CONESTOGA
Connect Life and Learning

COURSE CODE: 1372

PROGRAM CODE- PROG8651

SECTION – 10

ASSIGMENT TITTLE: Task 4 – Schema Control and Administration (A)

STUDENT NAME: VAISHNAVI GOPAL WADHWA

DATE: 01 DEC 2023

Tasks:

Your submission for this assessment will be formatted as an informal written report responding to your employer's work request(s). You are to address the following emails while referencing the client organization's Employee Database (first used in Project 2). Obtain, or create a copy of the Employee Database if you have previously built the Employee Database in a previous project then you may reuse said database on this individual assessment.

Question 1:

From: Matt Kozi <MKozi@cbr.org>
To: You
Subject: Employee Database administration
Hey,
I am not sure if anyone has briefed you on this, the department has been working towards standing up an intranet site to allow select employees the ability to pull data from the Employee Database that is in your administrative portfolio. The project is meant to reduce the departments dependence on submitting data requests to you and the other Database Administrators, simplifying the process by allowing direct access to relevant by diverse groups of internal users. We just wrapped up our meeting with the web developers, and before they can implement the employee page for our intranet site, they had a few observations about our employee database that we need to implement to meet data protection regulations. From what I could gather, there are a few key elements that we need to get into place now before any more work can be done on the system, as always, we must affect as little changes to the system as possible as there are a number of systems and applications already running off of the employee database and we can't afford to take it offline right now. The first thing that the dev's requested was that we needed to establish proper schemas for the database. For the schemas, we were looking at five general's groupings for the tables:

• Schema 1: Include any table that has general Information about the employee and their role.
• Schema 2: Include tables that have private or personal data which would be subject to a higher degree of government regulations. I do not really think we should let many people have access to the data on these tables, the last thing we need is a lawsuit.
• Facility: any non-personal data that does not contain address Information should be dumped into this schema. It does not matter if the tables are not really a perfect fit with 'facility' data, this will more-or less just be a catch all for any table we cannot place inside any of the other schemas.
• Schema 4: Anything to do with contact information must be grouped together in a single schema. This schema will need to be restricted to only certain roles, there is no need for everyone in the organization to be able to see into this subset of data.
• Address: this one is self-explanatory. You should come up with clear names for the schemas that have not been named yet, just call them whatever makes sense.

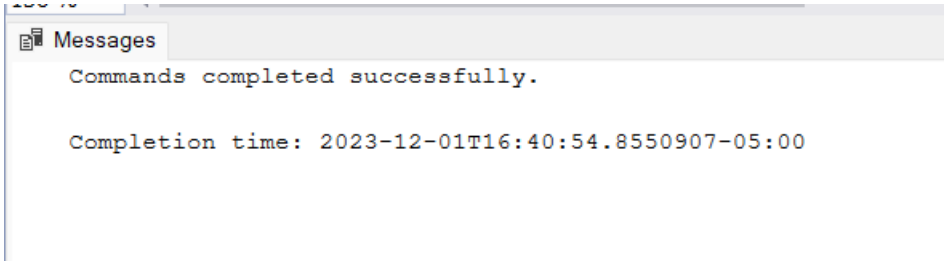
The developers for you to forward the SQL commands you used to create all the schemas and assign the existing tables to the appropriate schemas.
If I remember anything else I will email you and let you know, good luck.
Matt Kozi
Solutions Architect, Coffee Bean Roasters
mKozi@cbr.org

➔

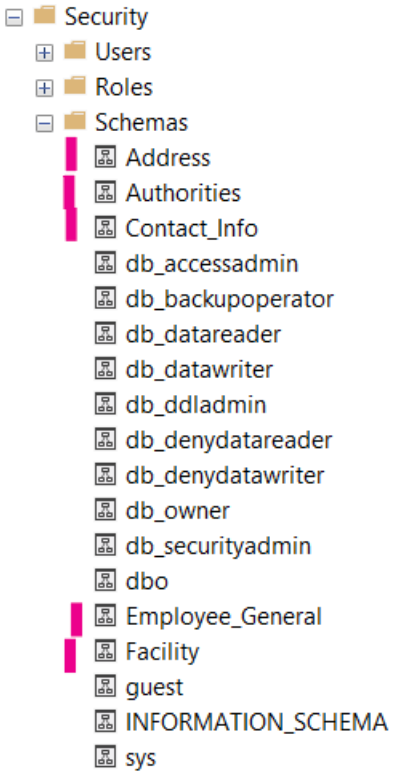
- Creating Schemas:

```
-- Creating Schemas:
GO
CREATE SCHEMA Employee_General --Schema1
GO
CREATE SCHEMA Authorities --Schema2
GO
CREATE SCHEMA Facility
GO
CREATE SCHEMA Contact_Info --Schema4
GO
CREATE SCHEMA [Address]
GO
```

OUTPUT:



FINAL OUTPUT:

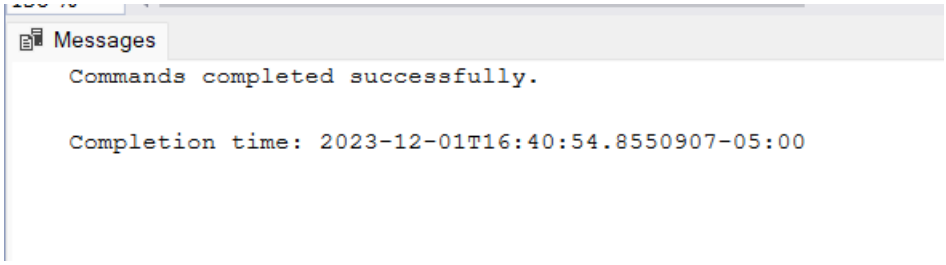


- Shifting table into their respective Schema:

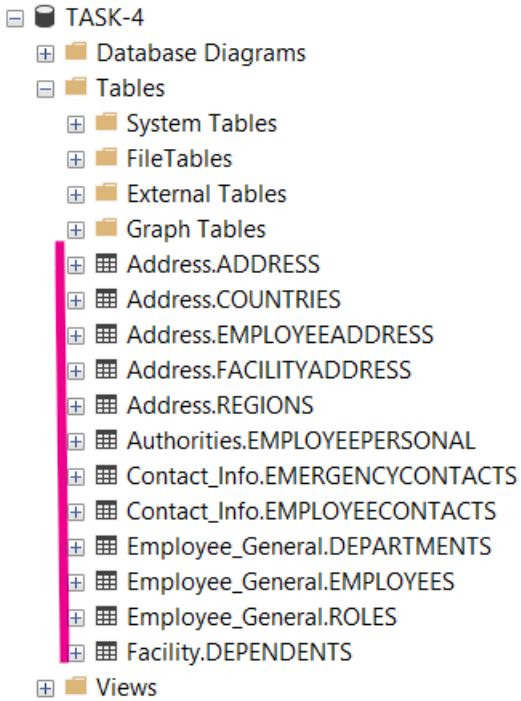
```
-- Shifting table into their respective Schema:

GO --SCHEMA 1
```

```
ALTER SCHEMA Employee_General TRANSFER dbo.EMPLOYEES
ALTER SCHEMA Employee_General TRANSFER dbo.DEPARTMENTS
GO

GO --SCHEMA 2
ALTER SCHEMA Authorities TRANSFER dbo.EMPLOYEEPERSONAL
ALTER SCHEMA Authorities TRANSFER dbo.ROLES
GO

GO --SCHEMA 3
ALTER SCHEMA Facility TRANSFER dbo.DEPENDENTS
GO

GO --SCHEMA 4
ALTER SCHEMA Contact_Info TRANSFER dbo.EMPLOYEECONTACTS
ALTER SCHEMA Contact_Info TRANSFER dbo.EMERGENCYCONTACTS
GO

GO --SCHEMA 5
ALTER SCHEMA [Address] TRANSFER dbo.ADDRESS
ALTER SCHEMA [Address] TRANSFER dbo.FACILITYADDRESS
ALTER SCHEMA [Address] TRANSFER dbo.REGIONS
ALTER SCHEMA [Address] TRANSFER dbo.COUNTRIES
ALTER SCHEMA [Address] TRANSFER dbo.EMPLOYEEADDRESS
GO
```

OUTPUT:



FINAL OUTPUT:



Question 2:

From: Matt Kozi <MKozi@cbr.org>
To: You
Subject: Database accounts and user function
Thanks for looking into establishing all the database schemas and the administrator account. We are currently preparing to build account access on the intranet site but first need you to add some user accounts to the database so we can test out the connection on our end. We have not decided yet exactly which employees we will be granting access too though, so for the TIme-being, I need you to setup some generic dummy accounts for a few of the departments. Just name the generic accounts after the job roles, we will later use these as templates for actual employees.
The web development team sent me the following to forward to you:

• We will need the following roles created:

o Human Resources, must have access to schema 1, 2, and 4. They will be in-charge of making all updates that are necessary, so give them full access to change data.
o Accounting, needs access to Schema 1, and the Address Schema, they will need to pull data to know where to send pay stubs and tax forms, so assign the permissions accordingly.
o Developers, will need access to all 5 schemas. They will need full data access as well as the ability to change the structure of the database.

• Create a step-by-step guide to creating a database user [SQL server authentication] with passwords. You can use any process you choose, just be sure to document how you did it. That way we can have some of the junior DBAs on staff replicate your work for specific user accounts when we are ready, we do not want to bother you with the busy work. Include a step for assigning one of the above roles to that user.

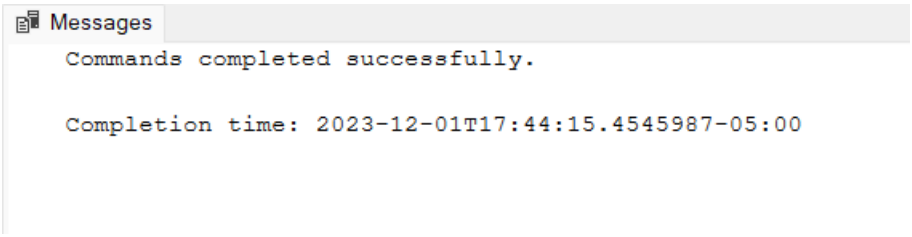
We also want to test out views, and the website's ability to pull data from them. Set up a view to produce a list of employees who have not yet completed their probation period. This should be always current; I do not want to have to wait for someone to change data in the table. You should find what you are looking for in the Roles and Employee tables.
Matt Kozi
Solutions Architect, Coffee Bean Roasters
mKozi@cbr.org

➔

Create Developers Role

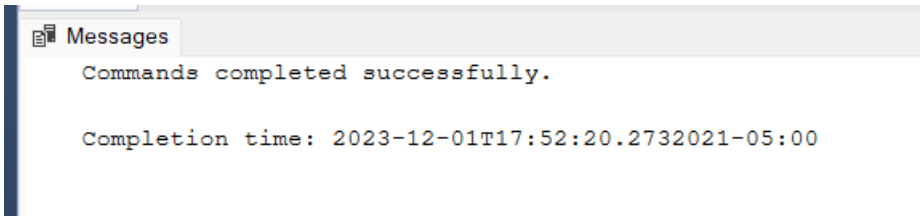
```
--CREATE ROLE Developers --Schema ALL FULL ACSESS ADMIN/ OWNER
--creating login for Developers
CREATE LOGIN Developers
WITH PASSWORD = 'VASH8939083';
```

OUTPUT:



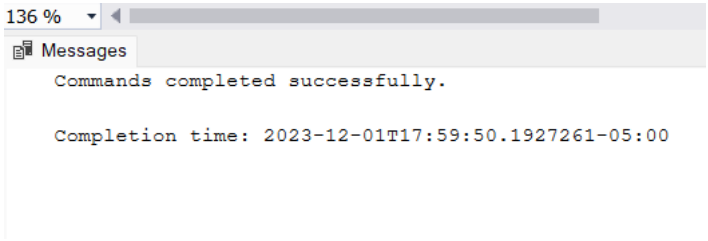

```
--create a new user for the login Developers
CREATE USER Developers
FOR LOGIN Developers;
```

OUTPUT:




```
-- Altering role to give it full set permission
ALTER ROLE db_datareader
ADD MEMBER Developers;
ALTER ROLE db_datawriter
ADD MEMBER Developers;
```

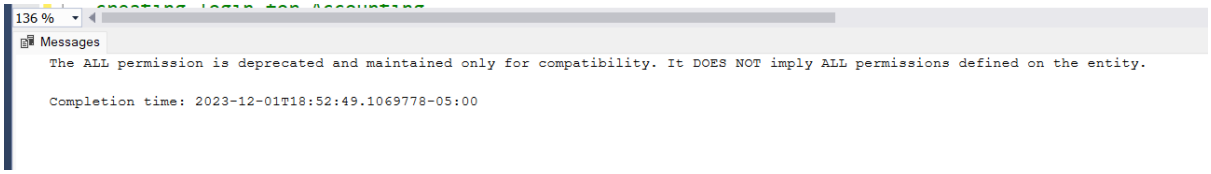
OUTPUT:



- Granting permissions:

```
-- Granting permissions:
GO
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Employee_General TO
Developers
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Authorities TO Developers
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Facility TO Developers
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Contact_Info TO Developers
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: [Address] TO Developers
GRANT ALL PRIVILEGES ON DATABASE :: [TASK-4] TO Developers
GO
```

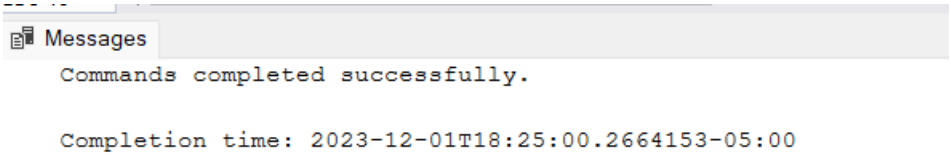
OUTPUT:



- Create Accounting Role

```
--CREATE ROLE Accounting --Schema 1 ADDRESS to send pay stubs and tax forms, ACCESS
--creating login for Accounting
CREATE LOGIN Accounting
WITH PASSWORD = 'VASH8939083';
--create a new user for the login Accounting
CREATE USER Accounting
FOR LOGIN Accounting;
-- Altering role to give it read set permission
ALTER ROLE db_datareader
ADD MEMBER Accounting;
```

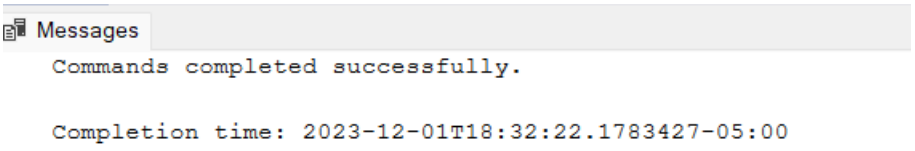
OUTPUT:



- Granting permissions:

```
-- Granting permissions:
GO
GRANT SELECT ON SCHEMA:: Employee_General TO Accounting
GRANT SELECT ON SCHEMA:: [Address] TO Accounting
GO
```

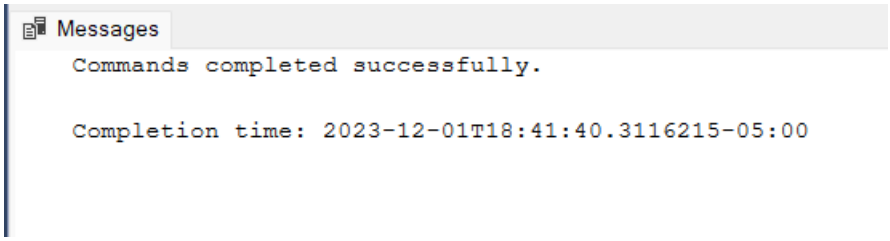
OUTPUT:



- Create Human resources Role

```
--creating login for Human_Resorces
CREATE LOGIN Human_Resorces
WITH PASSWORD = 'VASH8939083';
--create a new user for the login Human_Resorces
CREATE USER Human_Resorces
FOR LOGIN Human_Resorces;
-- Altering role to give it read set permission
ALTER ROLE db_datareader
ADD MEMBER Human_Resorces;
ALTER ROLE db_datawriter
ADD MEMBER Human_Resorces;
```

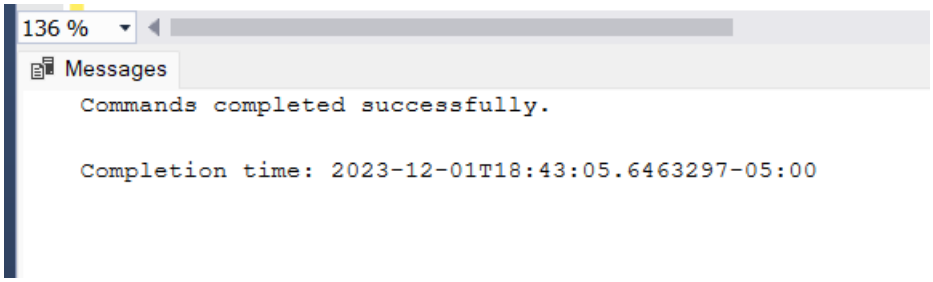
OUTPUT:



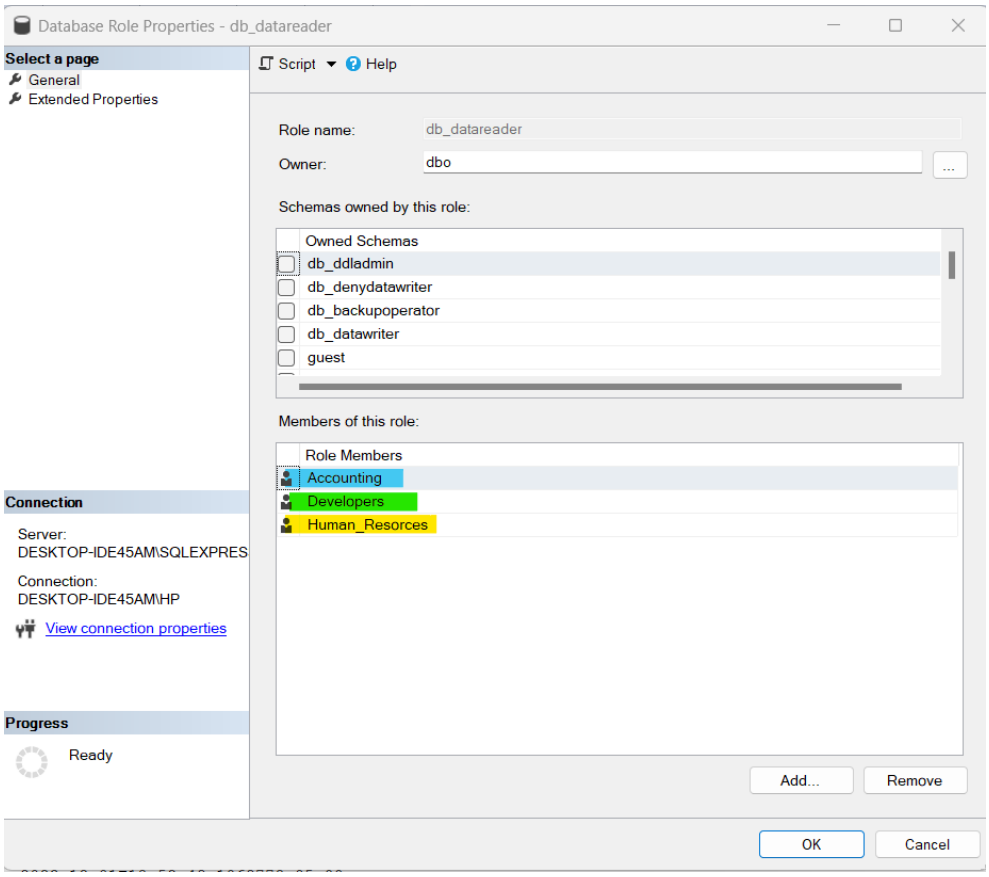
- Granting permissions:

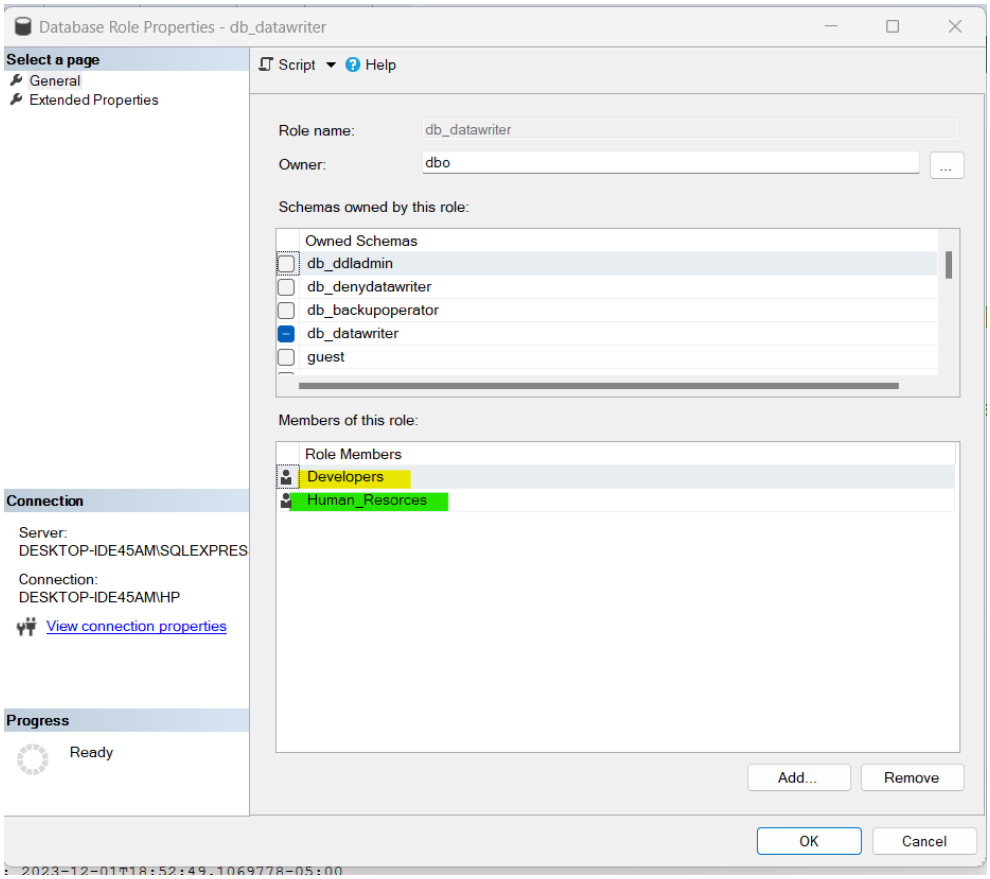
```
-- Granting permissions:
GO
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Employee_General TO
Human_Resorces
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Authorities TO
Human_Resorces
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA:: Contact_Info TO
Human_Resorces
GO
```

OUTPUT:



FINAL OUTPUT:

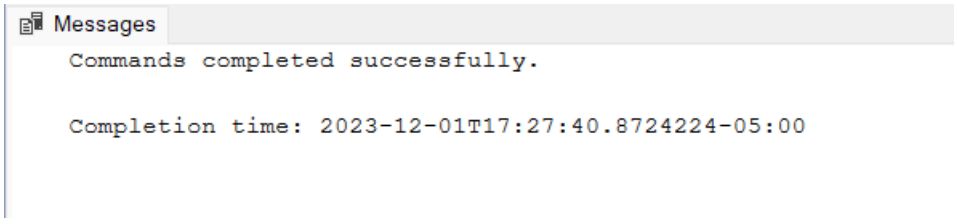




- Creating and displaying View:

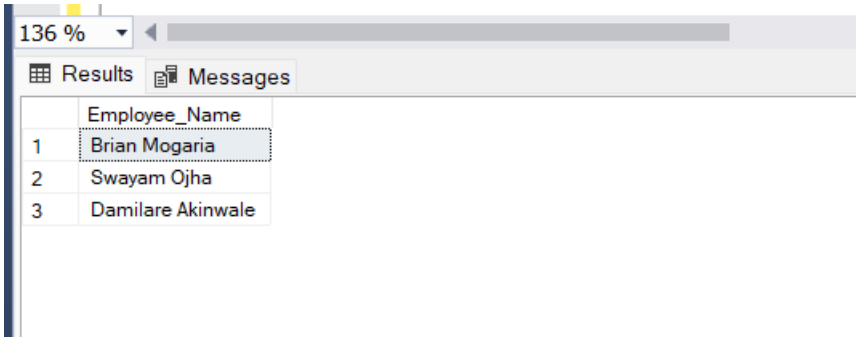
```
-- setting up view for list of employees who have not yet completed their probation
period
GO
CREATE OR ALTER VIEW [On Probation YET]
AS
SELECT (TRIM(e.FName)+ ' ' + TRIM(e.LName)) AS Employee_Name
FROM Employee_General.EMPLOYEES e JOIN Employee_General.ROLES r
ON e.RoleID = r.RoleID
WHERE (DATEDIFF(year,e.HireDate, CAST(GETDATE() AS DATE)) - r.ProbationLength) < 0;
GO
```

OUTPUT:




```
-- displaying results for view
SELECT * FROM [On Probation YET];
```

FINAL OUTPUT:



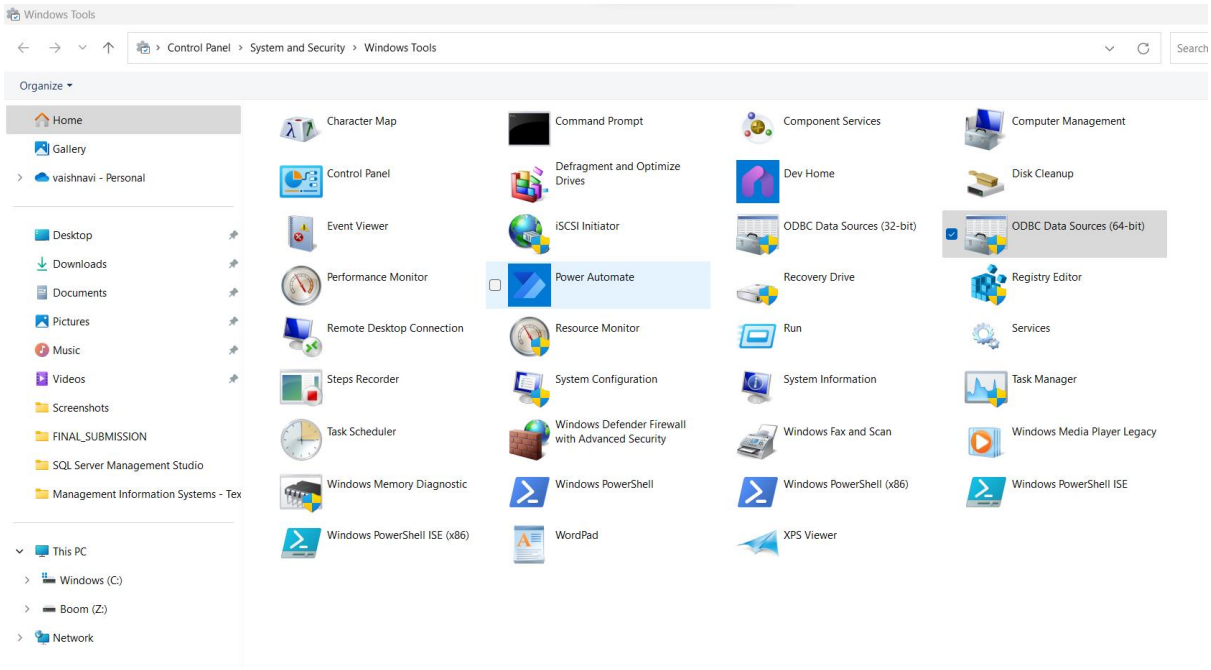
Question 3:

From: Christopher Nickel <cNickel@cbr.org>
To: You; mKozi@cbr.org
Subject: Issue with pulling data from the Employee Database
The web dev's just contacted me and said they cannot seem to pull any data from the Employee database, I assured them that everything on your side should be fine, but they asked if you could check to see if the ODBC connection is setup. If it is not, can you quickly set the ODBC data source in the DBMS and forward me a detailed step-by-step showing how you set it up and the parameters you set for it? Let us make sure that we are using Windows Integrated Authentication for the connection. Also, can you include a screenshot that shows your name in the description field for the ODBC, that way if there are any issues, we will know who to check with.
Thanks.
Christopher Nickel
Director of Infrastructure, Coffee Bean Roasters
cNickel@cbr.or

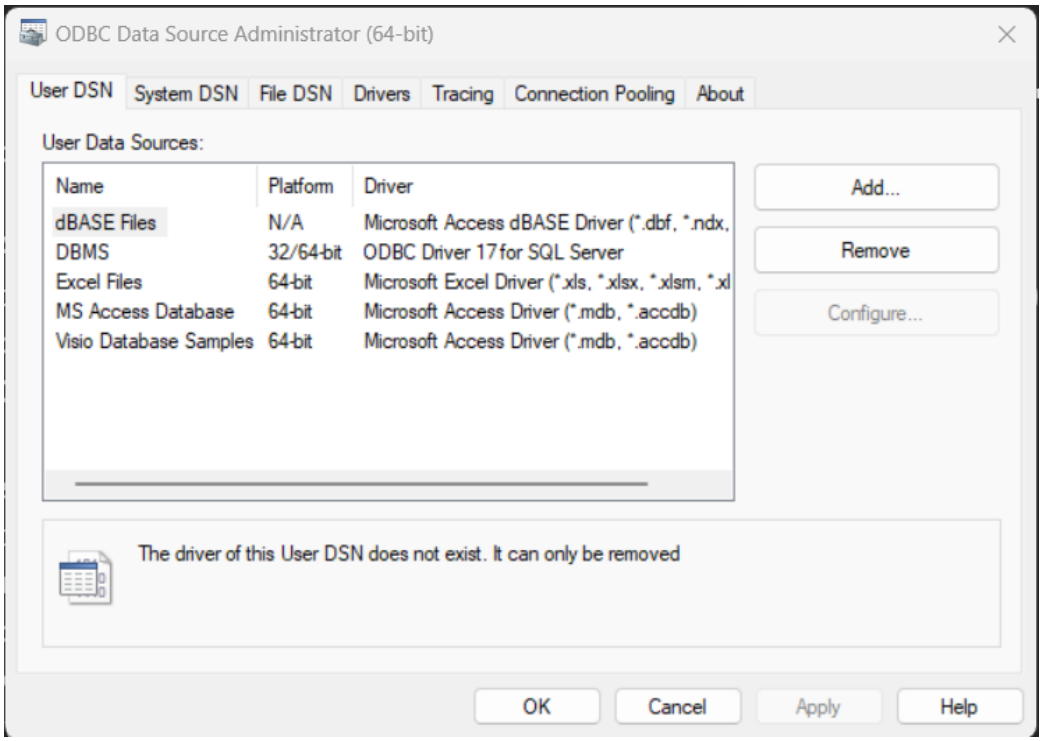
➔

Step-by-Step Guide:

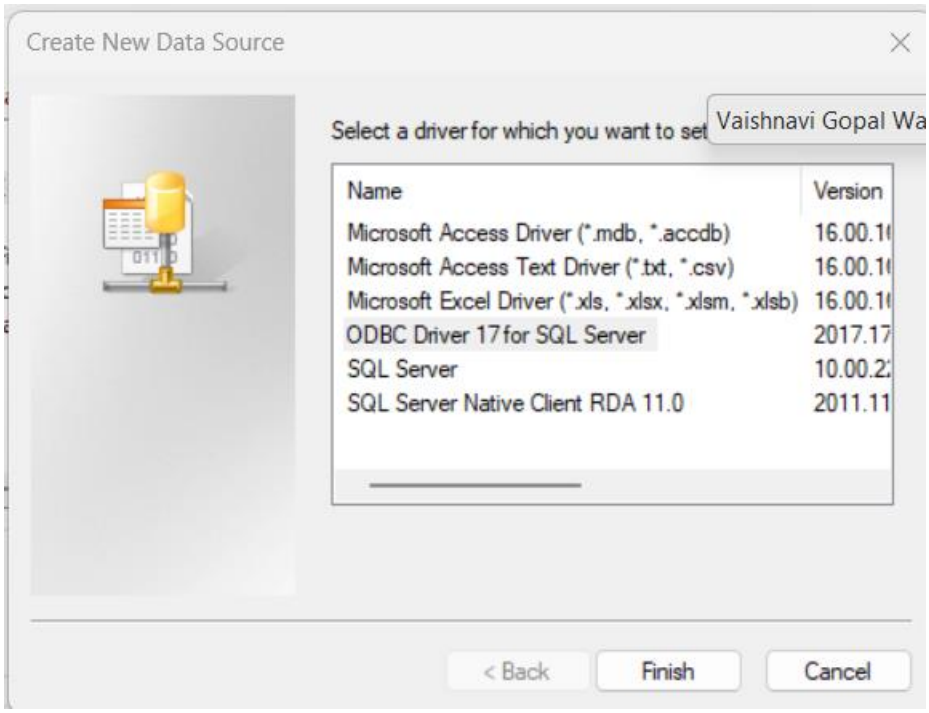
1. **Open ODBC Data Source Administrator:**
   - Navigate to the Control Panel.
   - Select "Administrative Tools" and then "Data Sources (ODBC)."



2. **Add a New System DSN:**
    - In the "ODBC Data Source Administrator" window, go to the "System DSN" tab.
    - Click on "Add."

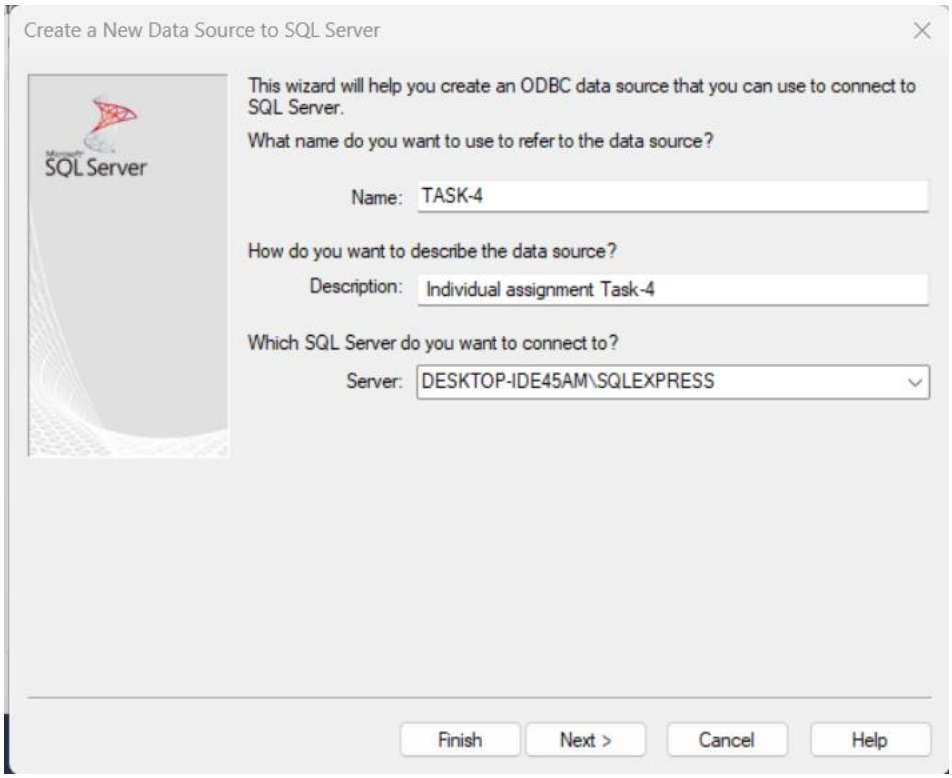


3. **Select the Appropriate Driver:**
    - Choose the appropriate driver for your database system (e.g., SQL Server).

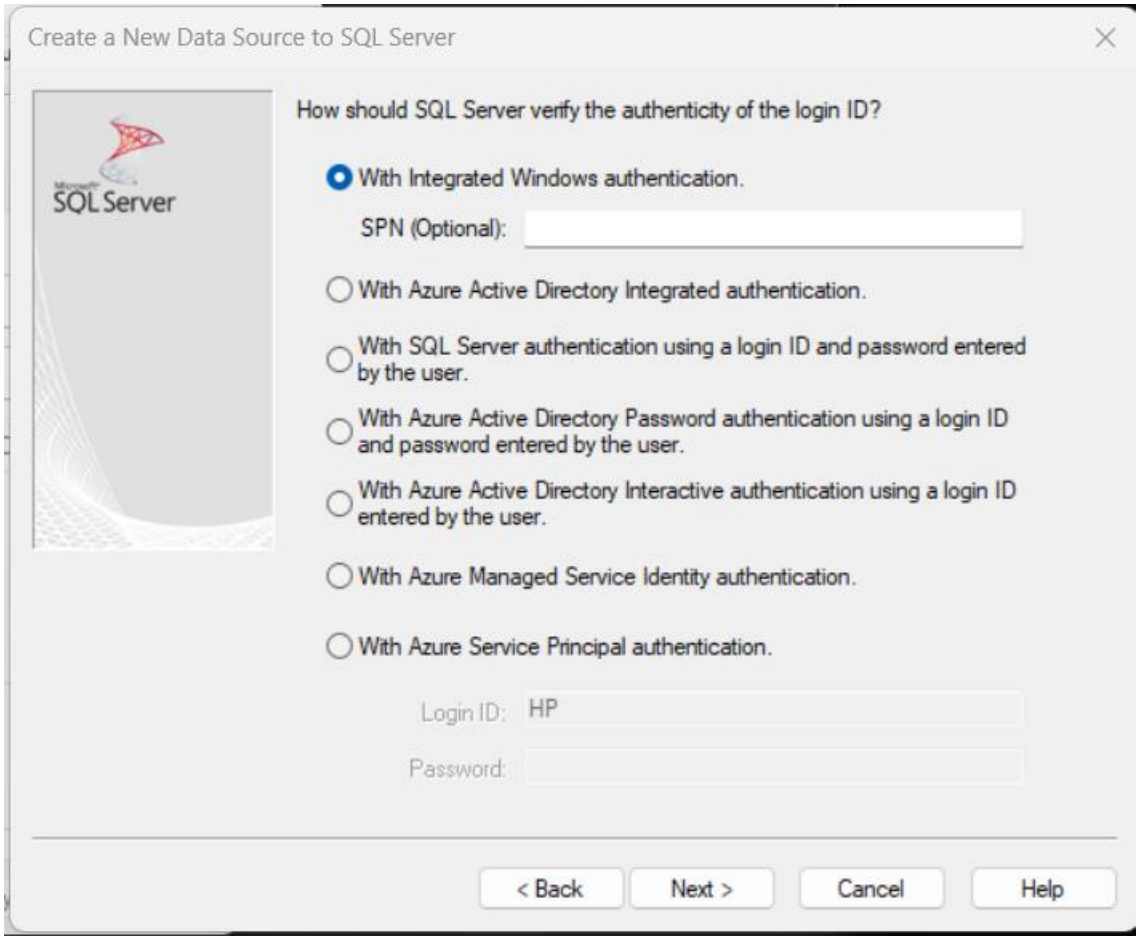


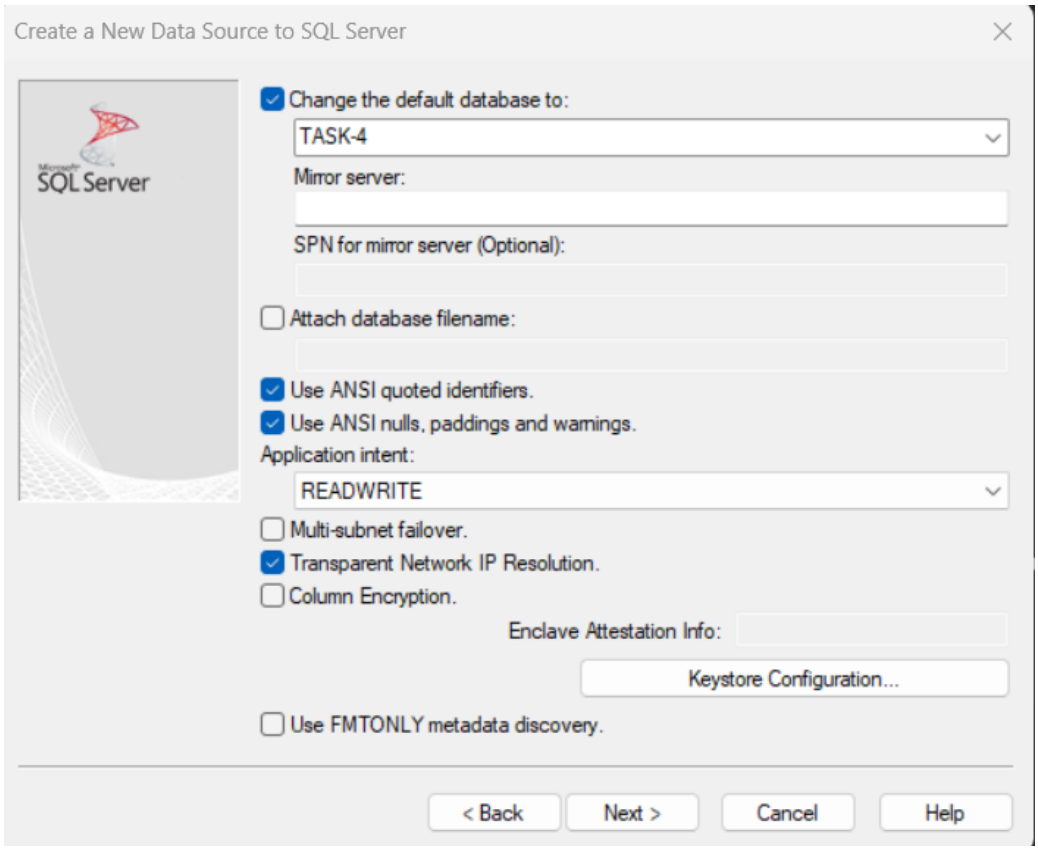
- Click "Finish."

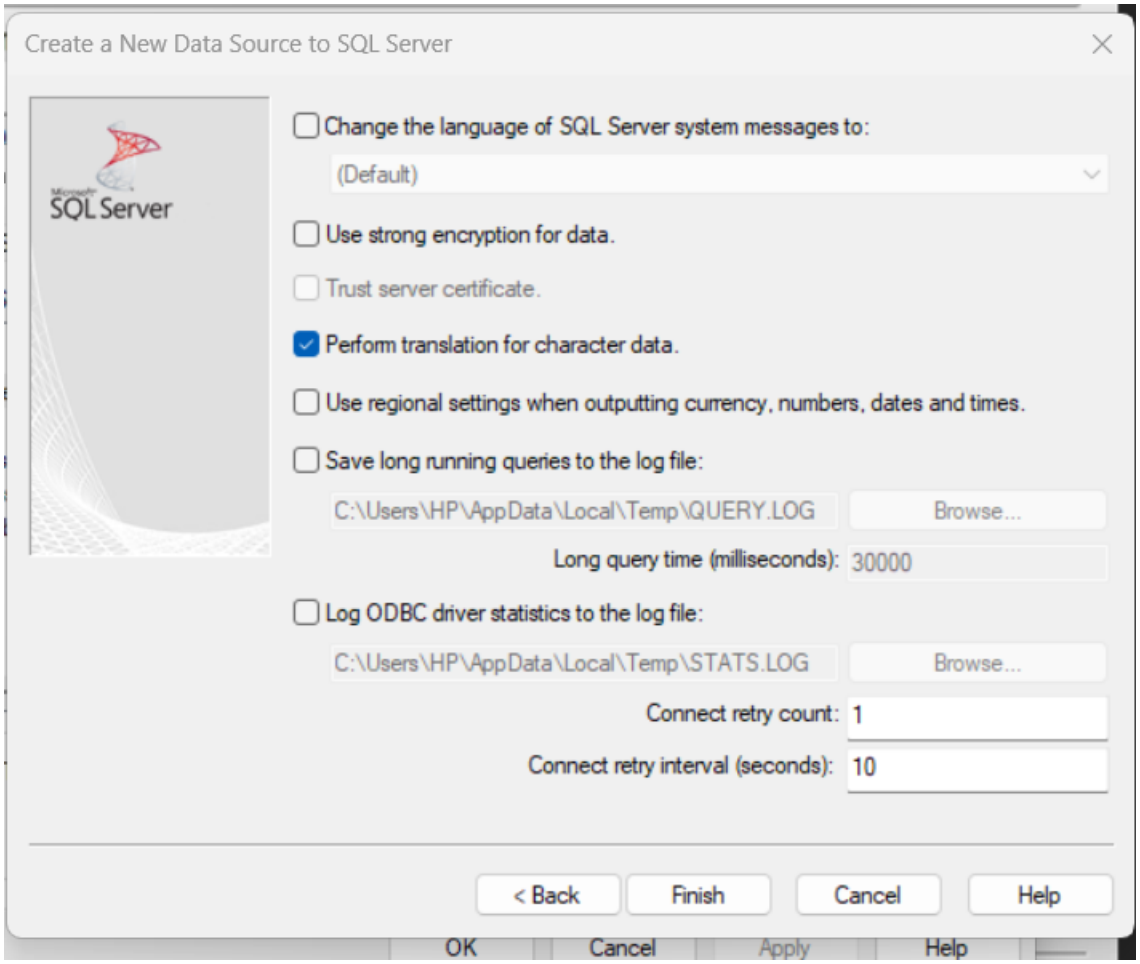
4. **Configure Connection Details:**
   - Enter a meaningful name in the "Name" field.
   - Specify the Server and Database details.



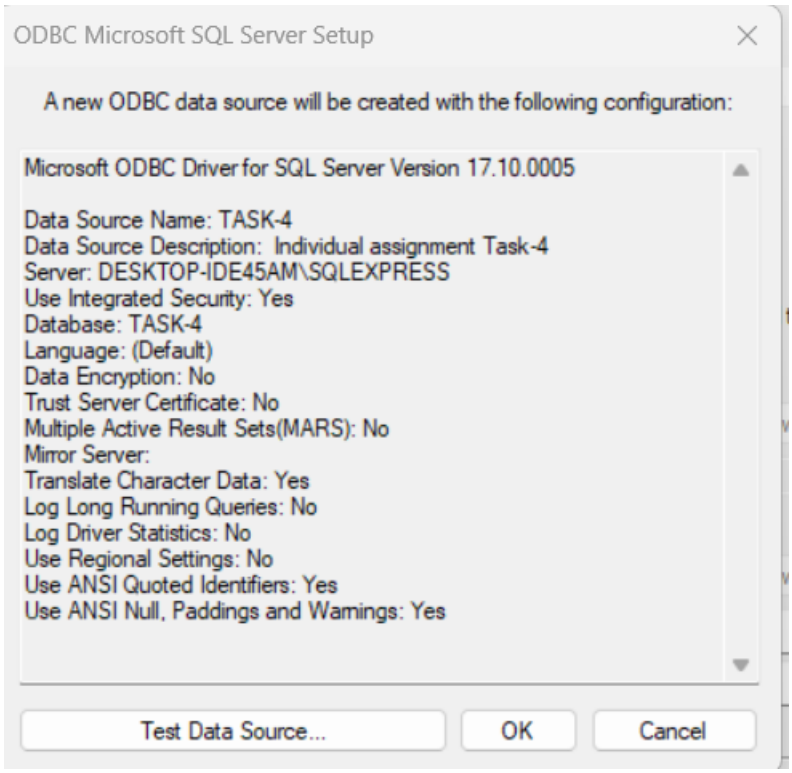
- Choose "Windows Authentication" for the authentication method.

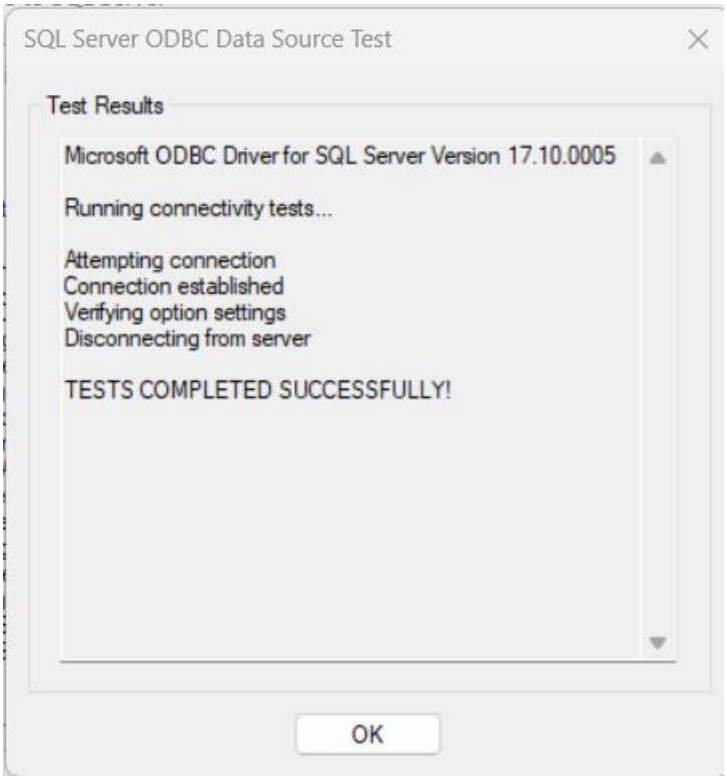

Create a New Data Source to SQL Server
SQL Server
How should SQL Server verify the authenticity of the login ID?
With Integrated Windows authentication.
SPN (Optional):
With Azure Active Directory Integrated authentication.
With SQL Server authentication using a login ID and password entered by the user.
With Azure Active Directory Password authentication using a login ID and password entered by the user.
With Azure Active Directory Interactive authentication using a login ID entered by the user.
With Azure Managed Service Identity authentication.
With Azure Service Principal authentication.
Login ID: HP
Password:
< Back
Next >
Cancel
Help


Create a New Data Source to SQL Server
SQL Server
Change the default database to:
TASK-4
Mirror server:
SPN for mirror server (Optional):
Attach database filename:
Use ANSI quoted identifiers.
Use ANSI nulls, paddings and warnings.
Application intent:
READWRITE
Multi-subnet failover.
Transparent Network IP Resolution.
Column Encryption.
Enclave Attestation Info:
Keystore Configuration...
Use FMTONLY metadata discovery.
< Back
Next >
Cancel
Help



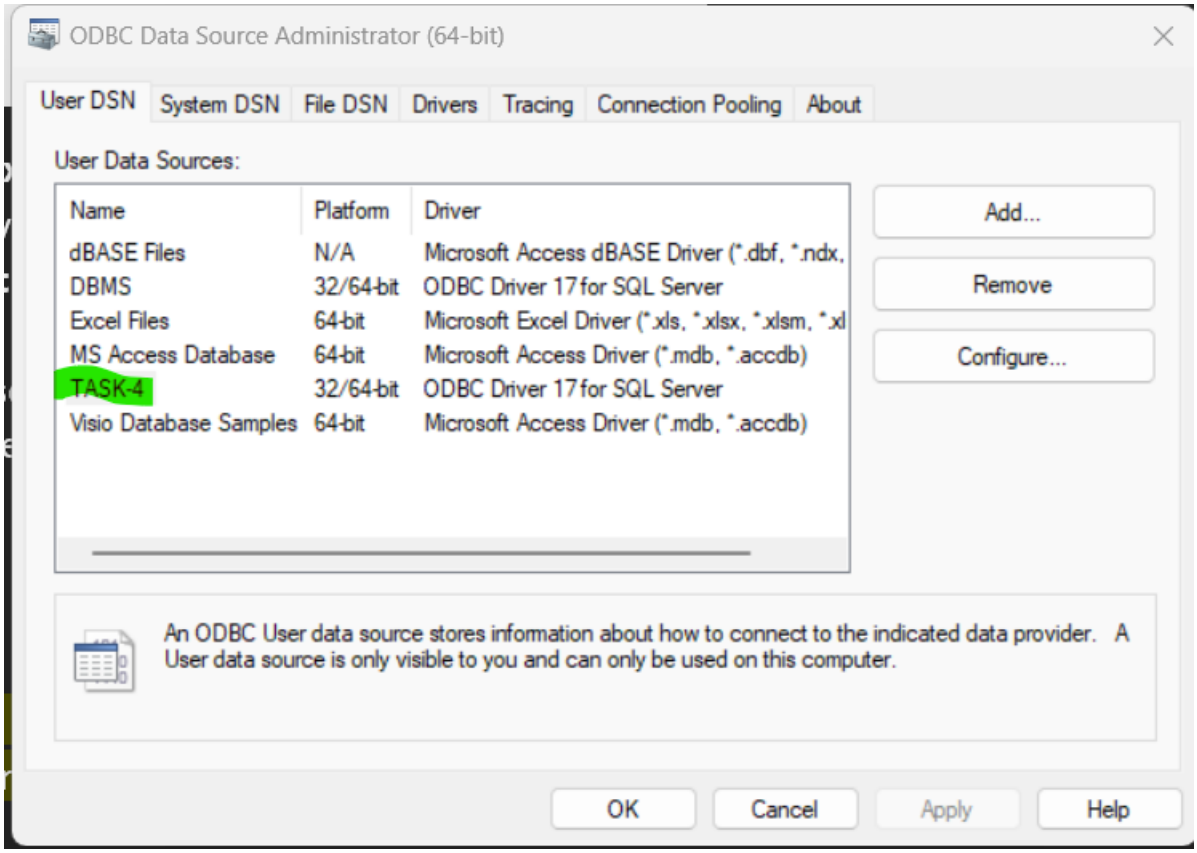
5. **Test the Connection:**
   - Click on "Test Data Source" to ensure a successful connection.





6. **Save and Exit:**
   - Save your settings and exit the configuration window.

Screenshot:



- A screenshot that includes the ODBC Data Source Administrator window with your name in the description field.