices xml.

The data in the invoices is sometimes incomplete. The incomplete data must be stored and processed as-is. Users cannot filter the data provided through views.

You are designing a SQL Server database named DB1 that will be used to receive, process, and securely store the invoice data. A third-party Microsoft .NET Framework component will be purchased to perform tax calculations. The third-party tax component will be provided as a DLL file named Treytax.dll and a source code file named Amortize.cs. The component will expose a class named TreyResearch and a method named Amortize(). The files are located in c:\temp\.

The following graphic shows the planned tables:



You have a sequence named Accounting.InvoiceID\_Seq.

You plan to create two certificates named CERT1 and CERT2. You will create CERT1 in master. You will create CERT2 in DB1.

You have a legacy application that requires the ability to generate dynamic T-SQL statements against DB1.

A sample of the queries generated by the legacy application appears in Legacy.sql.

## Application Requirements

The planned database has the following requirements:

- All stored procedures must be signed.
- The original XML invoices must be stored in the database.
- An XML schema must be used to validate the invoice data.
- Dynamic T-SQL statements must be converted to stored procedures.
- Access to the .NET Framework tax components must be available to T-SQL objects.
- Columns must be defined by using data types that minimize the amount of space used by each table.
- Invoices stored in the InvoiceStatus table must refer to an invoice by the same identifier used by the Invoice table.
- To protect against the theft of backup disks, invoice data must be protected by using the highest level of encryption.
- The solution must provide a table-valued function that provides users with the ability to filter invoices by customer.
- Indexes must be optimized periodically based on their fragmentation by using the minimum amount of administrative effort.

### Usp\_InsertInvoices.sql

```

01 CREATE PROCEDURE InsertInvoice @XML nvarchar(1000)
02 AS
03 DECLARE @XmlDocumentHandle INT;
04 DECLARE @XmlDocument nvarchar(1000);
05 SET @XmlDocument = @XML;
06
07 EXEC sp_xml_preparedocument @XmlDocumentHandle OUTPUT, @XmlDocument;
08
09 INSERT INTO DB1.Accounting.Invoices (
10     InvoiceID,
11     InvoiceXML,
12     CustomerID,
13     CustomerName,
14     InvoiceDate,
15     Total,
16     PONumber
17 )
18 SELECT (NEXT VALUE FOR Accounting.InvoiceID_Seq),
19     @XML, * FROM OPENXML (@XmlDocumentHandle, '/Invoice',2)
20 WITH (
21     CustomerID nvarchar(11) 'Customer/@ID',
22     CustomerName nvarchar(50) 'Customer/@Name',
23     InvoiceDate date 'InvoiceDate',
24     Total decimal(8, 2) 'Total',
25     PONumber bigint 'PONumber'
26 );
27
28 EXEC sp_xml_removedocument @XmlDocumentHandle;

```

### **Invoices.xml**

All customer IDs are 11 digits. The first three digits of a customer ID represent the customer's country. The remaining eight digits are the customer's account number.

The following is a sample of a customer invoice in XML format:

```
01 <?xml version="1.0"?>
02 <Invoice InvoiceDate="2012-02-20">
03   <Customer ID="00156590099" Name="Litware" />
04   <Total>125</Total>
05   <PONumber>1666</PONumber>
06 </Invoice>
```

### **InvoicesByCustomer.sql**

```
01 (SELECT CustomerID,
02   CustomerName,
03   InvoiceID,
04   InvoiceDate,
05   Total,
06   PONumber
07   FROM Accounting.Invoices
08   WHERE CustomerID=@CustID);
```

### **Legacy.sql**

```
01 DECLARE @sqlstring AS nvarchar(1000);
02 DECLARE @CustomerID AS varchar(11), @Total AS decimal(8,2);
03
04 SET @sqlstring=N'SELECT CustomerID, InvoiceID, Total
05   FROM Accounting.Invoices
06   WHERE CustomerID=@CustomerID AND Total > @Total;';
07
08 EXEC sys.sp_executesql
09   @statement=@sqlstring,
10   @params=N'@CustomerID AS varchar(11), @Total AS decimal(8,2)',
11   @CustomerID=999, @Total=500;
```

### **CountryFromID.sqf**

```
01 CREATE FUNCTION CountryFromID (@CustomerID varchar(11)) RETURNS varchar(20)
02 AS
03 BEGIN
04     DECLARE @Country varchar(20);
05     SET @CustomerID = LEFT(@CustomerID,3);
06     SELECT @Country = CASE @CustomerID
07         WHEN '001'
08             THEN 'United States'
09         WHEN '002'
10             THEN 'Spain'
11         WHEN '003'
12             THEN 'Japan'
13         WHEN '004'
14             THEN 'China'
15         WHEN '005'
16             THEN 'Brazil'
17         ELSE 'Other'
18     END;
19     RETURN @CustomerID;
20 END;
```

**IndexManagement.sql**

```

01 DECLARE @IndexTable TABLE (
02   TableName varchar(100), IndexName varchar(100), Fragmentation int, RowNumber int
03 );
04 DECLARE @TableName sysname, @IndexName sysname, @Fragmentation int,
05   @RowNumber int, @sqlcommand varchar(1000);
06
07 INSERT INTO @IndexTable (TableName, IndexName, Fragmentation, Rownumber)
08   SELECT OBJECT_NAME(i.Object_id),
09     i.name AS IndexName,
10     indexstats.avg_fragmentation_in_percent,
11     ROW_NUMBER() OVER(ORDER BY i.name DESC) AS 'RowNumber'
12   FROM sys.dm_db_index_physical_stats(DB_ID(), NULL, NULL, NULL, 'DETAILED')
13     AS indexstats INNER JOIN sys.indexes AS i
14   ON i.OBJECT_ID = indexstats.OBJECT_ID AND i.index_id = indexstats.index_id;
15
16 DECLARE @counter int = 0;
17
18 WHILE @counter < (SELECT RowNumber FROM @indextable)
19   BEGIN
20     SET @counter = @counter + 1;
21     WITH t AS (
22       SELECT TableName, IndexName, Fragmentation
23         FROM @IndexTable WHERE RowNumber = @counter
24     )
25     SELECT
26       @TableName= TableName,
27       @IndexName = IndexName,
28       @Fragmentation = Fragmentation
29     FROM t;
30
31     IF @Fragmentation <= 30
32       BEGIN
33         SET @sqlCommand =
34           N'ALTER INDEX '+@indexName+N' ON '+@TableName+N' REORGANIZE';
35         EXEC sp_executesql @sqlCommand;
36       END;
37     ELSE
38       BEGIN
39         SET @sqlCommand=N'ALTER INDEX '+@indexName+N' ON '+@TableName+N' REBUILD';
40         EXEC sp_executesql @sqlCommand;
41       END;
42     END;

```

### Question: 1

---

You need to modify the function in CountryFromID.sql to ensure that the country name is returned instead of the country ID.

Which line of code should you modify in CountryFromID.sql?

- A. 404
- B. 06
- C. 19
- D. 05

---

**Answer: C**

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms186755.aspx>  
<http://msdn.microsoft.com/en-us/library/ms191320.aspx>

---

### **Question: 2**

Which data type should you use for CustomerID?

- A. varchar(11)
- B. bigint
- C. nvarchar(11)
- D. char(11)

---

**Answer: D**

Explanation:

Explanation:

Invoices.xml

All customer IDs are 11 digits. The first three digits of a customer ID represent the customer's country. The remaining eight digits are the customer's account number.

int: -2^31 (-2,147,483,648) to 2^31-1 (2,147,483,647) (just 10 digits max)

bigint: -2^63 (-9,223,372,036,854,775,808) to 2^63-1 (9,223,372,036,854,775,807)

<http://msdn.microsoft.com/en-us/library/ms176089.aspx>

<http://msdn.microsoft.com/en-us/library/ms187745.aspx>

---

### **Question: 3**

You have a SQL Server 2012 database named Database1. Database1 has a data file named database1\_data.mdf and a transaction log file named database1log.ldf. Database1\_data.mdf is 1.5 GB. Database1log.ldf is 1.5 terabytes.

A full backup of Database1 is performed every day.

You need to reduce the size of the log file. The solution must ensure that you can perform transaction log backups in the future.

Which code segment should you execute?

To answer, move the appropriate code segments from the list of code segments to the answer area and arrange them in the correct order.

- A. CREATE ASSEMBLY TaxCalc FROM 'c:\temp\TreyTax.DLL'
  - B. CREATE ASSEMBLY TaxCalc FROM 'C:\temp\Amortize.cs';
  - C. CREATE FUNCTION Accounting.Amortize(  
    @total decimal(8,2), @period int  
) RETURNS decimal(8,2)  
AS EXTERNAL NAME TaxCalc.TreyResearch.Amortize;
  - D. EXEC sp\_recompile @objname = 'TaxCalc'
  - E. EXEC SP\_CONFIGURE 'clr enabled', '1';
  - F. RECONFIGURE;
- A. Option A  
B. Option B  
C. Option C  
D. Option D  
E. Option E  
F. Option F

---

**Answer: A, C, D, E**

---

**Question: 4**

---

You need to modify InsertInvoice to comply with the application requirements.  
Which code segment should you execute?

- A. OPEN CERT1;  
ALTER PROCEDURE Accounting.usp\_AuthPayment  
WITH ENCRYPTION;  
CLOSE CERT1;
  - B. ADD SIGNATURE TO Accounting.usp\_AuthPayment  
BY CERTIFICATE CERT2;
  - C. OPEN CERT2;  
ALTER PROCEDURE Accounting.usp\_AuthPayment  
WITH ENCRYPTION;  
CLOSE CERT2;
  - D. ADD SIGNATURE TO Accounting.usp\_AuthPayment  
BY CERTIFICATE CERT1;
- A. Option A  
B. Option B  
C. Option C  
D. Option D

---

**Answer: B**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb669102.aspx>

---

**Question: 5**

---

You need to convert the functionality of Legacy.sql to use a stored procedure.  
Which code segment should the stored procedure contain?

- C A. CREATE PROC usp\_InvoicesByCustomerAboveTotal(  
    @sqlstring AS nvarchar(1000),  
    OUTPUT @CustomerID AS char(11),  
    OUTPUT @Total AS decimal(8,2))  
AS  
...  
  
C B. CREATE PROC usp\_InvoicesByCustomerAboveTotal(  
    @sqlstring AS nvarchar(1000),  
    @CustomerID AS char(11),  
    @Total AS decimal(8,2))  
AS  
...  
  
C C. CREATE PROC usp\_InvoicesByCustomerAboveTotal(  
    @sqlstring AS nvarchar(1000))  
AS  
...  
  
C D. CREATE PROC usp\_InvoicesByCustomerAboveTotal (  
    @CustomerID AS char(11), @Total AS decimal(8,2))  
AS  
...
- A. Option A  
B. Option B  
C. Option C  
D. Option D

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms187926.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190782.aspx>  
<http://msdn.microsoft.com/en-us/library/bb669091.aspx>  
<http://msdn.microsoft.com/en-us/library/windows/desktop/ms709342.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188001.aspx>

---

**Question: 6**

---

DRAG DROP

You need to build a stored procedure that amortizes the invoice amount. Which code segment should you use to create the stored procedure? To answer, move the appropriate code segments from the list of code segments to the answer area and arrange them in the correct order.

Build List and Reorder:

Ordered List Title	Answer Choices Title
 <p><b>&lt;&lt; Move</b></p> <p><b>Remove &gt;&gt;</b></p>	<pre data-bbox="825 280 1302 976"> RECONFIGURE; EXEC sp_configure 'clr enabled', '1'; EXEC sp_recomplie @objname = 'TaxCalc' CREATE PROCEDURE Accounting.Amortize(@total decimal(8,2), @period int) RETURNS decimal(8,2) AS EXTERNAL NAME TaxCalc.TreyResearch.Amortize; CREATE ASSEMBLY TaxCalc FROM 'C:\temp\TreyTax.DLL' CREATE ASSEMBLY TaxCalc FROM 'C:\temp\Amortize.cs'</pre>

**Answer:**

```

EXEC sp_configure 'clr enabled', '1';
RECONFIGURE;
CREATE ASSEMBLY TaxCalc FROM
'C:\temp\TreyTax.DLL'
CREATE PROCEDURE
Accounting.Amortize(@total
decimal(8,2), @period int)
RETURNS decimal(8,2)
AS EXTERNAL NAME
TaxCalc.TreyResearch.Amortize;
```

**Explanation:****References:**

<http://msdn.microsoft.com/en-us/library/ms131089.aspx>  
<http://msdn.microsoft.com/en-us/library/ms131048.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187926.aspx>

**Question: 7**

You need to prepare the database to use the .NET Framework tax component.

Which code segments should you execute? (Each correct answer presents part of the solution. Choose all that apply.)

- A. CREATE ASSEMBLY TaxCalc FROM 'c:\temp\TreyTax.DLL'
- B. CREATE ASSEMBLY TaxCalc FROM 'C:\temp\Amortize.cs';
- C. CREATE FUNCTION Accounting.Amortize(  
    @total decimal(8,2),@period int  
)RETURNS decimal(8,2)  
AS EXTERNAL NAME TaxCalc.TreyResearch.Amortize;
- D. EXEC SP\_CONFIGURE 'clr enabled', '1';
- E. EXEC sp\_recompile @objname = 'TaxCalc'
- F. RECONFIGURE;

- A. Option A  
B. Option B  
C. Option C  
D. Option D  
E. Option E  
F. Option F

---

**Answer: A, C, D, E**

---

## Case Study: 8

### Scenario

### Background

### Corporate Information

Fourth Coffee is global restaurant chain. There are more than 5,000 locations worldwide.

### Physical Locations

Currently a server at each location hosts a SQL Server 2012 instance. Each instance contains a database called StoreTransactions that stores all transactions from point of sale and uploads summary batches nightly. Each server belongs to the COFFECORP domain. Local computer accounts access the StoreTransactions database at each store using sysadmin and datareaderwriter roles.

### Planned Changes

Fourth Coffee has three major initiatives:

- The IT department must consolidate the point of sales database infrastructure.
- The marketing department plans to launch a mobile application for micropayments.
- The finance department wants to deploy an internal tool that will help detect fraud.

Initially, the mobile application will allow customers to make micropayments to buy coffee and other items on the company web site. These micropayments may be sent as gifts to other users and redeemed within an hour of ownership transfer. Later versions will generate profiles based on customer activity that will push texts and ads generated by an analytics application.

When the consolidation is finished and the mobile application is in production, the micropayments and point of sale transactions will use the same database.

### **Existing Environment**

#### **Existing Application Environment**

Some stores have been using several pilot versions of the micropayment application. Each version currently is in a database that is independent from the point of sales systems. Some versions have been used in field tests at local stores, and others are hosted at corporate servers. All pilot versions were developed by using SQL Server 2012.

#### **Existing Supporting Infrastructure**

The proposed database for consolidating micropayments and transactions is called Coffee Transactions. The database is hosted on a SQL Server 2014 Enterprise Edition instance and has the following file structures:

Database name:	CoffeeTransactions									
Owner:	BUILTIN\Administrators									
<input checked="" type="checkbox"/> Use full-text indexing										
Database files:										
<table border="1"> <thead> <tr> <th>Logical Name</th><th>File Type</th><th>Filegroup</th></tr> </thead> <tbody> <tr> <td>CoffeeTrans...</td><td>ROWS Data</td><td>PRIMARY</td></tr> <tr> <td>CoffeeTrans...</td><td>LOG</td><td>Not Applicable</td></tr> </tbody> </table>		Logical Name	File Type	Filegroup	CoffeeTrans...	ROWS Data	PRIMARY	CoffeeTrans...	LOG	Not Applicable
Logical Name	File Type	Filegroup								
CoffeeTrans...	ROWS Data	PRIMARY								
CoffeeTrans...	LOG	Not Applicable								

### **Business Requirements**

#### **General Application Solution Requirements**

The database infrastructure must support a phased global rollout of the micropayment application and consolidation.

The consolidated micropayment and point of sales database will be into a Coffee Transactions database.

The infrastructure also will include a new Coffee Analytics database for reporting on content from Coffee Transactions.

Mobile applications will interact most frequently with the micropayment database for the following activities:

- retrieving the current status of a micropayment
- modifying the status of the current micropayment; and
- canceling the micropayment.

The mobile application will need to meet the following requirements:

- Communicate with web services that assign a new user to a micropayment by using a stored procedure named `usp_AssignUser`.

- Update the location of the user by using a stored procedure named usp\_AddMobileLocation.

The fraud detection service will need to meet the following requirements:

- Query the current open micropayments for users who own multiple micropayments by using a stored procedure named usp\_LookupConcurrentUsers.
- Persist the current user locations by using a stored procedure named usp.MobileLocationSnapshot.
- Look at the status of micropayments and mark micropayments for internal investigations.
- Move micropayments to dbo.POSException table by using a stored procedure named ups\_DetectSuspiciousActivity.

The Coffee Analytics database will combine imports of the POSTransaction and Mobile Location tables to create a UserActivity table for reports on the trends in activity. Queries against the UserActivity table will include aggregated calculations on all columns that are not used in filters or groupings.

Micropayments need to be updated and queried for only a week after their creation by the mobile application or fraud detection services.

### **Performance**

The most critical performance requirement is keeping the response time for any queries of the POSTransaction table predictable and fast.

Web service queries will take a higher priority in performance tuning decisions over the fraud detection agent queries.

### **Scalability**

Queries of the user of a micropayment cannot return while the micropayment is being updated, but can show different users during different stages of the transaction.

The fraud detection service frequently will run queries over the micropayments that occur over different time periods that range between 30 seconds and ten minutes.

The POSTransaction table must have its structure optimized for hundreds of thousands of active micropayments that are updated frequently.

All changes to the POSTransaction table will require testing in order to confirm the expected throughput that will support the first year's performance requirements.

Updates of a user's location can tolerate some data loss.

Initial testing has determined that the POSTransaction and POSException tables will be migrated to an in-memory optimized table.

### **Availability**

In order to minimize disruption at local stores during consolidation, nightly processes will restore the databases to a staging server at corporate headquarters.

### **Technical Requirements**

#### **Security**

The sensitive nature of financial transactions in the store databases requires certification of the COFFECORP\Auditors group at corporate that will perform audits of the data. Members of the COFFECORP\Auditors group cannot have sysadmin or datawriter access to the database.

Compliance requires that the data stewards have access to any restored StoreTransactions database without

changing any security settings at a database level.

Nightly batch processes are run by the services account in the COFFECORP\StoreAgent group and need to be able to restore and verify the schema of the store databases match.

No Windows group should have more access to store databases than is necessary.

### **Maintainability**

You need to anticipate when POSTransaction table will need index maintenance.

When the daily maintenance finishes, micropayments that are one week old must be available for queries in UserActivity table but will be queried most frequently within their first week and will require support for in-memory queries for data within first week.

The maintenance of the UserActivity table must allow frequent maintenance on the day's most recent activities with minimal impact on the use of disk space and the resources available to queries. The processes that add data to the UserActivity table must be able to update data from any time period, even while maintenance is running.

The index maintenance strategy for the UserActivity table must provide the optimal structure for both maintainability and query performance.

All micropayments queries must include the most permissive isolation level available for the maximum throughput.

In the event of unexpected results, all stored procedures must provide error messages in text message to the calling web service.

Any modifications to stored procedures will require the minimal amount of schema changes necessary to increase the performance.

### **Performance**

Stress testing of the mobile application on the proposed Coffee Transactions database uncovered performance bottlenecks. The sys.dm\_os\_wait\_stats Dynamic Management View (DMV) shows high wait\_time values for WRTTELOG and PAGEIOLATCHJJP wait types when updating the MobileLocation table.

Updates to the MobileLocation table must have minimal impact on physical resources.

### **Supporting Infrastructure**

The stored procedure usp\_LookupConcurrentUsers has the current implementation:

```

CREATE PROCEDURE usp_LookupConcurrentUsers
AS BEGIN
    --summary table
    CREATE TABLE #POSTransactionTemp (
        POSTransactionId int NOT NULL,
        UserId int NOT NULL,
        StatusID int NOT NULL,
        POSLocation int NOT NULL,
        CreateDate datetime2 NOT NULL,
        Price money
    )
    DECLARE @timewindow datetime2
    SET @timewindow = GETDATE();

    WITH concurrentusers
    AS
    (
        SELECT UserId, COUNT(*) concurrentsessions
        FROM dbo.POTransaction
        WHERE CreateDate >= dateadd(second,-60, @timewindow )
        GROUP BY UserId
        HAVING COUNT(*) > 1
    )
    INSERT INTO #POSTransactionTemp
    (
        POSTransactionId, UserId,
        StatusID, POSLocation,
        CreateDate, Price
    )
    SELECT d.*
    FROM dbo.POTransaction d
    JOIN concurrentusers c
    on d.UserID = c.UserId
    WHERE d.CreateDate >= dateadd(second,-60, @timewindow )
    ...
    SELECT * FROM #POSTransactionTemp
END

```

The current stored procedure for persisting a user location is defined in the following code:

```

CREATE PROCEDURE dbo.usp_MobileLocationSnapshot
AS
BEGIN
    INSERT INTO CoffeeAnalytics.dbo.MobileLocationLog
    SELECT * FROM CoffeeTransactions.dbo.MobileLocation
END

```

The current stored procedure for managing micropayments needing investigation is defined in the following code:

```

01 CREATE PROCEDURE dbo.usp_DetectSuspiciousActivity
02 WITH NATIVE_COMPILATION, SCHEMABINDING, EXECUTE AS OWNER
03 AS
04 BEGIN ATOMIC
05 WITH (TRANSACTION ISOLATION LEVEL = SNAPSHOT,
06 LANGUAGE = 'us_english')
07 IF EXISTS(SELECT POSTransactionId FROM dbo.POTransaction
08 WHERE StatusID >= 4 and CreateDate >= dateadd(second,-60,

```

```

09 GETDATE() ))
10 MERGE dbo.POSEException AS target
11 USING (SELECT POSTransactionId, StatusID, UserId,
12 POSLocation, CreateDate, Price FROM dbo.POTransaction
13 WHERE StatusID >= 4 and
14 CreateDate >= dateadd(second,-60, GETDATE() ))
15 AS source (POSTransactionId, StatusID, UserId,
16 POSLocation, CreateDate, Price)
17 ON (target.POSTransactionId = source.POSTransactionId)
18 WHEN MATCHED THEN
19 UPDATE SET StatusID = source.StatusID
20 WHEN NOT MATCHED THEN
21 INSERT (POSTransactionId, StatusID, UserId,
22 POSLocation, CreateDate, Price)
23 VALUES (source.POSTransactionId, source.StatusID,
24 source.UserId, source.POSLocation,
25 source.CreateDate, source.Price);
26 END

```

The current table, before implementing any performance enhancements, is defined as follows:

```

CREATE TABLE dbo.POTransaction (
    POSTransactionId int NOT NULL PRIMARY KEY,
    UserId int NOT NULL,
    POSLocation int NOT NULL,
    StatusID int NOT NULL,
    CreateDate datetime2 NOT NULL,
    Price money
)
CREATE INDEX ix UserID on dbo.POTransaction(UserId)

```

### Question: 1

---

You need to monitor the health of your tables and indexes in order to implement the required index maintenance strategy.

What should you do?

- A. Query system DMVs to monitor avg\_chain\_length and max\_chain\_length. Create alerts to notify you when these values converge.
- B. Create a SQL Agent alert when the File Table: Avg time per file I/O request value is increasing.
- C. Query system DMVs to monitor total\_bucket\_count. Create alerts to notify you when this value increases.
- D. Query system DMVs to monitor total\_bucket\_count. Create alerts to notify you when this value decreases.

---

### Answer: A

---

Explanation:

From scenario:

- \* You need to anticipate when POTransaction table will need index maintenance.
- \* The index maintenance strategy for the UserActivity table must provide the optimal structure for both maintainability and query performance.

---

### Question: 2

---

## DRAG DROP

You need to implement a new version of usp\_AddMobileLocation. Develop the solution by selecting and arranging the required code blocks in the correct order. You may not need all of the code blocks.

Code Blocks	Answer Area
<code>DELAYED_DURABILITY = ON , TRANSACTION ISOLATION LEVEL = SNAPSHOT</code>	
<code>CREATE PROCEDURE dbo.usp_AddMobileLocat ion @POSTransactionId int, @Long float, @Lat float WITH</code>	
<code>NATIVE_COMPILATION ...</code>	
<code>DELAYED_DURABILITY = OFF , TRANSACTION ISOLATION LEVEL = READ UNCOMMITTED</code>	
<code>DELAYED_DURABILITY = ON , TRANSACTION ISOLATION LEVEL = READ UNCOMMITTED</code>	
<code>Insert into dbo.MobileLocation ( POSTransactionId, Longitude, Latitude, CreateDate ) VALUES ( @POSTransactionId, @Long, @Lat, GETDATE() ) END</code>	
<code>, LANGUAGE = N'English' )</code>	
<code>AS BEGIN ATOMIC WITH (</code>	
<code>DELAYED_DURABILITY = OFF , TRANSACTION ISOLATION LEVEL = SNAPSHOT</code>	

---

**Answer:**

Box 1:

```
CREATE PROCEDURE dbo.usp_AddMobileLocation
    @POSTransactionId int, @Long
    float, @Lat float
    WITH
```

Box 2:

```
NATIVE_COMPILATION
***
```

Box 3:

```
AS
BEGIN ATOMIC WITH
()
```

Box 4:

```
DELAYED_DURABILITY = OFF
, TRANSACTION ISOLATION LEVEL
= READ UNCOMMITTED
```

Box 5:

```
, LANGUAGE = N'English'
)
```

Box 6:

```
Insert into dbo.MobileLocation
(
POSTransactionId,
Longitude,
Latitude,
CreateDate
)
VALUES
(
@POSTransactionId,
@Long,
@Lat,
GETDATE()
)
END
```

Explanation:

Note:

\* From scenario:

The mobile application will need to meet the following requirements:

- Update the location of the user by using a stored procedure named usp\_AddMobileLocation.
- \* DELAYED\_DURABILITY

SQL Server transaction commits can be either fully durable, the SQL Server default, or delayed durable (also known as lazy commit).

Fully durable transaction commits are synchronous and report a commit as successful and return control to the client only after the log records for the transaction are written to disk. Delayed durable transaction commits are asynchronous and report a commit as successful before the log records for the transaction are written to disk. Writing the transaction log entries to disk is required for a transaction to be durable. Delayed durable transactions become durable when the transaction log entries are flushed to disk.

### Question: 3

## DRAG DROP

You need to create the usp\_AssignUser stored procedure.

Develop the solution by selecting and arranging the required code blocks in the correct order. You may not need all of the code blocks.

Code Blocks	Answer Area
IF @StatusID IS NULL RAISERROR (N'The transaction does not exist.',16,1)	
WITH NATIVE_COMPILATION, SCHEMABINDING, EXECUTE AS OWNER	
CREATE PROCEDURE dbo.usp_AssignUser @UserId int, @POSTransactionId int	
WITH (TRANSACTION ISOLATION LEVEL = READ COMMITTED, LANGUAGE = N'us_english')	
UPDATE dbo.POTransaction SET UserId=@UserId WHERE POTransactionId=@POTransactio nId END	
AS BEGIN	
DECLARE @StatusID int SELECT @StatusID=StatusId FROM dbo.POTransaction WHERE POTransactionId=@POTransactionI d	
IF @StatusID IS NULL THROW 51000, N'The transaction does not exist.', 1	
WITH (TRANSACTION ISOLATION LEVEL = REPEATABLE READ, LANGUAGE = N'us_english')	
AS BEGIN ATOMIC	

---

**Answer:**

Box 1:

```
CREATE PROCEDURE dbo.usp_AssignUser
@UserId int, @POSTransactionId int
```

Box 2:

```
WITH  
NATIVE_COMPILATION, SCHEMABINDING,  
EXECUTE AS OWNER
```

Box 3:

```
AS
BEGIN ATOMIC
```

Box 4:

```
WITH (TRANSACTION ISOLATION LEVEL =
REPEATABLE READ, LANGUAGE
= N'us_english')
```

Box 5:

```
UPDATE dbo.POTransaction
SET UserId=@UserId
WHERE POTransactionId=@POTransactionId
END
```

Box 6:

```
DECLARE @StatusID int
SELECT @StatusID=StatusId
FROM dbo.POTransaction
WHERE POTransactionId=@POTransactionId
```

Box 7:

```
IF @StatusID IS NULL
THROW 51000, N'The transaction
does not exist.', 1
```

Explanation:

Note:

\* From scenario: The mobile application will need to meet the following requirements:

/Communicate with web services that assign a new user to a micropayment by using a stored procedure named usp\_AssignUser.

\* Example:

```
create procedure dbo.OrderInsert(@OrdNo integer, @CustCode nvarchar(5))
with native_compilation, schemabinding, execute as owner
as
begin atomic with
(transaction isolation level = snapshot,
language = N'English')
declare @OrdDate datetime = getdate();
insert into dbo.Org (OrdNo, CustCode, OrdDate) values (@OrdNo, @CustCode, @OrdDate);
end go
```

\* Natively compiled stored procedures are Transact-SQL stored procedures compiled to native code that access memory-optimized tables. Natively compiled stored procedures allow for efficient execution of the queries and business logic in the stored procedure.

#### Question: 4

DRAG DROP

You need to design the UserActivity table.

Which three steps should you perform in sequence? To answer, move the appropriate three actions from the list of actions to the answer area and arrange them in the correct order.

Actions	Answer Area
Create a nonclustered hash index.	
Create a clustered columnstore index.	
Create a partitioning scheme for use by the table.	
Use an ALTER INDEX REBUILD on a specific partition.	
Use an ALTER INDEX REORGANIZE on a specific partition.	

**Answer:**

Box 1:

Create a clustered columnstore index.

Box 2:

Create a partitioning scheme for use by the table.

Box 3:

Use an ALTER INDEX REORGANIZE on a specific partition.

Explanation:

Note:

\* Creating a partitioned table or index typically happens in four parts:

1. Create a filegroup or filegroups and corresponding files that will hold the partitions specified by the partition scheme.
2. Create a partition function that maps the rows of a table or index into partitions based on the values of a specified column.
3. Create a partition scheme that maps the partitions of a partitioned table or index to the new filegroups.
4. Create or modify a table or index and specify the partition scheme as the storage location.

\* Reorganizing an index uses minimal system resources.

\* From scenario:

/ The index maintenance strategy for the UserActivity table must provide the optimal structure for both maintainability and query performance.

/ The CoffeeAnalytics database will combine imports of the POSTransaction and MobileLocation tables to create a UserActivity table for reports on the trends in activity. Queries against the UserActivity table will include aggregated calculations on all columns that are not used in filters or groupings.

/ When the daily maintenance finishes, micropayments that are one week old must be available for queries in UserActivity table but will be queried most frequently within their first week and will require support for in-memory queries for data within first week.

The maintenance of the UserActivity table must allow frequent maintenance on the day's most recent activities with minimal impact on the use of disk space and the resources available to queries. The processes that add data to the UserActivity table must be able to update data from any time period, even while maintenance is running.

\* Columnstore indexes work well for mostly read-only queries that perform analysis on large data sets. Often, these are queries for data warehousing workloads. Columnstore indexes give high performance gains for queries that use full table scans, and are not well-suited for queries that seek into the data, searching for a particular value.

---

### **Question: 5**

---

DRAG DROP

You need to redesign the system to meet the scalability requirements of the application.

Develop the solution by selecting and arranging the required code blocks in the correct order.

You may not need all of the code blocks.

**Code Blocks****Answer Area**

```
,
```

```
UserId int NOT NULL
INDEX ix_UserId NONCLUSTERED
HASH WITH (BUCKET_COUNT=2),
```

```
,
```

```
UserId int NOT NULL
INDEX x_UserId NONCLUSTERED
HASH WITH (BUCKET_COUNT=900000),
```

```
POSLocation int NOT NULL,
StatusID int NOT NULL,
CreateDate datetime2 NOT NULL,
Price money
)
```

```
POSTransactionId int NOT NULL
PRIMARY KEY CLUSTERED
```

```
POSTransactionId int NOT NULL
```

```
ALTER DATABASE CoffeeTransactions
ADD FILEGROUP [CoffeeTransactions_inmem]
] CONTAINS MEMORY_OPTIMIZED_DATA
```

```
ON [CoffeeTransactions_inmem]
```

```
WITH (MEMORY_OPTIMIZED=ON,
DURABILITY=SCHEMA_ONLY)
```

```
POSTransactionId int NOT NULL
PRIMARY KEY CLUSTERED
HASH WITH (BUCKET_COUNT=1000000)
```

```
,
```

```
UserId int NOT NULL
NONCLUSTERED INDEX ix_UserId,
```

```
CREATE TABLE dbo.POSTransaction (
```

```
POSTransactionId int NOT NULL
PRIMARY KEY NONCLUSTERED
HASH WITH (BUCKET_COUNT=1)
```

**Answer:**

Box 1:

```
ALTER DATABASE CoffeeTransactions
ADD FILEGROUP [CoffeeTransactions_inmem]
] CONTAINS MEMORY_OPTIMIZED_DATA
```

Box 2:

```
CREATE TABLE dbo.POSTransaction (
```

Box 3:

```

,
UserId int NOT NULL
INDEX ix_UserId NONCLUSTERED
HASH WITH (BUCKET_COUNT=900000),

```

Box 4:

```

POSTransactionId int NOT NULL
PRIMARY KEY CLUSTERED
HASH WITH (BUCKET_COUNT=1000000)

```

Box 5:

```

POSLocation int NOT NULL,
StatusID int NOT NULL,
CreateDate datetime2 NOT NULL,
Price money
)

```

Box 6:

```

WITH (MEMORY_OPTIMIZED=ON,
DURABILITY=SCHEMA_ONLY)

```

Box 7:

```

ON [CoffeeTransactions_inmem]

```

Explanation:

Note:

\* MEMORY\_OPTIMIZED\_DATA

First create a memory-optimized data filegroup and add a container to the filegroup.

Then create a memory-optimized table.

\* You must specify a value for the BUCKET\_COUNT parameter when you create the memory-optimized table. In most cases the bucket count should be between 1 and 2 times the number of distinct values in the index key.

\* Example:

-- create a durable (data will be persisted) memory-optimized table

-- two of the columns are indexed

```

CREATE TABLE dbo.ShoppingCart (
    ShoppingCartId INT IDENTITY(1,1) PRIMARY KEY NONCLUSTERED,
    UserId INT NOT NULL INDEX ix_UserId NONCLUSTERED HASH WITH (BUCKET_COUNT=1000000),
    CreatedDate DATETIME2 NOT NULL,
    TotalPrice MONEY
) WITH (MEMORY_OPTIMIZED=ON)
GO

```

## Question: 6

You need to implement security for the restore and audit process. What should you do?

- Grant the COFFECORP\Auditors group ALTER ANY CONNECTION and SELECT ALL USER SECURABLES permissions. Grant the COFFECORP\StoreAgent group ALTER ANY CONNECTION and IMPERSONATE ANY LOGIN permissions.
- Grant the COFFECORP\Auditors group CONNECT ANY DATABASE and IMPERSONATE ANY LOGIN permissions. Grant the COFFECORP\StoreAgent group CONNECT ANY DATABASE and SELECT ALL USER SECURABLES permissions.
- Grant the COFFECORP\Auditors group ALTER ANY CONNECTION and IMPERSONATE ANY LOGIN permissions. Grant the COFFECORP\StoreAgent group ALTER ANY CONNECTION and SELECT ALL USER SECURABLES permissions.
- Grant the COFFECORP\Auditors group CONNECT ANY DATABASE and SELECT ALL USER SECURABLES permissions. Grant the COFFECORP\StoreAgent group CONNECT ANY DATABASE and IMPERSONATE ANY LOGIN permissions.

---

**Answer: A**

---

**Question: 7**

---

You need to modify the stored procedure usp.LookupConcurrentUsers.  
What should you do?

- A. Add a clustered index to the summary table.
- B. Add a nonclustered index to the summary table.
- C. Add a clustered columnstore index to the summary table.
- D. Use a table variable instead of the summary table.

---

**Answer: A**

---

Explanation:

Scenario: Query the current open micropayments for users who own multiple micropayments by using a stored procedure named usp.LookupConcurrentUsers

**Question: 8**

---

You need to modify the usp.DetectSuspiciousActivity stored procedure.  
Which two actions should you perform? Each correct answer presents part of the solution. Choose two.

- A. Replace lines 04-06 with the following code:

```
BEGIN ATOMIC WITH
(
    DELAYED_DURABILITY = ON,
    TRANSACTION ISOLATION LEVEL = READ UNCOMMITTED,
    LANGUAGE = N'English'
)
```

- B. Replace lines 04-06 with the following code:

```
BEGIN ATOMIC WITH
(
    DELAYED_DURABILITY = ON,
    TRANSACTION ISOLATION LEVEL = REPEATABLE READ
)
```

- C. Change the logic of the stored procedure to use separate UPDATE and INSERT statements.

- D. Replace lines 07-09 with the following code:

```
DECLARE @exists BIT = 0
IF EXISTS ( SELECT TOP 1 * FROM POSTransaction (NOLOCK) WHERE StatusID = 4 and CreateDate
>= dateadd(second,-60, GETDATE() ))
```

- E. Replace lines 04-06 with the following code:

```
BEGIN ATOMIC WITH
(
    TRANSACTION ISOLATION LEVEL = READ UNCOMMITTED,
    LANGUAGE = N'English'
)
```

- F. Replace lines 07-09 with the following code:

```
DECLARE @exists BIT = 0
SELECT TOP 1 @exists = 1 FROM POSTransaction WHERE StatusID >= 4 and CreateDate >= dateadd
(second,-60, GETDATE() )
IF @exists = 1
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D
- E. Option E
- F. Option F

---

**Answer: D, E**

---

Explanation:

Note:

\* Move micropayments to dbo.POSEException table by using a stored procedure named ups\_DetectSuspiciousActivity.

### Case Study: 9

#### Scenario

#### 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:

<b>Group</b>	<b>Members</b>
OurDomain\Management	All corporate executives
OurDomain\SalesStaff	All sales people
OurDomain\ProductionStaff	All product managers and support staff
OurDomain\AllUsers	Everyone
OurDomain \CustomerSupport	Customer support representatives

### **Server configuration**

The IT department has configured two physical servers with Microsoft Windows Server 2012 R2 and SQL Server 2014 Enterprise Edition and one Microsoft 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:

<b>Location</b>	<b>Server</b>
Company headquarters	HQ_Server
Satellite sales office	Satellite_Server
Microsoft Microsoft Azure (cloud)	Cloud_File Server

### **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 Production Staff 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:

Column	Data type
ProductID	INT
ProductName	VARCHAR(100)
ProductDescription	VARCHAR(MAX)
ProductPrice	SMALLMONEY
QuantityOnHand	INT
ProductCost	SMALLMONEY
ProductSupplierID	INT

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.

Column	Data type
SalesOrderDetailID	INT
ProductID	INT
SalePrice	SMALLMONEY
SaleQuantity	INT

### 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 assess

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 CustomerAccess. Supporting this requirement should have minimal impact on production website performance.

### **Backup**

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**

- Revoked 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:.

---

### **Question: 1**

---

You are designing your maintenance plan.

Which command should you use only during the monthly maintenance window?

- A. DBCC INDEXDEFRAG (ProdDB, SalesOrderDetail, SODIndex)
- B.ALTER INDEX SODIndex ON SalesOrderDetail REORGANIZE
- C.ALTER INDEX SODIndex ON SalesOrderDetail REBUILD
- D.ALTER INDEX SODIndex ON SalesOrderDetail REBUILD WITH (ONLINE \* ON)

---

**Answer: D**

---

**Explanation:**

\* Scenario: 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.

\* After the degree of fragmentation is known, use the following table to determine the best method to correct the fragmentation.

avg\_fragmentation\_in\_percent value

/ > 5% and < = 30%

then use

ALTER INDEX REORGANIZE

/ > 30%

then use

ALTER INDEX REBUILD WITH (ONLINE = ON)

ALTER INDEX (Transact-SQL)

---

## **Question: 2**

---

You need to implement a backup strategy to support the requirements.

Which two actions should you perform? Each correct answer presents part of the solution. Choose two.

- A. Create a credential called MyCredential on SQL Server by using a Windows domain account and password.
- B. Schedule a full backup by using the command BACKUP DATABASE ProdDB TO DISK...
- C. Create a share on your Windows Azure site by using your Windows Azure storage account information, and grant permission to the SQL Server service login.
- D. Schedule a full backup by using the command BACKUP DATABASE ProdDB TO URL ... WTTH CREDENTIAL=N'MyCredential'
- E. Create a share on the hot standby site and grant permission to the SQL Server service login.
- F. Create a credential called MyCredential on SQL Server, using MyStorageAccount for the storage account name and StorageAccountKey for the access key.
- G. Schedule a full backup by using the command BACKUP DATABASE ProdDB TO SHARE ... WITH CREDENTIAL=N'MyCredential'

---

**Answer: C, D**

---

**Explanation:**

\* Scenario: 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.

\* Need to store files in the cloud.

\* Manage your backups to Windows Azure: Using the same methods used to backup to DISK and TAPE, you can now back up to Windows Azure storage by Specifying URL as the backup destination. You can use this feature to manually backup or configure your own backup strategy like you would for a local storage or other off-site options. This feature is also referred to as SQL Server Backup to URL.

SQL Server Managed Backup to Windows Azure

---

## **Question: 3**

---

You need to implement changes to the system to reduce contention and improve performance of the

SalesOrderDetail table.

Which three actions should you perform? Each correct answer presents part of the solution. Choose three.

- A. Use (SNAPSHOT) hints in the report queries
- B. ALTER DATABASE [ProdDB] SET READ\_COMMITTED\_SNAPSHOT ON
- C. ALTER DATABASE [ProdDB] SET READ\_COMMITTED\_SNAPSHOT OFF
- D. SET TRANSACTION ISOLATION LEVEL SNAPSHOT
- E. Use (TABLOCK) hints in the report queries
- F. SET TRANSACTION ISOLATION LEVEL SERIALIZABLE
- G. ALTER DATABASE [ProdDB] SET ALLOW\_SNAPSHOT\_ISOLATION ON
- H. Use (SNAPSHOT) hints in the update statements

---

**Answer: A, B, F**

---

Explanation:

\* Scenario:

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.

\* 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.

\* READ\_COMMITTED\_SNAPSHOT { ON | OFF }

ON

Enables Read-Committed Snapshot option at the database level. When it is enabled, DML statements start generating row versions even when no transaction uses Snapshot Isolation. Once this option is enabled, the transactions specifying the read committed isolation level use row versioning instead of locking. When a transaction runs at the read committed isolation level, all statements see a snapshot of data as it exists at the start of the statement.

OFF

Turns off Read-Committed Snapshot option at the database level. Transactions specifying the READ COMMITTED isolation level use locking.

ALTER DATABASE SET Options (Transact-SQL)

SET Statements (Transact-SQL)

---

#### **Question: 4**

---

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?

- A. CREATE PROCEDURE Sales.usp\_CustomerSalesReport  
WITH EXECUTE AS 'OurDomain\ProductionStaff'  
AS  
SELECT \*  
FROM Production.Product  
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
- B. CREATE VIEW Sales.vw\_CustomerSalesReports  
AS  
SELECT \*  
FROM Production.Product  
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID  
OPTION (NOLOCK)
- C. CREATE PROCEDURE Sales.usp\_CustomerSalesReport  
AS  
SELECT \*  
FROM Production.Product  
JOIN Sales.SalesOrderDetail ON Product.ProductID = SalesOrderDetail.ProductID
- 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

- A. Option A  
B. Option B  
C. Option C  
D. Option D

---

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.

---

Question: 5

---

**DRAG DROP**

You need to distribute functionality across the three servers.

Which function should you assign to each server? To answer, drag the appropriate functions to the correct servers. Each function may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

<b>Functions</b>		<b>Answer Area</b>	
AlwaysOn primary replica		HQ office server	Function
AlwaysOn secondary replica		satellite office server	Function
file backup server		cloud server	Function
witness server			
mirroring primary			
mirroring secondary			
log shipping primary			
log shipping secondary			

**Answer:**

HQ office server	AlwaysOn primary replica
satellite office server	AlwaysOn secondary replica
cloud server	file backup server

**Explanation:**

**Note:**

\* Scenario: 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.

<http://msdn.microsoft.com/en-us/library/ff877884.aspx>

---

### **Question: 6**

You need to configure security on the Product table for customer support representatives.

Which two actions should you perform? Each correct answer presents part of the solution. Choose two.

- A. Create a view called CustProduct that includes columns ProductID, ProductName, Product Description, QuantityOnHand, ProductPrice, ProductCost, and ProductSupplierID.
- B. GRANT ALL on CustProduct TO OurDomain\CustomerSupport
- C. Create a user-defined data type called CustProduct that includes columns ProductID, ProductName, Product Description, and ProductPrice.
- D. Create a view called CustProduct that includes columns ProductID, ProductName, Product Description, QuantityOnHand, and ProductPrice.
- E. GRANT SELECT on CustProduct TO OurDomain\CustomerSupport.
- F. GRANT SELECT on CustProduct TO public.

---

**Answer: A, E**

---

Explanation:

Give access to CustomerSupport through a view. The view must include all these columns (refer to scenario).

GRANT Object Permissions (Transact-SQL)

---

### **Question: 7**

You need to change the ProdDB database.

Which two database options should you change to meet the requirements? Each correct answer presents part of the solution. Choose two.

- A. CONTAINS FILESTREAM
- B. Change recovery model to FULL
- C. CONTAINMENT = PARTIAL
- D. Change recovery model to BULK\_LOGGED
- E. COLLATE INMEMORY
- F. CONTAINS MEMORY OPTIMIZED DATA

---

**Answer: E, F**

---

Explanation:

Scenario:

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.

Collations and Code Pages

FileGroupDefinition.ContainsMemoryOptimizedData Property (Microsoft.SqlServer.TransactSql.ScriptDom)

## **Case Study: 10**

### **Mixed Questions**

---

### **Question: 1**

You have an application that uses a view to access data from multiple tables.  
You need to ensure that you can insert rows into the underlying tables by using the view.  
What should you do?

- A. Materialize the view.
- B. Create an INSTEAD OF trigger on the view.
- C. Define the view by using the CHECK option.
- D. Define the view by using the SCHEMABINDING option.

---

**Answer: B**

---

Explanation:

Explanation:  
<http://msdn.microsoft.com/en-us/library/ms180800.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187956.aspx>

---

### **Question: 2**

---

You create a view by using the following code:

```
CREATE VIEW dbo.View1
WITH VIEW_METADATA
AS
SELECT t1.col1, t1.col2, t2.*
FROM dbo.Table1 AS t1 JOIN dbo.Table2 AS t2 ON t1.col1=t2.col2;
```

Several months after you create the view, users report that the view has started to return unexpected results.

You discover that the design of Table2 was modified since you created the view.

You need to ensure that the view returns the correct results.

Which code segment should you run?

- A. EXEC sp\_refreshview @viewname = 'dbo.View1';
  - B. ALTER dbo.View1 WITH SCHEMABINDING, VIEW\_METADATA AS  
SELECT t1.col1, t1.col2, t2.\*  
FROM dbo.Table1 AS t1 JOIN dbo.Table2 AS t2  
ON t1.col1=t2.col2;
  - C. DROP dbo.View1;  
GO  
CREATE dbo.View1 WITH SCHEMABINDING, VIEW\_METADATA AS  
SELECT t1.col1, t1.col2, t2.\*  
FROM dbo.Table1 AS t1 JOIN dbo.Table2 AS t2  
ON t1.col1=t2.col2;
  - D. EXEC sp\_refreshsqlmodule @name = 'dbo.Table2';
- A. Option A  
B. Option B  
C. Option C  
D. Option D

---

**Answer: A**

---

### **Question: 3**

---

You plan to design an application that temporarily stores data in a SQL Azure database. You need to identify which types of database objects can be used to store data for the application. The solution must ensure that the application can make changes to the schema of a temporary object during a session. Which type of objects should you identify?

- A. Common table expressions (CTEs)
- B. Temporary tables
- C. Table variables
- D. Temporary stored procedures

---

**Answer: B**

---

Explanation:

References:

- <http://msdn.microsoft.com/en-us/library/ms175972.aspx>
- <http://msdn.microsoft.com/en-us/library/ms189084.aspx>
- <http://msdn.microsoft.com/en-us/library/ms175010.aspx>
- <http://msdn.microsoft.com/en-us/library/bb510489.aspx>
- <http://msdn.microsoft.com/en-us/library/ms187926.aspx>

<http://zacksfiasco.com/post/2010/01/21/SQL-Server-Temporary-Stored-Procedures.aspx>

---

#### **Question: 4**

---

You are creating a table named Orders.

You need to ensure that every time a new row is added to the Orders table, a user-defined function is called to validate the row before the row is added to the table.

What should you use?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. a Data Definition Language (DDL) trigger
- B. a data manipulation language (DML) trigger
- C. a DEFAULT constraint
- D. a FOREIGN KEY constraint
- E. a CHECK constraint

---

#### **Answer: E**

---

Explanation:

Reference:

<http://www.techrepublic.com/blog/programming-and-development/comparing-sql-server-constraints-and-dmltriggers/402>

<http://msdn.microsoft.com/en-us/library/ms178110.aspx>

---

#### **Question: 5**

---

You have an index for a table in a SQL Azure database. The database is used for Online Transaction Processing (OLTP).

You discover that the index consumes more physical disk space than necessary.

You need to minimize the amount of disk space that the index consumes.

What should you set from the index options?

- A. STATISTICS\_NORECOMPUTE = OFF
- B. STATISTICS\_NORECOMPUTE = ON
- C. FILLFACTOR = 0
- D. FILLFACTOR = 80

---

#### **Answer: C**

---

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/ms177459.aspx>

<http://msdn.microsoft.com/en-us/library/ms188783.aspx>

---

#### **Question: 6**

---

You have a SQL Server 2012 database named Database1.

You execute the following code:

```

CREATE TABLE Sales
(
    ID int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    OrderDate char(10) NOT NULL,
    Amount decimal
);
GO

CREATE INDEX IX_Sales_OrderDate
    ON Sales(OrderDate)
    INCLUDE (ID, Amount);
GO

CREATE PROC usp_Proc1(
    @date1 datetime,
    @date2 datetime
)
AS
SELECT ID, OrderDate, Amount
    FROM Sales
    WHERE CAST(OrderDate AS datetime)
        BETWEEN @date1 AND @date2
    ORDER BY ID;
GO

```

You insert 3 million rows into Sales.

You need to reduce the amount of time it takes to execute Proc1.

What should you do?

- A. Productive varchar(11) 'ProductType/SID',
- B. ProductType varchar(11) '@ProductType',
- C. Productive varchar(11) 'ProductType/ID',
- D. ProductType varchar(11) 'ProductType1,

---

**Answer: D**

---

### Question: 7

---

You run the following code:

```

CREATE TABLE dbo.Orders
(
    Id int CONSTRAINT PK_Order_Id PRIMARY KEY,
    Amount decimal,
    Details xml
);

```

You need to ensure that the root node of the XML data stored in the Details column is <Order\_Details>.

What should you implement?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. A user-defined data type

- B. A Data Definition Language (DDL) trigger
- C. A data manipulation language (DML) trigger
- D. An XML schema collection
- E. An XML index

---

**Answer: D**

---

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/ms187856.aspx>

---

### **Question: 8**

---

Your company has a SQL Azure subscription.

You implement a database named Database1. Database1 has two tables named Table1 and Table2.

You create a stored procedure named sp1. Sp1 reads data from Table1 and inserts data into Table2.

A user named User1 informs you that he is unable to run sp1.

You verify that User1 has the SELECT permission on Table1 and Table2.

You need to ensure that User1 can run sp1. The solution must minimize the number of permissions assigned to User1.

What should you do?

- A. Grant User1 the INSERT permission on Table2.
- B. Add User1 to the db\_datawriter role.
- C. Grant User1 the EXECUTE permission on sp1.
- D. Change sp1 to run as the sa user.

---

**Answer: C**

---

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/ms191291.aspx>

---

### **Question: 9**

---

**DRAG DROP**

You are designing an authentication strategy for a new server that has SQL Server 2012 installed.

The strategy must meet the following business requirements:

The account used to generate reports must be allowed to make a connection during certain hours only.

Failed authentication requests must be logged.

You need to recommend a technology that meets each business requirement. The solution must minimize the amount of events that are logged.

Which technologies should you recommend?

To answer, drag the appropriate solution to the correct business requirement in the answer area.

Technologies	Answer Area	
login auditing	The account used to generate reports must be allowed to make a connection during certain hours only.	Technology
logon triggers	Failed authentication requests must be logged.	Technology
C2 audit tracing		
Policy-Based Management		
Technologies	Answer Area	
	The account used to generate reports must be allowed to make a connection during certain hours only.	logon triggers
	Failed authentication requests must be logged.	login auditing
C2 audit tracing		
Policy-Based Management		

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms175850.aspx>  
<http://msdn.microsoft.com/en-us/library/bb326598.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187634.aspx>  
<http://msdn.microsoft.com/en-us/library/bb510667.aspx>

### Question: 10

You are creating a database that will store usernames and passwords for an application.

You need to recommend a solution to store the passwords in the database.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Encrypting File System (EFS)
- B. One-way encryption
- C. Reversible encryption
- D. Transparent Data Encryption (TDE)

**Answer: B**

Explanation:

Reference:

<http://stackoverflow.com/questions/2329582/what-is-currently-the-most-secure-one-way-encryption-algorithm>  
<http://msdn.microsoft.com/en-us/library/ms179331.aspx>

## Question: 11

---

DRAG DROP

You have a SQL Azure database named Database1.

You need to design the schema for a table named table1. Table1 will have less than one million rows. Table1 will contain the following information for each row:

Column	Description
ID	An incremental numeric value used to identify the row
Name	A string in English
Code	An alphanumeric code that has five characters
ModifiedDate	The date of the last modification

The solution must minimize the amount of space used to store each row.

Which data types should you recommend for each column?

To answer, drag the appropriate data type to the correct column in the answer area.

Data Types	Answer Area		
int	ID	Data type	
bigint	Name	Data type	
varchar	Code	Data type	
nvarchar	ModifiedDate	Data type	
char			
smalldatetime			
date			

---

Answer:

---

Data Types	Answer Area
	ID int
bigint	Name varchar
	Code char
nvarchar	ModifiedDate date
smalldatetime	

Explanation:

Reference:

<http://msdn.microsoft.com/en-US/library/ms187752.aspx>

### Question: 12

You are designing a SQL Server database for an order fulfillment system. You create a table named Sales.Orders by using the following script:

```
CREATE TABLE Sales.Orders
(
    OrderID int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    OrderDate date NOT NULL,
    CustomerID int NOT NULL
);
```

Each order is tracked by using one of the following statuses:

Fulfilled

Shipped

Ordered

Received

You need to design the database to ensure that you can retrieve the status of an order on a given date. The solution must ensure that new statuses can be added in the future.

What should you do?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. To the Sales.Orders table, add a column named Status that will store the order status. Update the Status column as the order status changes.
- B. To the Sales.Orders table, add three columns named FulfilledDate, ShippedDate, and ReceivedDate. Update the value of each column from null to the appropriate date as the order status changes.
- C. Implement change data capture on the Sales.Orders table.
- D. Create a new table named Sales.OrderStatus that contains three columns named OrderID, StatusDate, and Status. Insert new rows into the table as the order status changes.

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms191178.aspx>

<http://msdn.microsoft.com/en-us/library/cc645937.aspx>

---

**Question: 13**

---

DRAG DROP

You plan to deploy SQL Server 2012.

Your company identifies the following monitoring requirements for the database:

An e-mail message must be sent if the SQL Server Authentication mode changes.

An e-mail message must be sent if CPU utilization exceeds 90 percent.

You need to identify which feature meets each monitoring requirement.

Which features should you identify?

To answer, drag the appropriate feature to the correct monitoring requirement in the answer area.

Features	Answer Area	
Policy-Based Management	An e-mail message must be sent if the SQL Server Authentication mode changes.	Feature
a SQL Server Agent alert	An e-mail message must be sent if CPU utilization exceeds 90 percent.	Feature
SQL Server Integration Services (SSIS)		
trace flags		

---

**Answer:**

Features	Answer Area	
	An e-mail message must be sent if the SQL Server Authentication mode changes.	Policy-Based Management
	An e-mail message must be sent if CPU utilization exceeds 90 percent.	a SQL Server Agent alert
SQL Server Integration Services (SSIS)		
trace flags		

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb510667.aspx>

<http://msdn.microsoft.com/en-us/library/ms180982.aspx>

<http://msdn.microsoft.com/en-us/library/ms141026.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188396.aspx>

### **Question: 14**

You are troubleshooting an application that runs a query. The application frequently causes deadlocks.

You need to identify which transaction causes the deadlock.

What should you do?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Query the sys.dm\_exec\_sessions dynamic management view.
- B. Create an extended events session to capture deadlock information.
- C. Query the sys.dm\_exec\_requests dynamic management view.
- D. Create a trace in SQL Server Profiler that contains the Deadlock graph event.

**Answer: B**

Explanation:

References:

<http://www.sqlservercentral.com/blogs/james-sql-footprint/2012/08/12/monitor-deadlock-in-sql-2012/>  
[http://blogs.technet.com/b/mspfe/archive/2012/06/28/how\\_2d00\\_to\\_2d00\\_monitor\\_2d00\\_deadlocks\\_2d00\\_in\\_2d00\\_sql\\_2d00\\_server.aspx](http://blogs.technet.com/b/mspfe/archive/2012/06/28/how_2d00_to_2d00_monitor_2d00_deadlocks_2d00_in_2d00_sql_2d00_server.aspx)  
<http://msdn.microsoft.com/en-us/library/ms177648.aspx>  
<http://msdn.microsoft.com/en-us/library/ms176013.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188246.aspx>

### **Question: 15**

DRAG DROP

You plan to deploy SQL Server 2012.

You must create two tables named Table 1 and Table 2 that will have the following specifications:

Table1 will contain a date column named Column1 that will contain a null value approximately 80 percent of the time.

Table2 will contain a column named Column2 that is the product of two other columns in Table2.

Both Table1 and Table2 will contain more than 1 million rows.

You need to recommend which options must be defined for the columns. The solution must minimize the storage requirements for the tables.

Which options should you recommend?

To answer, drag the appropriate options to the correct column in the answer area.

Options	Answer Area
Sparse	Column1 Option
Computed	Column2 Option
Persisted computed	

**Answer:**

Options	Answer Area
	Column1      Sparse
	Column2      Computed
Persisted computed	

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/cc280604.aspx>  
<http://msdn.microsoft.com/en-us/library/ms186241.aspx>

### Question: 16

DRAG DROP

You are designing a database for a university.

The database will contain two tables named Classes and StudentGrades that have the following specifications:

Classes will store brochures in the XPS format. The brochures must be structured in folders and must be accessible by using UNC paths.

StudentGrades must be backed up on a separate schedule than the rest of the database.

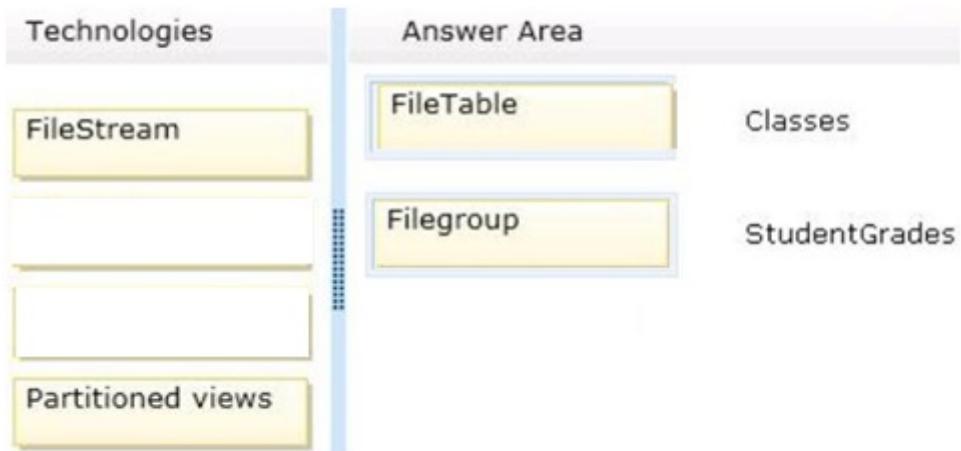
You need to identify which SQL Server technology meets the specifications of each table.

Which technologies should you identify?

To answer, drag the appropriate technology to the correct table in the answer area.

Technologies	Answer Area
FileStream	Technology      Classes
FileTable	Technology      StudentGrades
Filegroup	
Partitioned views	

Answer:



Explanation:

References:

<http://msdn.microsoft.com/en-us/library/gg471497.aspx>  
<http://msdn.microsoft.com/en-us/library/ff929144.aspx>  
<http://msdn.microsoft.com/en-us/library/ms189563.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190174.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187956.aspx>

### **Question: 17**

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.

You need to recommend a solution to implement the database while minimizing costs. The solution must not affect any existing applications.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. SQL Server 2012 Enterprise
- B. SQL Azure
- C. SQL Server 2012 Express with Advanced Services
- D. SQL Server 2012 Standard

---

**Answer: B**

---

Explanation:

References:

<https://www.windowsazure.com/en-us/pricing/details/>  
<http://msdn.microsoft.com/en-us/library/windowsazure/ee336279.aspx>  
<http://msdn.microsoft.com/en-us/library/windowsazure/ee336241.aspx>  
<http://msdn.microsoft.com/en-us/library/windowsazure/ee336230.aspx>  
<http://msdn.microsoft.com/en-us/evalcenter/hh230763.aspx>  
<http://msdn.microsoft.com/en-us/library/hh510202.aspx>  
<http://msdn.microsoft.com/en-us/library/cc645993.aspx>

---

### **Question: 18**

---

You have a server named Server1 that has 16 processors.  
You plan to deploy multiple instances of SQL Server 2012 to Server1.  
You need to recommend a method to allocate processors to each instance.  
What should you include in the recommendation?  
More than one answer choice may achieve the goal. Select the BEST answer.

- A. Max Degree of Parallelism
- B. Processor affinity
- C. Windows System Resource Manager (WSRM)
- D. Resource Governor

---

**Answer: B**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms187104.aspx>  
<http://msdn.microsoft.com/en-us/library/ms188611.aspx>  
<http://msdn.microsoft.com/en-us/library/bb933866.aspx>

---

### **Question: 19**

---

You have a SQL Azure database.  
You need to identify which keyword must be used to create a view that will be indexed.  
Which keyword should you identify?

- A. DISTINCT
- B. DEFAULT
- C. SCHEMABINDING
- D. VIEW\_METADATA

---

**Answer: C**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms187956.aspx>  
<http://msdn.microsoft.com/en-us/library/ms191432.aspx>

---

### **Question: 20**

---

DRAG DROP

You are designing two stored procedures named Procedure1 and Procedure2. You identify the following requirements:  
Procedure1 must take a parameter that ensures that multiple rows of data can pass into the stored procedure.  
Procedure2 must use business logic that resides in a Microsoft .NET Framework assembly.  
You need to identify the appropriate technology for each stored procedure.  
Which technologies should you identify?  
To answer, drag the appropriate technology to the correct stored procedure in the answer area  
a. (Answer choices may be used once, more than once, or not at all.)

Technologies	Answer Area
Common language runtime (CLR)	Procedure1      Technology
Extensible Markup Language (XML)	Procedure2      Technology
a table-valued parameter (TVP)	

---

**Answer:**

---

Technologies	Answer Area
	Procedure1      a table-valued parameter (TVP)
Extensible Markup Language (XML)	Procedure2      Common language runtime (CLR)

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms131102.aspx>

<http://msdn.microsoft.com/en-us/library/bb522446.aspx>

<http://msdn.microsoft.com/en-us/library/bb510489.aspx>

---

**Question: 21**

---

You have a database hosted on SQL Azure.

You are developing a script to create a view that will be used to update the data in a table. The following is the relevant portion of the script. (Line numbers are included for reference only.)

```

01 CREATE VIEW View1
02 AS
03 SELECT
04 ...
05 WHERE Column1 = 'City1'
06

```

You need to ensure that the view can update the data in the table, except for the data in Column1.

Which code segment should you add at line 06?

- A. WITH VIEW\_METADATA
- B. WITH ENCRYPTION
- C. WITH CHECK OPTION
- D. WITH SCHEMABINDING

---

**Answer: C**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms187956.aspx>

---

### **Question: 22**

---

You have a text file that contains an XML Schema Definition (XSD).

You have a table named Schema1.Table1.

You have a stored procedure named Schema1.Proc1 that accepts an XML parameter named Param1.

You need to store validated XML data in Schema1.Table1. The solution must ensure that only valid XML data is accepted by Param1.

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

- A. Use the modify method to insert the XML schema into each row of the XML column in Table1.
- B. Define an XML column in Table1 by using an XML schema collection.
- C. Declare Param1 var1 as type XML and associate the variable to the XML schema collection.
- D. Create an XML schema collection in the database from the text file.

---

**Answer: ABD**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb510420.aspx>

<http://msdn.microsoft.com/en-us/library/ms187856.aspx>

<http://msdn.microsoft.com/en-us/library/ms176009.aspx>

<http://msdn.microsoft.com/en-us/library/hh403385.aspx>

<http://msdn.microsoft.com/en-us/library/ms184277.aspx>

---

### **Question: 23**

---

You have an index for a table in a SQL Azure database. The database is used for Online Transaction Processing (OLTP).

You discover that many page splits occur when records are inserted or updated in the table.

You need to minimize the number of page splits.

What should you set from the index options?

- A. FILLFACTOR = 0
- B. STATISTICS\_NORECOMPUTE = ON
- C. STATISTICS\_NORECOMPUTE = OFF
- D. FILLFACTOR = 80

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188783.aspx>

<http://msdn.microsoft.com/en-us/library/ms177459.aspx>

---

### **Question: 24**

---

You have a SQL Azure database.

You execute the following script:

```
CREATE TABLE dbo.Table1
(
    Column1 int PRIMARY KEY,
    Column2 varchar(50) SPARSE NULL
)
```

You add 1 million rows to Table1. Approximately 85 percent of all the rows have a null value for Column2.

You plan to deploy an application that will search Column2.

You need to create an index on Table1 to support the planned deployment. The solution must minimize the storage requirements.

Which code segment should you execute?

- A. CREATE INDEX IX\_Table1 ON Table1 (Column1)  
INCLUDE (Column2)
- B. CREATE INDEX IX\_Table1 ON Table1 (Column2)  
WHERE Column2 IS NOT NULL
- C. CREATE INDEX IX\_Table1 ON Table1 (Column2)  
WHERE Column2 IS NULL
- D. CREATE INDEX IX\_Table1 ON Table1 (Column2)  
WITH FILLFACTOR=0

---

**Answer: B**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms188783.aspx>  
<http://msdn.microsoft.com/en-us/library/cc280372.aspx>

---

### **Question: 25**

---

You are creating a table named Orders.

You need to ensure that every time a new row is added to the Orders table, a table that is used for auditing is updated.

What should you use?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. a DEFAULT constraint
- B. a Data Definition Language (DDL) trigger
- C. a CHECK constraint
- D. a FOREIGN KEY constraint
- E. a data manipulation language (DML) trigger

---

**Answer: E**

---

Explanation:

References:

<http://www.techrepublic.com/blog/programming-and-development/comparing-sql-server-constraints-and-dmltriggers/402>  
<http://msdn.microsoft.com/en-us/library/ms178110.aspx>

## Question: 26

DRAG DROP

You execute the following code:

```
CREATE TA3LS Customers
```

```
(  
    id int primary key,  
    name nchar(10)  
)
```

```
GO
```

You discover that the Customers table was created in the dbo schema.

You need to create a code segment to move the table to another schema named Schema2.

What should you create?

To answer, drag the appropriate code segments to the correct location in the answer area.

a. (Answer choices may be used once, more than once, or not at all.)

Code Segments	Answer Area
ALTER SCHEMA	Code
ALTER TABLE	Code
dbo	Code
dbo.Customers	Code
EXEC sp_rename	
TRANSFER	
Schema2	

Answer:

Code Segments	Answer Area
	ALTER SCHEMA
ALTER TABLE	Schema2
dbo	TRANSFER
EXEC sp_rename	dbo.Customers

Explanation:

Reference:

<http://msdn.microsoft.com/en-us/library/ms173423.aspx>

---

### Question: 27

---

You have a database named database1.

Database developers report that there are many deadlocks.

You need to implement a solution to monitor the deadlocks. The solution must meet the following requirements:

Support real-time monitoring.

Be enabled and disabled easily.

Support querying of the monitored data.

What should you implement?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. a SQL Server Profiler template
- B. an Extended Events session
- C. log errors by using trace flag 1204
- D. log errors by using trace flag 1222

---

**Answer: B**

---

Explanation:

References:

<http://www.sqlservercentral.com/blogs/james-sql-footprint/2012/08/12/monitor-deadlock-in-sql-2012/>

[http://blogs.technet.com/b/mspfe/archive/2012/06/28/how\\_2d00\\_to\\_2d00\\_monitor\\_2d00\\_deadlocks\\_2d00\\_in\\_2d00\\_sql\\_2d00\\_server.aspx](http://blogs.technet.com/b/mspfe/archive/2012/06/28/how_2d00_to_2d00_monitor_2d00_deadlocks_2d00_in_2d00_sql_2d00_server.aspx)

---

### Question: 28

---

You execute the following code.

```
CREATE TABLE HumanResources.Employees
(
    EmployeeID int IDENTITY(1,1) PRIMARY KEY,
    ContactID int NOT NULL
        FOREIGN KEY REFERENCES Person.Contact(ContactID),
    JobTitle varchar(100)
);
GO

CREATE INDEX IX_Employees
ON HumanResources.Employee(JobTitle);
GO
```

After populating the Employees table with 10,000 rows, you execute the following query:

```
SELECT EmployeeID, JobTitle
FROM HumanResources.Employee
WHERE SUBSTRING(JobTitle,1,1) = 'C'
```

You need to reduce the amount of time it takes to execute the query.

What should you do?

- A. Change SUBSTRING(JobTitle,1, 1) = 'C' to JobTitle LIKE 'C%'.
- B. Partition the table and use the JobTitle column for the partition scheme.
- C. Replace IX\_Employees with a clustered index.
- D. Change SUBSTRING (JobTitle, 1, 1) = 'C' to LEFT(JobTitle ,1) = 'C'.

---

**Answer: A**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms179859.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187748.aspx>

---

### **Question: 29**

---

You have a SQL Server 2012 database named DB1. You have a backup device named Device1.

You discover that the log file for the database is full.

You need to ensure that DB1 can complete transactions. The solution must not affect the chain of log sequence numbers (LSNs).

Which code segment should you execute?

- A. BACKUP LOG DB1 TO Device1 WITH TRUNCATE\_ONLY
- B. BACKUP LOG DB1 TO Device1 WITH COPY\_ONLY
- C. BACKUP LOG DB1 TO Device1 WITH NORECOVERY
- D. BACKUP LOG DB1 TO Device1

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms186865.aspx>

<http://msdn.microsoft.com/en-us/library/ms179478.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190925.aspx>

---

### **Question: 30**

---

You have a server that has SQL Server 2012 installed.  
You need to identify which parallel execution plans are running in serial.  
Which tool should you use?

- A. Performance Monitor
- B. Database Engine Tuning Advisor
- C. Extended Events
- D. Data Profile Viewer

---

**Answer: C**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/bb677278.aspx>  
<http://msdn.microsoft.com/en-us/library/bb630282.aspx>  
<http://www.sql-server-performance.com/2006/query-execution-plan-analysis/>  
<http://www.simple-talk.com/sql/learn-sql-server/understanding-and-using-parallelism-in-sql-server/>  
<http://www.sqlservercentral.com/articles/SQL+Server+2012/At+last%2c+execution+plans+show+true+thread+reservations./92458/>  
[http://sqlblog.com/blogs/paul\\_white/archive/2011/12/23/forcing-a-parallel-query-execution-plan.aspx](http://sqlblog.com/blogs/paul_white/archive/2011/12/23/forcing-a-parallel-query-execution-plan.aspx)  
[http://sqlblog.com/blogs/paul\\_white/archive/2012/05/02/parallel-row-goals-gone-rogue.aspx](http://sqlblog.com/blogs/paul_white/archive/2012/05/02/parallel-row-goals-gone-rogue.aspx)  
<http://msdn.microsoft.com/en-us/library/bb895310.aspx>  
<http://msdn.microsoft.com/en-us/library/bb895313.aspx>  
<http://msdn.microsoft.com/en-us/library/hh231122.aspx>

---

### **Question: 31**

---

DRAG DROP

You have a table named Table1 that contains 1 million rows. Table1 contains a column named Column1 that stores sensitive information. Column1 uses the nvarchar (16) data type.

You have a certificate named Cert1.

You need to replace Column1 with a new encrypted column that uses two-way encryption.

Which code segment should you execute before you remove Column1?

To answer, move the appropriate code segments from the list of code segments to the answer area and arrange them in the correct order.

```

ALTER TABLE Table1
ADD Column2 nvarchar(256);

CLOSE SYMMETRIC KEY;

CREATE SYMMETRIC KEY Key1 WITH ALGORITHM =
SHA1
ENCRYPTION BY CERTIFICATE Cert1;

CREATE CREDENTIAL Cred1 WITH IDENTITY =
'User1', SECRET = 'P@sswOrd';

OPEN SYMMETRIC KEY Key1
DECRYPTION BY CERTIFICATE Cert1;

CREATE SYMMETRIC KEY Key1 WITH ALGORITHM =
AES_256
ENCRYPTION BY CERTIFICATE Cert1;

UPDATE table1 SET Column2 = EncryptByKey
(Key_GUID('Key1'),Column1);

ALTER TABLE Table1
ADD Column2 varbinary(256);

```

**Answer:**

```

CREATE SYMMETRIC KEY Key1 WITH ALGORITHM =
SHA1
ENCRYPTION BY CERTIFICATE Cert1;

CREATE CREDENTIAL Cred1 WITH IDENTITY =
'User1', SECRET = 'P@sswOrd';

```

```

ALTER TABLE Table1
ADD Column2 varbinary(256);

```

```

ALTER TABLE Table1
ADD Column2 nvarchar(256);

CREATE SYMMETRIC KEY Key1 WITH ALGORITHM =
AES_256
ENCRYPTION BY CERTIFICATE Cert1;

OPEN SYMMETRIC KEY Key1
DECRYPTION BY CERTIFICATE Cert1;

UPDATE table1 SET Column2 = EncryptByKey
(Key_GUID('Key1'),Column1);

CLOSE SYMMETRIC KEY;

```

**Explanation:****References:**

- <http://www.databasejournal.com/features/mssql/article.php/3922881/Column-Level-Encryption-in-SQL-Server.htm>
- <http://msdn.microsoft.com/en-us/library/bb510663.aspx>
- <http://msdn.microsoft.com/en-us/library/ms179331.aspx>
- <http://msdn.microsoft.com/en-us/library/ms175491.aspx>
- <http://msdn.microsoft.com/en-us/library/ms181860.aspx>
- <http://msdn.microsoft.com/en-us/library/ms174361.aspx>
- <http://msdn.microsoft.com/en-us/library/ms190499.aspx>
- <http://msdn.microsoft.com/en-us/library/ms177938.aspx>
- <http://msdn.microsoft.com/en-us/library/ms345262.aspx>
- <http://msdn.microsoft.com/en-us/library/ms188357.aspx>

<http://msdn.microsoft.com/en-us/library/ms175491.aspx>

---

### **Question: 32**

You are creating a table to support an application that will cache data outside of SQL Server.

The application will detect whether cached values were changed before it updates the values.

You need to create the table, and then verify that you can insert a row into the table.

Which code segment should you use?

- A. CREATE TABLE Table1 (  
    ID int IDENTITY(1,1),  
    Name varchar(100),  
    version uniqueidentifier DEFAULT NEWID())  
    INSERT INTO Table1 (Name, Version)  
    VALUES ('Smith, Ben')
- B. CREATE TABLE Table1 (  
    ID int IDENTITY(1,1),  
    Name varchar(100),  
    Version rowversion)  
    INSERT INTO Table1 (Name, Version)  
    VALUES ('Smith, Ben', NEWID())
- C. CREATE TABLE Table1 (  
    ID int IDENTITY(1,1),  
    Name varchar(100),  
    Version uniqueidentifier DEFAULT NEWID())  
    INSERT INTO Table1 (Name, Version)  
    VALUES ('Smith, Ben', NEWID())
- D. CREATE TABLE Table1 (  
    ID int IDENTITY(1,1),  
    Name varchar(100),  
    Version rowversion)  
    INSERT INTO Table1 (Name)  
    VALUES ('Smith, Ben')

- A. Option A
- B. Option B
- C. Option C
- D. Option D

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms182776.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187942.aspx>  
<http://msdn.microsoft.com/en-us/library/ms190348.aspx>

---

### **Question: 33**

You use SQL Server 2012 to maintain the data used by the applications at your company.

You plan to create a table named Table1 by using the following statement. (Line numbers are included for reference only.)

```
01 CREATE TABLE dbo.table1(
02     ID int IDENTITY(1,1) NOT NULL,
03
04     Email varchar(100) NULL,
05     CONSTRAINT PK_table1PRIMARY KEY CLUSTERED(ID ASC)
06 )
```

You need to ensure that Table1 contains a column named UserName.

The UserName column will:

Store string values in any language.

Accept a maximum of 200 characters.

Be case-sensitive and accent-sensitive.

Which code segment should you add at line 03?

- A. UserName nvarchar(200) COLLATE Latin1\_General\_CI\_AI NOT NULL,
- B. UserName varchar(200) COLLATE Latin1\_General\_CI\_AI NOT NULL,
- C. UserName nvarchar(200) COLLATE Latin1\_General\_CS\_AS NOT NULL,
- D. UserName varchar(200) COLLATE Latin1\_General\_CS\_AS NOT NULL,
- E. UserName nvarchar(200) COLLATE Latin1\_General\_CI\_AS NOT NULL,
- F. UserName varchar(200) COLLATE Latin1\_General\_CI\_AS NOT NULL,

---

**Answer: C**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms184391.aspx>

<http://msdn.microsoft.com/en-us/library/ms143726.aspx>

<http://msdn.microsoft.com/en-us/library/ff848763.aspx>

---

### **Question: 34**

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DRAG DROP

You plan to deploy SQL Server 2012.

Your company identifies the following monitoring requirements:

Tempdb must be monitored for insufficient free space.

Deadlocks must be analyzed by using Deadlock graphs.

You need to identify which feature meets each monitoring requirement.

Which features should you identify?

To answer, drag the appropriate feature to the correct monitoring requirement in the answer area.

Features	Answer Area
dynamic management view	Tempdb must be monitored for insufficient free space.
Activity Monitor	Deadlocks must be analyzed by using Deadlock graphs.
Resource Governor	
SQL Trace	

**Answer:**

Features	Answer Area
	Tempdb must be monitored for insufficient free space.
Activity Monitor	dynamic management view
Resource Governor	SQL Trace

**Explanation:****References:**

- <http://msdn.microsoft.com/en-us/library/ms188754.aspx>
- <http://msdn.microsoft.com/en-us/library/cc879320.aspx>
- <http://msdn.microsoft.com/en-us/library/hh212951.aspx>
- <http://msdn.microsoft.com/en-us/library/bb933866.aspx>
- <http://msdn.microsoft.com/en-us/library/hh245121.aspx>

**Question: 35**

You are creating a database that will store usernames and credit card numbers for an application.

You need to recommend a solution to store the credit card numbers in the database.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. One-way encryption
- B. Reversible encryption
- C. Encrypting File System (EPS)

D. Transparent Data Encryption (TDE)

---

**Answer: A**

---

Explanation:

References:

[http://technet.microsoft.com/en-us/library/hh994559\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/hh994559(v=ws.10).aspx)

<http://msdn.microsoft.com/en-us/library/bb964742.aspx>

<http://msdn.microsoft.com/en-us/library/bb510663.aspx>

---

**Question: 36**

---

DRAG DROP

You plan to deploy SQL Server 2012.

You identify the following security requirements for the deployment:

Users must be prevented from intercepting and reading the T-SQL statements sent from the clients to the database engine.

All database files and log files must be encrypted if the files are moved to another disk on another server.

You need to identify which feature meets each security requirement. The solution must minimize processor overhead.

Which features should you identify?

To answer, drag the appropriate feature to the correct requirement in the answer area.

Features	Answer Area
Encrypting File System (EFS)	Users must be prevented from intercepting and reading the T-SQL statements sent from the clients to the database engine.
Policy-Based Management	All database files and log files must be encrypted if the files are moved to another disk on another server.
Secure Socket Layer (SSL)	
Transparent Data Encryption (TDE)	
Windows BitLocker Drive Encryption (BitLocker)	

---

**Answer:**

---

Features	Answer Area	
Encrypting File System (EFS)	Users must be prevented from intercepting and reading the T-SQL statements sent from the clients to the database engine.	Secure Socket Layer (SSL)
Policy-Based Management	All database files and log files must be encrypted if the files are moved to another disk on another server.	Transparent Data Encryption (TDE)
Windows BitLocker Drive Encryption (BitLocker)		

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/windows/desktop/aa364223.aspx>  
<http://msdn.microsoft.com/en-us/library/bb510667.aspx>  
<http://msdn.microsoft.com/en-us/library/bb879935.aspx>  
<http://msdn.microsoft.com/en-us/library/bb934049.aspx>  
<http://msdn.microsoft.com/en-us/library/windows/hardware/gg487306.aspx>  
<http://msdn.microsoft.com/en-us/library/ff773063.aspx>

## Question: 37

DRAG DROP

You plan to install two SQL Server 2012 environments named Environment1 and Environment2.

Your company identifies the following availability requirements for each environment:

Environment1 must have mirroring with automatic failover implemented.

Environment2 must have AlwaysOn with automatic failover implemented.

You need to identify the minimum number of SQL Server 2012 servers that must be deployed to each environment to ensure that all data remains available if a physical server fails.

How many servers should you identify?

To answer, drag the appropriate number to the correct environment in the answer area.

Number of Servers	Answer Area
2	Environment1 <input type="text"/> #"/>
3	Environment2 <input type="text"/> #"/>
4	

Answer:

Number of Servers	Answer Area
   4	Environment1  3
	Environment2  2

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ms189852.aspx>

<http://msdn.microsoft.com/en-us/library/hh510230.aspx>

### Question: 38

You have two SQL Server instances named SQLDev and SQLProd that have access to various storage media.

You plan to synchronize SQLDev and SQLProd.

You need to recommend a solution that meets the following requirements:

The database schemas must be synchronized from SQLDev to SQLProd.

The database on SQLDev must be deployed to SQLProd by using a package.

The package must support being deployed to SQL Azure.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. a database snapshot
- B. change data capture
- C. a data-tier application
- D. SQL Server Integration Services (SSIS)
- E. SQL Data Sync

---

**Answer: D**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/windowsazure/ee336279.aspx>

<http://msdn.microsoft.com/en-us/library/windowsazure/hh694043.aspx>

<http://msdn.microsoft.com/en-us/library/hh456371.aspx>

### Question: 39

You have a database named DB1.

You plan to create a stored procedure that will insert rows into three different tables. Each insert must use the same identifying value for each table, but the value must increase from one invocation of the stored procedure to the next. Occasionally, the identifying value must be reset to its initial value.

You need to design a mechanism to hold the identifying values for the stored procedure to use.

What should you do?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Create a sequence object that holds the next value in the sequence. Retrieve the next value by using the stored procedure. Reset the value by using an ALTER SEQUENCE statement as needed.
- B. Create a fourth table that holds the next value in the sequence. At the end each transaction, update the value by using the stored procedure. Reset the value as needed by using an UPDATE statement.
- C. Create a sequence object that holds the next value in the sequence. Retrieve the next value by using the stored procedure. Increment the sequence object to the next value by using an ALTER SEQUENCE statement. Reset the value as needed by using a different ALTER SEQUENCE statement.
- D. Create an identity column in each of the three tables. Use the same seed and the same increment for each table. Insert new rows into the tables by using the stored procedure. Use the DBCC CHECKIDENT command to reset the columns as needed.

---

**Answer: A**

---

Explanation:

References:

<http://msdn.microsoft.com/en-us/library/ff878091.aspx>  
<http://msdn.microsoft.com/en-us/library/ms176057.aspx>  
<http://msdn.microsoft.com/en-us/library/ff878572.aspx>  
<http://msdn.microsoft.com/en-us/library/ff878058.aspx>

---

### **Question: 40**

---

DRAG DROP

You have a SQL Server 2012 database named Database1. Database1 has a data file named database1\_data.mdf and a transaction log file named database1\_Log.ldf. Database1\_Data.mdf is 1.5 GB. Database1\_Log.ldf is 1.5 terabytes. A full backup of Database1 is performed every day.

You need to reduce the size of the log file. The solution must ensure that you can perform transaction log backups in the future. Which code segment should you execute? To answer, move the appropriate code segments from the list of code segments to the answer area and arrange them in the correct order.

Build List and Reorder:

Ordered List Title	Answer Choices Title
	<pre> ALTER DATABASE Database1 SET RECOVERY FULL ; ALTER DATABASE Database1 SET RECOVERY SIMPLE ; DBCC SHRINKFILE (Database1_Log); DBCC SHRINKFILE (Database1_Log, TRUNCATEONLY), BACKUP LOG Database1 TO Database1_Log_Backup; BACKUP LOG Database1 TO Database1_Log_Backup WITH NO_TRUNCATE; USE Database1; USE master; </pre>

**Answer:**

```

USE master;
ALTER DATABASE Database1 SET
RECOVERY FULL ;
USE Database1;
BACKUP LOG Database1
TO Database1_Log_Backup;
DBCC SHRINKFILE
(Database1_Log);

```

**Explanation:****References:**

<http://technet.microsoft.com/en-us/library/ms190757.aspx>  
<http://technet.microsoft.com/en-us/library/ms189493.aspx>  
<http://technet.microsoft.com/en-us/library/ms365418.aspx>  
<http://technet.microsoft.com/en-us/library/ms189272.aspx>  
<http://technet.microsoft.com/en-us/library/ms179478.aspx>

**Question: 41**

You have a SQL Server 2012 database named Database1. You execute the following code:

```

CREATE TABLE Sales
(
    ID int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    OrderDate char(10) NOT NULL,
    Amount decimal
);
GO

CREATE INDEX IX_Sales_OrderDate
    ON Sales(OrderDate)
    INCLUDE (ID, Amount);
GO

CREATE PROC usp_Proc1(
    @date1 datetime,
    @date2 datetime
)
AS
SELECT ID, OrderDate, Amount
    FROM Sales
    WHERE CAST(OrderDate AS datetime)
        BETWEEN @date1 AND @date2
    ORDER BY ID;
GO

```

You insert 3 million rows into Sales.

You need to reduce the amount of time it takes to execute Proc1.

What should you do?

- A. Run the following: ALTER TABLE Sales ALTER COLUMN OrderDate datetime NOT NULL;
- B. Change the WHERE clause to the following: WHERE OrderDate BETWEEN CAST(@date1,char(10)) AND CAST(@date2,char(10))
- C. Remove the ORDER BY clause from the stored procedure.
- D. Run the following:

```

DROP INDEX IX_Sales_OrderDate;
GO
CREATE INDEX IX_Sales_OrderDate ON Sales(OrderDate);
GO

```

---

**Answer: D**

---

Explanation:

Reference:

[http://www.c-sharpcorner.com/UploadFile/skumar\\_mca/good-practices-to-write-the-stored-procedures-in-sqlserver/](http://www.c-sharpcorner.com/UploadFile/skumar_mca/good-practices-to-write-the-stored-procedures-in-sqlserver/)

---

### Question: 42

---

You execute the following code:

```
CREATE TABLE dbo.Customers
(
    id int PRIMARY KEY,
    CustomerName char(10)
)
```

You create a nonclustered index named IX\_CustomerName on the CustomerName column.

You execute the following query:

```
SELECT * FROM dbo.Customers
WHERE LEFT(CustomerName,1) = 'a'
```

You need to reduce the amount of time it takes to execute the query.

What should you do?

- A. Partition the table and use the CustomerName column for the partition scheme.
- B. Replace IX\_CustomerName with a clustered index.
- C. Replace LEFT(CustomerName ,1) = 'a' with CustomerName LIKE 'a%'.
- D. Replace LEFT(CustomerName ,1) = 'a' with SUBSTRING(CustomerName ,1,1) - 'a'.

---

**Answer: C**

---

Explanation:

Explanation:

<http://msdn.microsoft.com/en-us/library/ms179859.aspx>  
<http://msdn.microsoft.com/en-us/library/ms187748.aspx>

### Question: 43

---

You administer an instance of SQL Server 2014.

You are tasked with tuning a common set of queries. You have the results of several test executions, along with query plans. The schema and the data for all database object(s) used remain unchanged between executions. The QueryTime column is defined as a computed column that uses the GETDATEO system function. The query plans and results are shown below:

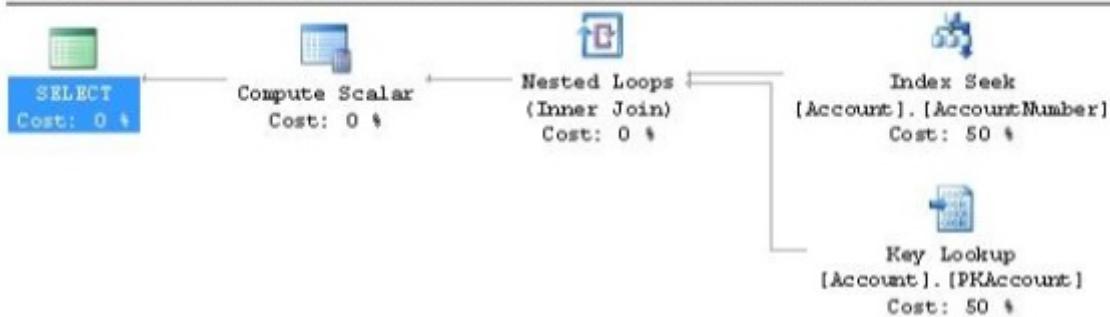
```
SELECT *
FROM   dbo.Account
WHERE  AccountNumber = 'A10000001'
```

---

Query 1: Query cost (relative to the batch): 100%

```
SELECT * FROM [dbo].[Account] WHERE [AccountNumber]=@1
```

---



AccountID	AccountNumber	Name	QueryTime
-----	-	-	-----
0F63B176-7257-4480-9D0E-126C45 CEFFF1	A10000001	Don Hall	2014-01-29 18:01:50.923

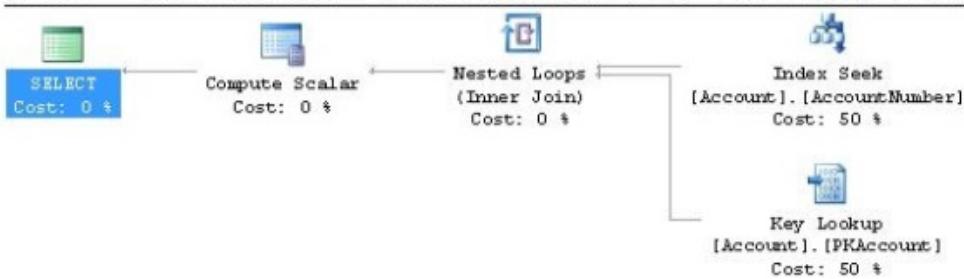
```
SELECT *
FROM dbo.Account
WHERE AccountNumber IN( 'A10000001','Q88700323','R00000012')
GO
```

---

Query 1: Query cost (relative to the batch): 100%

```
SELECT * FROM dbo.Account WHERE AccountNumber IN( 'A10000001','Q88700323','R00000012')
```

---



AccountID	AccountNumber	Name	QueryTime
-----	-	-	-----
0F63B176-7257-4480-9D0E-126C45 CEFFF1	A10000001	Don Hall	2014-01-29 20:14:05.660
337227AA-3A4B-4B28-8E02-0ADEAD 06EA10	Q88700323	Darren Parker	2014-01-29 20:14:05.660
C4980E64-874E-4640-8826- BAF35D8FB845	R00000012	Carol Philips	2014-01-29 20:14:05.660

You need to make an initial diagnosis of the situation, based solely on this input.

Which two statements can you make about the performance characteristics of this query? Each correct answer presents a complete solution. Choose two.

- A. The queries would perform better if the index named AccountNumber included the Name and QueryTime column.
- B. The queries would perform worse if the index named AccountNumber included the NameColumn.
- C. The queries would perform better if the index named AccountNumber included the Name column.
- D. The object Account is a table, with an index having a leading column of AccountNumber and a Clustered Index named PKAccount.
- E. The object Account is an indexed view, with an index having a leading column of AccountNumber and a Clustered Index named PKAccount.
- F. The object Account is a view, joining the Account-AccountNumber and Account.PKAccount objects together.

---

**Answer: B, D**

---

**Question: 44**

---

You have a SQL Server 2014 database named Database1.

You execute the following code:

```
CREATE TABLE Sales
(
    ID int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    OrderDate char(10) NOT NULL,
    Amount decimal
);
GO

CREATE INDEX IX_Sales_OrderDate
    ON Sales(OrderDate)
    INCLUDE (ID, Amount);
GO

CREATE PROC usp_Proc1(
    @date1 datetime,
    @date2 datetime
)
AS
SELECT ID, OrderDate, Amount
    FROM Sales
    WHERE CAST(OrderDate AS datetime)
        BETWEEN @date1 AND @date2
    ORDER BY ID;
GO
```

You insert 3 million rows into Sales.

You need to reduce the amount of time it takes to execute Proc1.

What should you do?

- C A. Change the query inside Proc1 to:

```
SELECT ID, OrderDate, Amount  
FROM Sales  
WHERE OrderDate BETWEEN CONVERT(char(10),@date1,112)  
AND CONVERT(char(10),@date2,112)  
ORDER BY ID;
```

- C B. Change the definition of Proc1 to:

```
CREATE PROC usp_Proc1(  
@date1 int, @date2 int  
)
```

- C C. Change the query inside Proc1 to:

```
SELECT ID, OrderDate, Amount  
FROM Sales  
WHERE CAST(OrderDate AS datetime) < @date1  
AND CAST(OrderDate AS datetime) > @date2  
ORDER BY ID;
```

- C D. Change the definition of Proc1 to:

```
CREATE PROC usp_Proc1(  
@date1 date, @date2 date  
)
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D

---

**Answer: A**

---

### Question: 45

---

DRAG DROP

You have two existing tables, one named COUNTRY and the other named STATES.  
The tables are defined as follows:

```

CREATE TABLE COUNTRY
(
Country_Abbr CHAR(3) PRIMARY KEY CLUSTERED,
Country_Description VARCHAR(30) Not Null
)
CREATE TABLE STATES
(
State_Abbr CHAR(2) PRIMARY KEY CLUSTERED,
State_Description VARCHAR(30) Not Null,
Country_Abbr CHAR(3) Not Null
)

```

You need to set up a rule that every STATE.Country\_Abbr must match an existing record in the COUNTRY table. Develop the solution by selecting and arranging the required code blocks in the correct order. You may not need all of the code blocks.

Code Blocks	Answer Area
REFERENCES STATES (Country_Abbr)	
REFERENCES COUNTRY (Country_Abbr)	
ON STATES	
FOREIGN KEY (Country_Abbr)	
ON COUNTRY	
ADD CONSTRAINT FK_StateCountry	
ON COUNTRY_ABBR	
ALTER TABLE COUNTRY	
ADD FOREIGN KEY FK_StateCountry	
ALTER TABLE STATES	

---

**Answer:**

Box 1:

**ALTER TABLE STATES**

Box 2:

**ADD CONSTRAINT FK\_StateCountry**

Box 3:

**FOREIGN KEY (Country\_Abbr)**

Box 4:

**REFERENCES COUNTRY (Country\_Abbr)**

Explanation:

Note:

To allow naming of a FOREIGN KEY constraint, and for defining a FOREIGN KEY constraint on multiple columns, use the following SQL syntax:

MySQL / SQL Server / Oracle / MS Access:

ALTER	TABLE	Orders
ADD	CONSTRAINT	fk_PerOrders
FOREIGN	KEY	(P_Id)
REFERENCES Persons(P_Id)		

---

**Question: 46**

You use SQL Server 2012 to maintain the data used by the applications at your company.

You plan to create a disk-based table named Table1 by using the following statement. (Line numbers are included for reference only.)

```

01 CREATE TABLE dbo.table1(
02   ID int IDENTITY(1,1) NOT NULL,
03
04   Email varchar(100) NULL,
05   CONSTRAINT PK_table1 PRIMARY KEY CLUSTERED(ID ASC)
06 )

```

You need to ensure that Table1 contains a column named UserName. The UserName column will:

Store string values in any language.

Accept a maximum of 200 characters.

Be case-insensitive and accent-insensitive.

Which code segment should you add at line 03?

- A. UserName nvarchar(200) COLLATE Latin1\_General\_CS\_AS NOT NULL,
- B. UserName varchar(200) COLLATE Latin1\_General\_CI\_AI NOT NULL,
- C. UserName varchar(200) COLLATE Latin 1\_General\_CS\_AS NOT NULL,
- D. UserName nvarchar(200) COLLATE Latin1\_General\_CI\_AI NOT NULL,

---

**Answer: D**

---

**Question: 47**

DRAG DROP

You need to recommend a backup process for data warehouse database.

The solution must meet the following requirements:

Ensure that if a hardware failure occurs, you can bring the database online without losing more than 24 hours of transactions.

Minimize the amount of administrative effort required to restore any lost data.

Minimize the space used by transaction logs.

What should you include in the recommendation?

To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions	Work Area
Perform a weekly full backup of the database.	
Ship the logs to a secondary server.	
Set the database to the simple recovery model.	
Set the database to the full recovery model.	
Create a database snapshot.	
Perform a backup of the transaction log every hour.	
Perform a differential backup of the database every night.	

**Answer:**

Box 1: Set the database to the simple recovery model.

Box 2: Perform a weekly full backup of the database.

Box 3: Perform a differential backup of the database every night.

Explanation:

Note:

\* Simple recovery model

No log backups.

\* Full recovery model

Requires log backups

Recovery Models (SQL Server)

Full Database Backups (SQL Server)

Differential Backups (SQL Server)

**Question: 48**

DRAG DROP

You are planning a SQL Server 2012 deployment.

The corporate security policy states that all Windows servers must be installed in an environment that reduces the attack surface.

You plan to deploy two SQL Server instances named SQL1 and SQL2 that must meet the following requirements:

SQL1 will host databases for a line-of-business application that requires 32 GB of RAM

SQL2 will host SQL Server Reporting Services and application databases that require 16 GB of RAM.

You need to recommend an operating system for each SQL Server instance. The solution must minimize licensing costs.

What should you recommend?

To answer, drag the appropriate operating system to the correct server in the answer area.

<b>Operating Systems</b>		<b>Answer Area</b>
	a full installation of Windows Server 2008 R2 Standard	SQL1      Operating system
	a Server Core installation of Windows Server 2008 R2 Standard	SQL2      Operating system
	a full installation of Windows Server 2008 R2 Enterprise	
	a Server Core installation of Windows Server 2008 R2 Enterprise	

**Answer:**

SQL1	a Server Core installation of Windows Server 2008 R2 Standard
SQL2	a full installation of Windows Server 2008 R2 Standard

**Question: 49**

You are designing a database named DB1.

Changes will be deployed to DB1 every Wednesday night.

You need to recommend a strategy to deploy the changes to DB1. The strategy must meet the following requirements:

The strategy must not disrupt backup operations.

DB1 must be online while the changes are deployed.

You must be able to undo quickly any changes made to objects.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Perform a copy-only database backup before the changes are deployed. If the deployment fails, restore the database to another server and recover the original objects from the restored database.
- B. Create a database snapshot. If the deployment fails, recover the objects from the database snapshot.
- C. Create a database snapshot. If the deployment fails, revert the database to the database snapshot.
- D. Perform a full database backup before the changes are deployed. If the deployment fails, restore the database to another server and recover the original objects from the restored database.

**Answer: C**

Explanation:

Database Snapshots (SQL Server)

**Question: 50**

You have a database hosted on SQL Server 2012 R2. The database contains 5 million rows.

You need to recommend a repeatable method to migrate the database to SQL Database.

Which method should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Create a SQL Server Integration Services (SSIS) package, and then run the package.
- B. Back up the database, and then restore the database.
- C. Extract a data-tier application, and then import the application.
- D. Generate scripts to create all of the database objects and all of the data, and then execute the scripts by using SQL Azure.

---

**Answer: A**

---

Explanation:

SQL Server Integration Services

Most flexibility

Data Transfer Efficiency: Good

/ SSIS can be used to perform a broad range of data migration tasks. SSIS provides support for complex workflow and data transformation between the source and destination. It is a good choice to transfer of data for databases that require many changes to work on Microsoft Azure SQL Database. You can use SSIS data transfer packages with another mechanism for transferring the database schema, such as a Data-tier Application package.

SSIS for Azure and Hybrid Data Movement

---

**Question: 51**

---

You are the new database administrator for a SQL Server 2014 instance.

You conduct an assessment on the instance and determine that the auto create statistics setting on the database named DB1 has been turned off. You see no evidence that any maintenance has been occurring.

You want to set up monitoring to see if query performance is being affected.

You need to set up a monitoring process that will capture any cases where statistics could have been useful if they existed.

What should you do?

- A. Create a SQL Server Agent job to execute DBCC SHOWSTATISTICS on each of the primary key columns in the database.
- B. Use the missing\_column\_statistics extended event.
- C. Query the sys.statistics system view to see all cases where the statistics were last needed.
- D. Write a query using the sys.dm\_db\_missing\_index\_group\_stats DMV Joining to sys.indexes, filtering on is\_hypothetical.

---

**Answer: B**

---

Explanation:

The Missing Column Statistics event class indicates that column statistics that could have been useful for the optimizer are not available.

By monitoring the Missing Column Statistics event class, you can determine if there are statistics missing for a column used by a query. This can cause the optimizer to choose a less efficient query plan than expected.

Missing Column Statistics Event Class

---

**Question: 52**

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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 server-scope 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.

sys.dm\_exec\_sessions (Transact-SQL)

---

### **Question: 53**

---

You are creating a database that will store usernames and credit card numbers for an application.

You need to recommend a solution to store and reuse the credit card numbers in the database.

What should you recommend?

More than one answer choice may achieve the goal. Select the BEST answer.

- A. Data encryption
- B. Transparent Data Encryption (TDE)
- C. Encrypting File System (EFS)
- D. Data hashing

---

**Answer: B**

---

Explanation:

If we are going to encrypt credit card number for storage, then we should have Data Encryption Key (DEK) for encrypting the credit card number.

<http://msdn.microsoft.com/en-us/library/bb934049.aspx>

---

### **Question: 54**

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**HOTSPOT**

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:

OrderID	OrderDate	CustomerID	IsTaxable	SubTotal	TaxAmount	Freight
1	11/13/2013 11:22	58465	NULL	\$ 25.99	NULL	\$ 5.40
2	11/15/2013 9:34	12588	NULL	\$ 42.00	NULL	NULL
3	12/1/2013 14:34	85477	NULL	\$ 23.99	NULL	\$ 4.85
4	12/17/2013 4:31	58742	NULL	\$ 19.00	NULL	NULL
5	1/3/2014 8:22	12477	NULL	\$ 13.50	NULL	\$ 5.40
6	1/5/2014 18:39	63214	NULL	\$ 5.69	NULL	NULL
7	1/15/2014 14:22	85471	NULL	\$ 18.99	NULL	\$ 7.85
8	1/19/2014 3:20	85412	NULL	\$ 65.77	NULL	NULL
9	1/22/2014 13:44	12588	NULL	\$ 22.38	NULL	\$ 7.35
10	1/28/2014 10:14	85471	1	\$ 24.99	\$ 2.19	\$ 5.40

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.

**Answer Area**

Column Names	Sparse	Not Sparse
OrderID	<input type="radio"/>	<input type="radio"/>
OrderDate	<input type="radio"/>	<input type="radio"/>
CustomerID	<input type="radio"/>	<input type="radio"/>
IsTaxable	<input type="radio"/>	<input type="radio"/>
SubTotal	<input type="radio"/>	<input type="radio"/>
TaxAmount	<input type="radio"/>	<input type="radio"/>
Freight	<input type="radio"/>	<input type="radio"/>

**Answer:****Answer Area**

Column Names	Sparse	Not Sparse
OrderID	<input type="radio"/>	<input checked="" type="checkbox"/>
OrderDate	<input type="radio"/>	<input checked="" type="checkbox"/>
CustomerID	<input type="radio"/>	<input checked="" type="checkbox"/>
IsTaxable	<input checked="" type="checkbox"/>	<input type="radio"/>
SubTotal	<input type="radio"/>	<input checked="" type="checkbox"/>
TaxAmount	<input checked="" type="checkbox"/>	<input type="radio"/>
Freight	<input checked="" type="checkbox"/>	<input type="radio"/>

Explanation:

Note:

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 retrieve nonnull values. Consider using sparse columns when the space saved is at least 20 percent to 40 percent.

Use Sparse Columns

**Question: 55**

You have a table named ORDERS that contains 10,514,003 Orders. The ORDERS table has an IDENTITY (1,1) column named ORDERID. ORDERID is the UNIQUE CLUSTERED INDEX and PRIMARY KEY for the table. The first ORDERID is 1.

There are no missing ORDERIDs in the set.

Based on table usage patterns, you decide to use partitioning on this table based off of the ORDERID column.

You need to create the following partitions:

Which code should you use to create the partition function?

- A. `CREATE PARTITION FUNCTION pfOrderIDRange (int) AS RANGE LEFT FOR VALUES (7500000,10000000)`
- B. `CREATE PARTITION FUNCTION pfOrderIDRange (int) AS RANGE LEFT FOR VALUES (0,7500000,10000000)`
- C. `CREATE PARTITION FUNCTION pfOrderIDRange (int) AS RANGE RIGHT FOR VALUES (7500000,10000000)`
- D. `CREATE PARTITION FUNCTION pfOrderIDRange (int) AS RANGE RIGHT FOR VALUES (0,7500000,10000000)`

- A. Option A
- B. Option B
- C. Option C
- D. Option D

---

**Answer: A**

---

Explanation:

Ref: <http://msdn.microsoft.com/en-us/library/ms187802.aspx>

---

### **Question: 56**

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DRAG DROP

You administer a SQL Server 2014 instance.

The server is capable of 10000 IO/second (IOPS). During the time period when the second process executes, the disk IO can reach 7000 IOPS, and CPU use can average 30% over the eight processors.

The first process summarizes the day's activity executed by a login of [SummaryReportLogin]. The second process submits transactions executed by a login of [ETLLogin].

A Resource Governor classifier function has been created to return WG\_Low for connections from the [ETLLogin] and [SummaryReportLogin].

You need to set up the Resource Group and Workgroup Pools on the instance.

You have the following requirements:

Both processes must never use more than 50 percent of the CPU at any one time.

The number of active queries that these processes can execute simultaneously should be limited to a maximum of 10.

The SummaryReportLogin process must always achieve the minimum IOPS required to be minimally affected during executing the ETLLogin processes.

Develop the solution by selecting and arranging the required code blocks in the correct order.

You may not need all of the code blocks.

**Code Blocks**

```
MAX_IOPS_PER_VOLUME=3000
)
```

```
CREATE WORKLOAD GROUP WG_Low
WITH
(
    MAX_DOP = 4
)
USING RP_Low
```

```
CREATE WORKLOAD GROUP WG_Low
WITH
(
GROUP_MAX_REQUESTS=10
)
USING RP_Low
```

```
CREATE WORKLOAD GROUP WG_Low
WITH
(
    REQUEST_MAX_CPU_TIME_SEC = 100,
    MAX_DOP = 4
)
USING RP_Low
```

```
CREATE RESOURCE POOL RP_Low
WITH
(
CAP_CPU_PERCENT=50,
MAX_CPU_PERCENT=30,
```

```
CREATE RESOURCE POOL RP_Low
WITH
(
AFFINITY_SCHEDULER = (0 to 50),
MAX_CPU_PERCENT=30,
```

```
CREATE RESOURCE POOL RP_Low
WITH
(
MAX_CPU_PERCENT=50,
```

```
)
```

**Answer Area****Answer:**

Box 1:

```
CREATE RESOURCE POOL RP_Low
WITH
(
CAP_CPU_PERCENT=50,
MAX_CPU_PERCENT=30,
```

Box 2:

```
MAX_IOPS_PER_VOLUME=3000  
)
```

Box 3:

```
CREATE WORKLOAD GROUP WG_Low  
WITH  
(  
GROUP_MAX_REQUESTS=10  
)  
USING RP_Low
```

Explanation:

Note:

**CREATE WORKLOAD RESOURCE POOL**

\* Resource pools. A resource pool, represents the physical resources of the server. You can think of a pool as a virtual SQL Server instance inside of a SQL Server instance.

\* Workload groups. A workload group serves as a container for session requests that have similar classification criteria. A workload allows for aggregate monitoring of the sessions, and defines policies for the sessions. Each workload group is in a resource pool.

\* CAP\_CPU\_PERCENT =value

Specifies a hard cap on the CPU bandwidth that all requests in the resource pool will receive. Limits the maximum CPU bandwidth level to be the same as the specified value. value is an integer with a default setting of 100. The allowed range for value is from 1 through 100.

\* MIN\_IOPS\_PER\_VOLUME =value

Specifies the minimum I/O operations per second (IOPS) per disk volume to reserve for the resource pool.

\* GROUP\_MAX\_REQUESTS =value

Specifies the maximum number of simultaneous requests that are allowed to execute in the workload group. value must be a 0 or a positive integer.

## **Question: 57**

**DRAG DROP**

You are the senior database administrator at Contoso, Ltd. You manage a SQL Server 2014 Instance, with multiple databases used for reporting.

You have recently hired a junior database administrator. You want this person to be able to view the database structures on the server, but you do not want him or her to be able to make changes or see the data in the tables.

The new hire's login credentials are as follows:

Login name: JFree

Password: Jx672\$qse

You want the new hire to be required to change his password on his next login.

The code that is produced should execute no matter the initial database context in which it is started.

You need to write the code required to give the new hire only the desired access, using the smallest number of steps.

Develop the solution by selecting and arranging the required code blocks in the correct order. You may not need all of the code blocks.

Code Blocks	Answer Area
USE Tempdb; CREATE LOGIN [JFree] WITH PASSWORD = 'Jx672\$qse' MUST_CHANGE, CHECK_EXPIRATION = ON;	
USE MASTER; CREATE LOGIN [JFree] WITH PASSWORD = 'Jx672\$qse' CHANGE ON LOGIN, CHECK_EXPIRATION = ON;	
GRANT VIEW SERVER STATE TO [JFree];	
USE Master; CREATE LOGIN [JFree] WITH PASSWORD = 'Jx672\$qse' MUST_CHANGE, CHECK_EXPIRATION = ON;	
ALTER SERVER ROLE [securityadmin] ADD MEMBER [JFree];	
GRANT CONNECT ANY DATABASE TO [JFree]; GRANT SELECT ALL USER SECURABLES TO [JFree];	
GRANT VIEW ANY DEFINITION TO [JFree]; GRANT CONNECT ANY DATABASE TO [JFree];	

---

**Answer:**

---

USE Master; CREATE LOGIN [JFree] WITH PASSWORD = 'Jx672\$qse' MUST_CHANGE, CHECK_EXPIRATION = ON;
GRANT VIEW ANY DEFINITION TO [JFree]; GRANT CONNECT ANY DATABASE TO [JFree];

---

**Question: 58**

---

You have a query that is used by a reporting dashboard.  
 Users report that the query sometimes takes a long time to run.  
 You need to recommend a solution to identify what is causing the issue.  
 What should you recommend?  
 More than one answer choice may achieve the goal. Select the BEST answer.

- A. Set the blocked process threshold, and then run SQL Server Profiler.
- B. Set the blocked process threshold, and then create an alert.
- C. Enable trace flag 1204, and then create an alert.
- D. Create a job that queries the sys.dm\_os\_waiting\_tasks dynamic management view.

---

**Answer: B**

---

Explanation:

Step 1: Turn on the blocked process report. This will look for any blocking taking 20 seconds or longer.

--Make sure you don't have any pending changes

SELECT \*

FROM sys.configurations

WHERE value <> value\_in\_use;

```
GO  
exec sp_configure 'show advanced options', 1;  
GO  
RECONFIGURE  
GO  
exec sp_configure 'blocked process threshold (s)', 20;  
GO  
RECONFIGURE  
GO  
Step 2: Set up a trace to capture the blocked process report. Run it as a server side trace.  
blocked process threshold Server Configuration Option
```

---

### **Question: 59**

---

You administer a SQL Server 2014 instance.

Users report that the SQL Server has seemed slow today. A large database was being restored for much of the day, which could be causing issues.

You want to write a query of the system views that will report the following:

Number of users that have a connection to the server

Whether a user's connection is active

Whether any connections are blocked

What queries are being executed

Whether the database restore is still executing and, if it is, what percentage of the restore is complete

Which system objects should you use in your query to best achieve this task?

- A. sys.dm\_exec\_requests, sys.dm\_exec\_sessions, sys.objects
- B.sys.dm\_exec\_sessions, sys.dm\_exec\_query\_stats, sys.dm\_exec\_query\_text,sys.objects
- C.sys.sysprocesses, sys.dm\_exec\_query\_text, sys.objects
- D.sys.dm\_exec\_requests, sys.dm\_exec\_sessions, sys.dm\_exec\_query\_text

---

### **Answer: D**

---

Explanation:

\* sys.dm\_exec\_requests

Returns information about each request that is executing within SQL Server.

\* sys.dm\_exec\_sessions

Returns one row per authenticated session on SQL Server. sys.dm\_exec\_sessions is a server-scope view that shows information about all active user connections and internal tasks. This information includes client version, client program name, client login time, login user, current session setting, and more.

\* sys.dm\_exec\_query\_text

Returns the text of the SQL batch that is identified by the specified sql\_handle.

sys.dm\_exec\_requests (Transact-SQL)

sys.dm\_exec\_sessions (Transact-SQL)