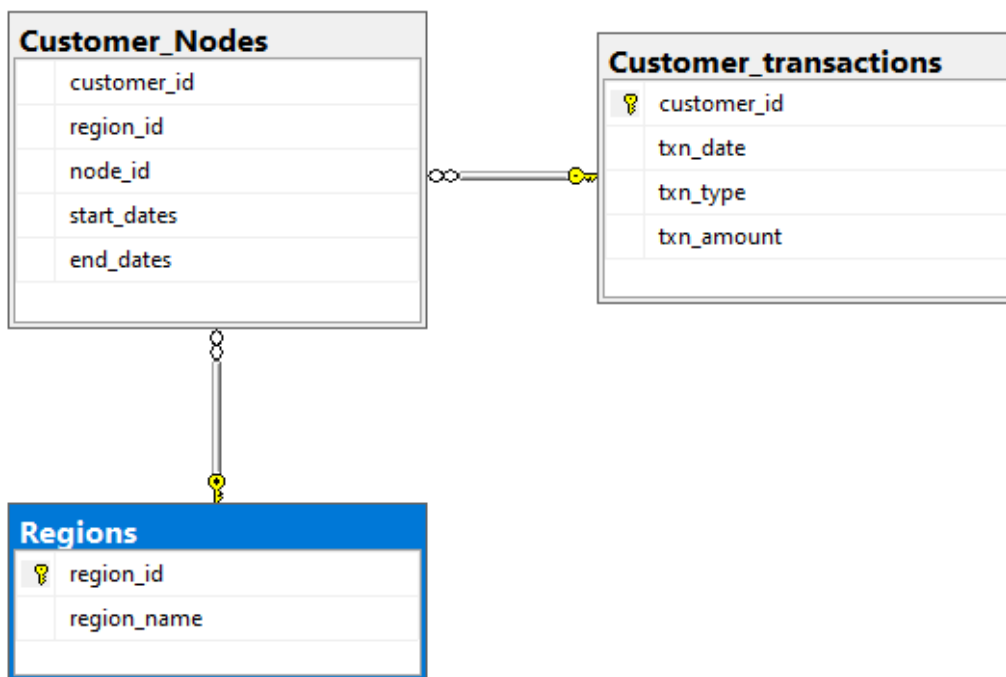


CASE STUDY 2

The basic schema would consist of 3 entities

- Regions
- Customer nodes
- Customer transactions



Driver Code

```
using DataBaseTrialConnection;
using System.Data.SqlClient;
using System.Configuration;
using System.Text;

class Program : ConfigurationSection
{
    public static void Main(String[] args)
    {

        AdoCase adoCase = new AdoCase();
        adoCase.OpenConn();
        Console.WriteLine();
    }
}
```

```

        Console.WriteLine("1. Display the number of nodes per region");
        Console.WriteLine();

        adoCase.ques1();
        Console.WriteLine();

        Console.WriteLine("2. Display the number of customers allocated to each
region");
        Console.WriteLine();

        adoCase.ques2();
        Console.WriteLine();

        Console.WriteLine("3. Display the total count and average amount of deposits
for all the customers");
        Console.WriteLine();

        adoCase.ques3();
        Console.WriteLine();

        Console.WriteLine("4. Display the closing balance for each customer at the
end of the month");
        Console.WriteLine();

        adoCase.ques4();
        Console.WriteLine();

        Console.WriteLine("5. Display the number of customers who have increased
their closing balance compared to the previous month.");
        Console.WriteLine();

        adoCase.ques5();

    }
}

```

Stub Code

1. Display the number of nodes per region
2. Display the number of customers allocated to each region
3. Display the total count and average amount of deposits for all the customers
4. Display the closing balance for each customer at the end of the month
5. Display the number of customers who have increased their closing balance compared to the previous month.

```

using System;
using System.Collections.Generic;
using System.Data.SqlClient;
using System.Data;
using System.Linq;

```

```

using System.Text;
using System.Threading.Tasks;

namespace DataBaseTrialConnection
{
    internal class AdoCase
    {
        SqlConnection conn;
        SqlDataAdapter da;
        DataSet ds;
        public void OpenConn()
        {
            //create connection
            conn = new SqlConnection(@"data source=DESKTOP-
QCJN09K\SQLEXPRESS;Initial catalog=Adocase_study; integrated security=SSPI");
            conn.Open();
            Console.WriteLine("opened");
        }
        public void ques1()
        {
            da = new SqlDataAdapter("select Regions.region_name, count(Distinct
Customer_Nodes.node_id)as node_counts from Regions inner join Customer_Nodes on
Regions.region_id = Customer_Nodes.region_id group by Regions.region_name;\r\n",
conn);

            ds = new DataSet();
            da.Fill(ds, "ado1");

            foreach (DataRow dr in ds.Tables["ado1"].Rows)
            {
                Console.WriteLine(dr[0].ToString() + "    " + dr[1].ToString());
            }
            conn.Close();
        }
        public void ques2()
        {
            da = new SqlDataAdapter("select Regions.region_name, count(Distinct
Customer_Nodes.customer_id) as customer_counts from Customer_Nodes inner join
Regions on Customer_Nodes.region_id=Regions.region_id group by
Regions.region_name;", conn);
            ds = new DataSet();
            da.Fill(ds, "ado1");
            Console.WriteLine("Region name ,      customer_counts");
            foreach (DataRow dr in ds.Tables["ado1"].Rows)
            {
                Console.WriteLine(dr[0].ToString() + "          " +
dr[1].ToString());
            }
            conn.Close();
        }
        public void ques3()
        {
            da = new SqlDataAdapter("select count(*) Total_count , AVG(txn_amount)
Average_amount from Customer_transactions where txn_type='deposit'", conn);
            ds = new DataSet();
            da.Fill(ds, "ado1");
            Console.WriteLine("TotalCounts , Average_Amount");
            foreach (DataRow dr in ds.Tables["ado1"].Rows)

```

```

        {
            Console.WriteLine(dr[0].ToString() + "          " +
dr[1].ToString());
        }
        conn.Close();
    }
    public void ques4()
    {
        da = new SqlDataAdapter("WITH All_customer as (SELECT customer_id,
DATEPART(MONTH,txn_date) as month,SUM(CASE WHEN txn_type ='deposit' then txn_amount
else 0 end) as deposit, SUM(CASE WHEN txn_type ='purchase' then -txn_amount else 0
end) as purchase , SUM(CASE WHEN txn_type ='withdrawal' then -txn_amount else 0 end)
as withdrawal from customer_transactions GROUP BY
customer_id,DATEPART(MONTH,txn_date)),All_customer_2 AS (SELECT
customer_id,month,(deposit +purchase +withdrawal) as total from All_customer) SELECT
customer_id, month, SUM(total) OVER (PARTITION BY customer_id ORDER BY
customer_id,month ROWS BETWEEN UNBOUNDED PRECEDING AND current ROW) AS balance FROM
All_customer_2", conn);
        ds = new DataSet();
        da.Fill(ds, "ado1");
        Console.WriteLine("cus_id, mon, bal");
        foreach (DataRow dr in ds.Tables["ado1"].Rows)
        {
            Console.WriteLine(dr[0].ToString() + "          " + dr[1].ToString() + "
" + dr[2].ToString());
        }
        conn.Close();
    }
    public void ques5()
    {
        da = new SqlDataAdapter("WITH All_customer as (SELECT customer_id,
DATEPART(MONTH,txn_date) as month,SUM(CASE WHEN txn_type ='deposit' then txn_amount
else 0 end) as deposit, SUM(CASE WHEN txn_type ='purchase' then -txn_amount else 0
end) as purchase , SUM(CASE WHEN txn_type ='withdrawal' then -txn_amount else 0 end)
as withdrawal from customer_transactions GROUP BY
customer_id,DATEPART(MONTH,txn_date)),All_customer_2 AS (SELECT
customer_id,month,(deposit +purchase +withdrawal) as total from All_customer) SELECT
count(*) AS change_in_balance FROM All_customer_2;", conn);
        ds = new DataSet();
        da.Fill(ds, "ado1");
        Console.WriteLine("Closing balance compare to previous month");
        foreach (DataRow dr in ds.Tables["ado1"].Rows)
        {

            Console.WriteLine(dr[0].ToString() );
        }
        conn.Close();
    }
}
}

```

Output:

```
Microsoft Visual Studio Debug Console
opened

1. Display the number of nodes per region
Africa 1
Asia 2
Central_America 1
Europe 1
Middle_East 2

2. Display the number of customers allocated to each region
Region name , customer_counts
Africa 1
Asia 2
Central_America 1
Europe 1
Middle_East 2

3. Display the total count and average amount of deposits for all the customers
TotalCounts , Average_Amount
7 4470

4. Display the closing balance for each customer at the end of the month
cus_id, mon, bal
123 2 1287
130 6 3121
139 8 6270
334 5 4256
512 9 9030
531 11 125
953 12 7203

5. Display the number of customers who have increased their closing balance compared to the previous month.
Closing balance compare to previous month
7

C:\Users\Administrator\source\repos\Prstise\DataBaseTrialConnection\bin\Debug\net6.0\DataBaseTrialConnection.exe (process 25808) exited with code 0.
Press any key to close this window . . .
```