

## Common Table Expressions Lab Problems

- 1) Will the following code execute properly? Why or why not?

```
WITH Sales
AS (
    SELECT YEAR(OrderDate), TotalDue
    FROM Sales.SalesOrderHeader
)

SELECT *
FROM Sales
```

- 2) Using CTEs, find out, for each year the company hired new employees, how many employees the company hired for each year and how many employees they hired the previous year. Use the HumanResources.Employee table for this lab question. You should have return three columns: the hire year, the number of employees hired that year, and the number of employees hired the year before.
- 3) Using a CTE such that no functions are contained in the GROUP BY clause of the SELECT statement, find the number of products that began selling per year (using the Production.Product table and the SellStartDate column).
- 4) Using a CTE that references the Sales.SalesOrderHeader table, find each month's total sales for the year 2006. No functions should be used in either the WHERE or the GROUP BY clause of your SELECT statement.

## Common Table Expressions Lab Answers

### Question 1:

This query will fail at runtime because the first column of the CTE does not contain a name. Since every column in a table expression must have a name specified, the lack of a column alias will cause the query to return an error.

### Question 2:

```
WITH Hires
AS (
    SELECT
        YEAR(HireDate) AS HireYear,
        BusinessEntityID
    FROM HumanResources.Employee
), HireByYear AS (
    SELECT
        HireYear,
        COUNT(*) AS HireCount
    FROM Hires
    GROUP BY HireYear
)

SELECT
    H1.HireYear,
    H1.HireCount AS CurrentYearHireCount,
    H2.HireCount AS PriorYearHireCount
FROM HireByYear H1
LEFT OUTER JOIN HireByYear H2
ON H1.HireYear = H2.HireYear + 1
```

### Question 3:

```
WITH Products
AS (
    SELECT
        YEAR(SellStartDate) AS ProductSellStartYear,
        ProductID
    FROM Production.Product
)

SELECT
    ProductSellStartYear,
    COUNT(*) AS ProductCount
FROM Products
GROUP BY ProductSellStartYear
```

### Question 4:

```
WITH SalesMonth
AS (
    SELECT
        MONTH(OrderDate) AS OrderMonth,
        TotalDue
    FROM Sales.SalesOrderHeader
```

```
        WHERE YEAR(OrderDate) = 2006
    )

SELECT
    OrderMonth,
    SUM(TotalDue) AS MonthlySales
FROM SalesMonth
GROUP BY OrderMonth
ORDER BY 1
```