Lab Answer Key: Module 4: Planning and Implementing a Backup Strategy

Lab: Backing Up Databases

Exercise 1: Backing Up Databases

Task 1: Prepare the Lab Environment

1. Ensure that the 20462C-MIA-DC and 20462C-MIA-SQL virtual machines are both running, and then log on to 20462C-MIA-SQL as

   ADVENTUREWORKS\Student with the password **Pa$$w0rd**.

2. In the D:\Labfiles\Lab04\Starter folder, right-click **Setup.cmd**, and then click **Run as administrator**.

3. Click **Yes** when prompted to confirm you want to run the command file, and wait for the script to finish.

Task 2: Set the Recovery Model

1. Start SQL Server Management Studio and connect to the **MIA-SQL** database engine using Windows authentication.

2. In Object Explorer, expand **Databases**. Then right-click **HumanResources** and click **Properties**.

3. In the **Database Properties – HumanResources** dialog box, on the **Options** page, in the **Recovery model** drop-down list, select **Simple**. Then click **OK**.

Task 3: Perform a Full Database Backup

1. In SQL Server Management Studio, in Object Explorer, under **Databases**, right-click

HumanResources, point to **Tasks**, and click **Back Up**.

2. In the **Backup Up Database – HumanResources** dialog box, ensure that **Backup type** is set to **Full**, and in the **Destination** section, select the existing file path and click **Remove**. Then click **Add** and in the **Select Backup Destination** dialog box, enter the file name **R:\Backups\HumanResources.bak** and click **OK**.

3. In the **Backup Up Database – HumanResources** dialog box, on the **Media Options** page, select **Back up to a new media set, and erase all existing backup sets**. Then enter the new media set name **HumanResources Backup**.

4. In the **Backup Up Database – HumanResources** dialog box, on the **Backup Options** page, note the default backup name. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.

5. When the backup has completed successfully, click **OK**.

6. Verify that the backup file **HumanResources.bak** has been created in the R:\Backups folder, and note its size.

Task 4: Modify Data in the Database

1. In SQL Server Management Studio, click **New Query**.

2. Enter the following Transact-SQL code in the query pane, and then click **Execute**. Alternatively, you can open the **Update HumanResources.sql** file in the D:\Labfiles\Lab04\Starter folder.

```
UPDATE HumanResources.dbo.Employee

SET PhoneNumber='151-555-1234'

WHERE BusinessEntityID = 259;
```

3. Note the number of rows affected, and then close the query pane without saving the file.

Task 5: Perform Another Full Database Backup

1. In SQL Server Management Studio, in Object Explorer, under **Databases**, right-click **HumanResources**, point to **Tasks**, and click **Back Up**.
2. In the **Backup Up Database – HumanResources** dialog box, ensure that **Backup type** is set to **Full**, and in the **Destination** section, verify that **R:\Backups \HumanResources.bak** is listed.
3. In the **Backup Up Database – HumanResources** dialog box, on the **Media Options** page, ensure that **Back up to the existing media set** and **Append to the existing backup set** are selected.
4. In the **Backup Up Database – HumanResources** dialog box, on the **Backup Options** page, change the backup name to **HumanResources-Full Database Backup 2**. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.
5. When the backup has completed successfully, click **OK**.
6. View the **HumanResources.bak** backup file in the R:\Backups folder, and verify that its size has increased.

Task 6: View the Backup and Restore Events Report

1. In SQL Server Management Studio, in Object Explorer, under **Databases**, right-click **HumanResources**, point to **Reports**, point to **Standard Reports**, and click **Backup and Restore Events**.
2. In the **Backup and Restore Events [HumanResources]** report, expand **Successful Backup Operations** and view the backup operations that have been performed for this database.
3. In the **Device Type** column, expand each of the **Disk (temporary)** entries to view details of the backup media set file.
4. Close the report pane.

Result: At the end of this exercise, you will have backed up the HumanResources database to R:\Backups\HumanResources.bak.

Exercise 2: Performing Database, Differential, and Transaction Log Backups

Task 1: Set the Recovery Model

1. In SQL Server Management Studio, in Object Explorer, expand **Databases**. Then right-click **InternetSales** and click **Properties**.
2. In the **Database Properties – InternetSales** dialog box, on the **Options** page, in the **Recovery model** drop-down list, ensure that **Full** is selected. Then click **OK**.

Task 2: Perform a Full Database Backup

1. In Object Explorer, under **Databases**, right-click **InternetSales**, point to **Tasks**, and click **Back Up**.
2. In the **Backup Up Database – InternetSales** dialog box, ensure that **Backup type** is set to **Full**, and in the **Destination** section, select the existing file path and click **Remove**. Then click **Add** and in the **Select Backup Destination** dialog box, enter the file name **R:\Backups\InternetSales.bak** and click **OK**.
3. In the **Backup Up Database – InternetSales** dialog box, on the **Media Options** page, select **Back up to a new media set, and erase all existing backup sets**. Then enter the new media set name **InternetSales Backup**.
4. In the **Backup Up Database – InternetSales** dialog box, on the **Backup Options** page, note the default backup name. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.
5. When the backup has completed successfully, click **OK**.
6. Verify that the backup file **InternetSales.bak** has been created in the R:\Backups folder, and note its size.

Task 3: Modify Data in the Database

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**. Alternatively, you can open the **Update InternetSales.sql** file in the D:\Labfiles\Lab04\Starter folder, and select the first batch of code.

```
UPDATE InternetSales.dbo.Product
SET ListPrice = ListPrice * 1.1
WHERE ProductSubcategoryID = 1;
```

3. Note the number of rows affected. Keep the script open, you will use it again in a later task.

Task 4: Perform a Transaction Log Backup

1. In Object Explorer, under **Databases**, right-click **InternetSales**, point to **Tasks**, and click **Back Up**.
2. In the **Backup Up Database – InternetSales** dialog box, in the **Backup type** list, select **Transaction Log**, and in the **Destination** section, verify that **R:\Backups\InternetSales.bak** is listed.
3. In the **Backup Up Database – InternetSales** dialog box, on the **Media Options** page, ensure that **Back up to the existing media set** and **Append to the existing backup set** are selected.
4. In the **Backup Up Database – InternetSales** dialog box, on the **Backup Options** page, change the backup name to **InternetSales-Transaction Log Backup**. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.
5. When the backup has completed successfully, click **OK**.
6. View the **InternetSales.bak** backup file in the R:\Backups folder, and verify that its size has increased.

Task 5: Modify Data in the Database

1. Modify the Transact-SQL code in the query pane as follows, and then click **Execute**. Alternatively, you can open the **Update InternetSales.sql** file in the D:\Labfiles\Lab04\Starter folder, and select the second batch of code.

```
UPDATE InternetSales.dbo.Product
SET ListPrice = ListPrice * 1.1
WHERE ProductSubcategoryID = 2;
```

2. Note the number of rows affected. Keep the script open, you will use it again in a later task.

Task 6: Perform a Differential Backup

1. In Object Explorer, under **Databases**, right-click **InternetSales**, point to **Tasks**, and click **Back Up**.
2. In the **Backup Up Database – InternetSales** dialog box, in the **Backup type** list, select **Differential**, and in the **Destination** section, verify that **R:\Backups\InternetSales.bak** is listed.
3. In the **Backup Up Database – InternetSales** dialog box, on the **Media Options** page, ensure that **Back up to the existing media set** and **Append to the existing backup set** are selected.
4. In the **Backup Up Database – InternetSales** dialog box, on the **Backup Options** page, change the backup name to **InternetSales-Differential Backup**. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.
5. When the backup has completed successfully, click **OK**.
6. View the **InternetSales.bak** backup file in the R:\Backups folder, and verify that its size has increased

Task 7: Modify Data in the Database

1. Modify the Transact-SQL code in the query pane as follows, and then click **Execute**.

Alternatively, you can open the **Update InternetSales.sql** file in the D:\Labfiles\Lab04\Starter folder, and select the third batch of code.

```
UPDATE InternetSales.dbo.Product
SET ListPrice = ListPrice * 1.1
WHERE ProductSubcategoryID = 3;
```

2. Note the number of rows affected. Then close the query pane without saving the file.

Task 8: Perform Another Transaction Log Backup

1. In Object Explorer, under **Databases**, right-click **InternetSales**, point to **Tasks**, and click **Back Up**.
2. In the **Backup Up Database – InternetSales** dialog box, in the **Backup type** list, select **Transaction Log**, and in the **Destination** section, verify that **R:\Backups\InternetSales.bak** is listed.
3. In the **Backup Up Database – InternetSales** dialog box, on the **Media Options** page, ensure that **Back up to the existing media set** and **Append to the existing backup set** are selected.
4. In the **Backup Up Database – InternetSales** dialog box, on the **Backup Options** page, change the backup name to **InternetSales-Transaction Log Backup 2**. Then in the **Set backup compression** list, select **Compress backup** and click **OK**.
5. When the backup has completed successfully, click **OK**.
6. View the **InternetSales.bak** backup file in the R:\Backups folder, and verify that its size has increased.

Task 9: Verify Backup Media

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**.

```
RESTORE HEADERONLY
FROM DISK = 'R:\Backups\InternetSales.bak';
GO
```

3. Verify that the backups you performed in this exercise are all listed.
4. Modify the Transact-SQL code as follows, and then click **Execute**.

```
RESTORE FILELISTONLY
FROM DISK = 'R:\Backups\InternetSales.bak';
GO
```

5. Note the database files that are included in the backups.
6. Modify the Transact-SQL code as follows, and then click **Execute**.

```
RESTORE VERIFYONLY
FROM DISK = 'R:\Backups\InternetSales.bak';
GO
```

7. Verify that the backup is valid. Then close the query pane without saving the file.

Result: At the end of this exercise, you will have backed up the InternetSales database to R:\Backups\InternetSales.bak.

Exercise 3: Performing a Partial Backup

Task 1: Set the Recovery Model

1. In SQL Server Management Studio, in Object Explorer, expand **Databases**. Then right-click **AWDataWarehouse** and click **Properties**.
2. In the **Database Properties – AWDataWarehouse** dialog box, on the **Options** page, in the **Recovery model** drop-down list, select **Simple**. Then click **OK**.

Task 2: Back Up the Read-Only Filegroup

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**.

```
BACKUP DATABASE AwDataWarehouse
FILEGROUP = 'Archive'
TO DISK = 'R:\Backups\AWDataWarehouse-Read-Only.bak'
WITH FORMAT, INIT, NAME = 'AWDataWarehouse-Archive', COMPRESSION;
```

3. Verify that the backup file **AWDataWarehouse-Read-Only.bak** has been created in the R:\Backups folder.

Task 3: Perform a Partial Backup

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**.

```
BACKUP DATABASE AWDataWarehouse
READ_WRITE_FILEGROUPS
TO DISK = 'R:\Backups\AWDataWarehouse-Read-Write.bak'
WITH FORMAT, INIT, NAME = 'AWDataWarehouse-Active Data', COMPRESSION;
```

3. Verify that the backup file **AWDataWarehouse-Read-Write.bak** has been created in the R:\Backups folder.

Task 4: Modify Data in the Database

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**. Alternatively, you can open the **Update AWDataWarehouse.sql** file in the D:\Labfiles\Lab04\Starter folder.

```
INSERT INTO AWDataWarehouse.dbo.FactInternetSales
VALUES
(1, 20080801, 11000, 5.99, 2.49);
```

3. Note the number of rows affected, and then close the query pane without saving the file.

Task 5: Perform a Differential Partial Backup

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**.

```
BACKUP DATABASE AWDataWarehouse
```

READ_WRITE_FILEGROUPS

TO DISK = 'R:\Backups\AWDataWarehouse-Read-Write.bak'

WITH DIFFERENTIAL, NOFORMAT, NOINIT, NAME = 'AWDataWarehouse-Active Data Diff', COMPRESSION;

Task 6: Verify Backup Media

1. In SQL Server Management Studio, click **New Query**.
2. Enter the following Transact-SQL code in the query pane, and then click **Execute**.

   RESTORE HEADERONLY

   FROM DISK = 'R:\Backups\AWDataWarehouse-Read-Only.bak';

   GO
3. View the backups on this backup media, and scroll to the right to view the **BackupTypeDescription** column.
4. Modify the Transact-SQL code as follows, and then click **Execute**.

   RESTORE HEADERONLY

   FROM DISK = 'R:\Backups\AWDataWarehouse-Read-Write.bak';

   GO
5. View the backups on this backup media, and scroll to the right to view the **BackupTypeDescription** column.
6. Close SQL Server Management Studio without saving any script files.

Result: At the end of this exercise, you will have backed up the read-only filegroup in the AWDataWarehouse to R:\Backups\AWDataWarehouse_Read-Only.bak; and you will have backed up the writable filegroups in the AWDataWarehouse to R:\Backups \AWDataWarehouse_Read-Write.bak