Continuing Education Program
Center for Computing and Information Technology
Fakultas Teknik Universitas Indonesia

SQL Administration Configuration Bimbel F1 Database

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Class : 2NAP-2

Semester : 2

Continuing Education Program for Computing and Information Technology

Faculty of Engineering

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Kampus Baru UI Depok 1642

PROJECT ON

SQL Administration Configuration Bimbel F1 Database

Developed By

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Start Date : Wednesday, March 25, 2020

End Date :

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Date of Submission : Wednesdayy, 1 Apri,l 2020

CERTIFICATE

This is to certify that this report titled “SQL Administration Configuration Bimbel F1 Database” embodies the original work done by Muhammad Vino Arystio, Rizki Roihan Soeharto, and Syarif Al Khairi. Project in partial fulfillment of their course requirement at NIIT & CEP CCIT-FT UI.

Coordinator:

Tri Agus Riyadi, S.Kom, M.Kom

ACKNOWLEDGEMENT

Thank you, the author wishes to God the Almighty for His blessings and grace, we can complete this project task both in the form of presentation and paper in a timely manner.

The author also delivers him gratitude to Mr. Tri Agus Riyadi faculty and other faculty for all guidance to complete it. Thank you to fellow students who have supported, and also thank you to fellow workers in the education at CEP CCIT-FT UI. The Project paper entitled "SQL Administration Configuration Bimbel F1 Database" the author submits as a requirement for the Project assignment in 2020.

Finally, the authors hope this paper can be useful for all and also gain a better insight into the operating system. The author realizes that it is still imperfect. Therefore, the authors really expect all suggestions and criticisms from readers who are constructive in order for the perfection of this paper. Hopefully, this paper can provide many benefits for the readers.

SYSTEM ANALYSIS

System Summary :

This project manages the Bimbel F1 Database mostly in User Account & Roles, Backup & Restore, and Replication. Previously, The database have been inputed several values in many tables.

The User Account will be divided into 4 which is the central server (Database Admin), AdminBimbelF1, Teacher, and Student. On the AdminBimbelF1 here are treated like a server owner which is have unrestricred access but just according to the selected database which is Bimbel_F1. After that, to avoid mistakes from humans or nature disaster or electricity, backup is needed and if things happen that are not desirable and the data is lost, it can prevented using restore. Then replicate from the central server to the other local server.

USER ACCOUNT & ROLES

1. Concept User Roles BarBarShop Database
    a. Admin (Database Administrator/DBA)

       Admin have unrestricted access for the server as well as databases. Admin here also create a server and database of Bimbel F1. The server use Windows Server 2016 running in VM and SQL Server 2019 Developer Edition to build the database. Admin has full access across all the accounts and function will need to create a new SQL Server Login and User Accounts for databases. Admin use Windows Accounts to control the server and database.

    b. Teacher

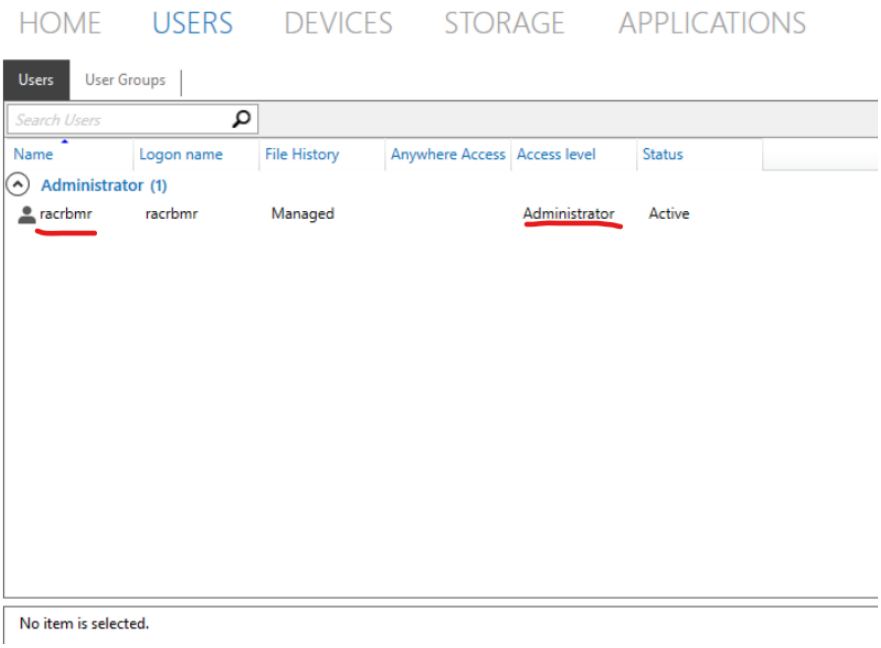
       Teacher have an account access for the database. Not much function can teacher do with Teacher account access. Teacher need to change subject, schedule, exam score, and etc. So Teacher granted permission to use functions Such as Select, Insert, Alter, and Delete. Cashier use Windows Account to enable the limited function.

    c. Student

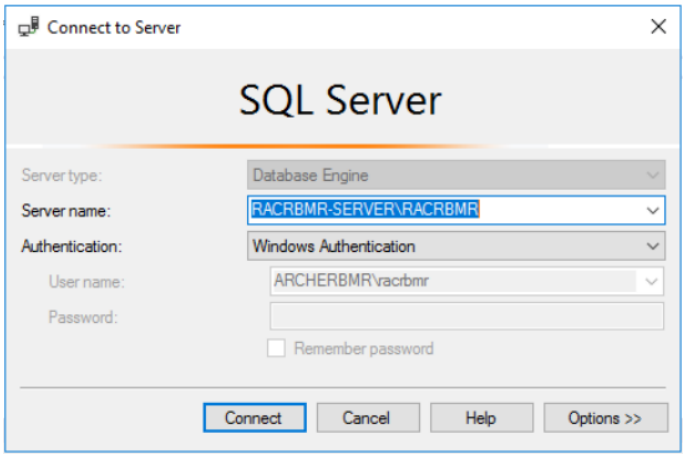
       Student account didn't do much. Created student account just for students that want to see their Teacher, schedule, subject, and Exam test score. So it will be granted just Select function.

USER ACCOUNT & ROLES

2. Create Windows Server Account for Administrator
    a. Since the installation of Windows Server and Configuring the Server Administrator account is already be made while installation so in our case the Administrator is racrbmr(myself).



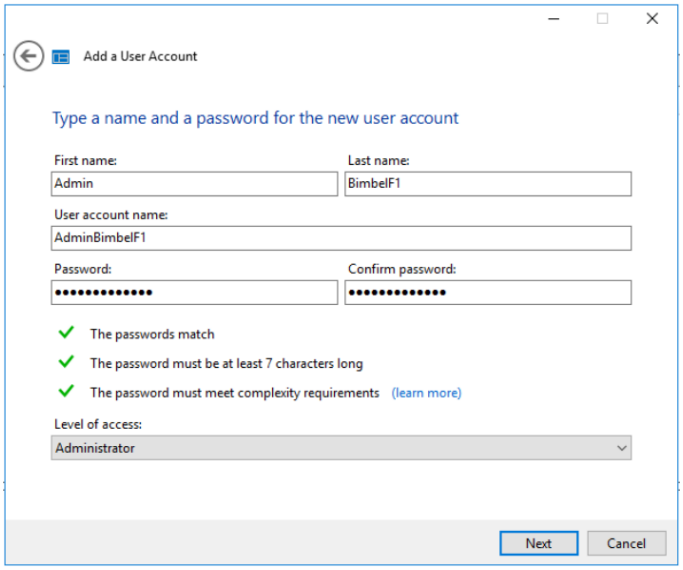
    b. Login **SQL Server** with **Admin Account**.



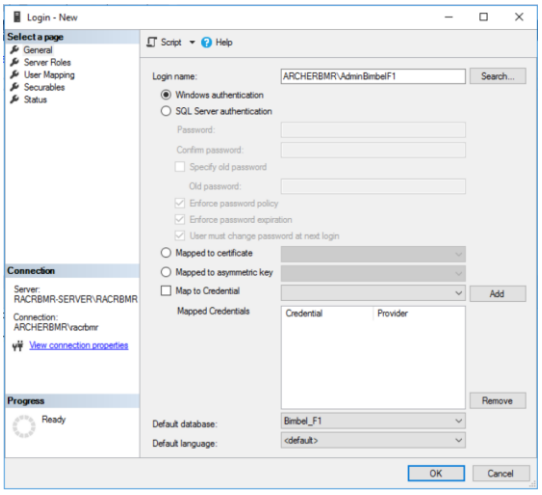
USER ACCOUNT & ROLES

3. Create Windows Account for AdminBimbelF1

   a. Launch **Win Server** and open **Win Server Essentials. Users Tab** and choose **Add a user Account**. Level of access choose Administrator.

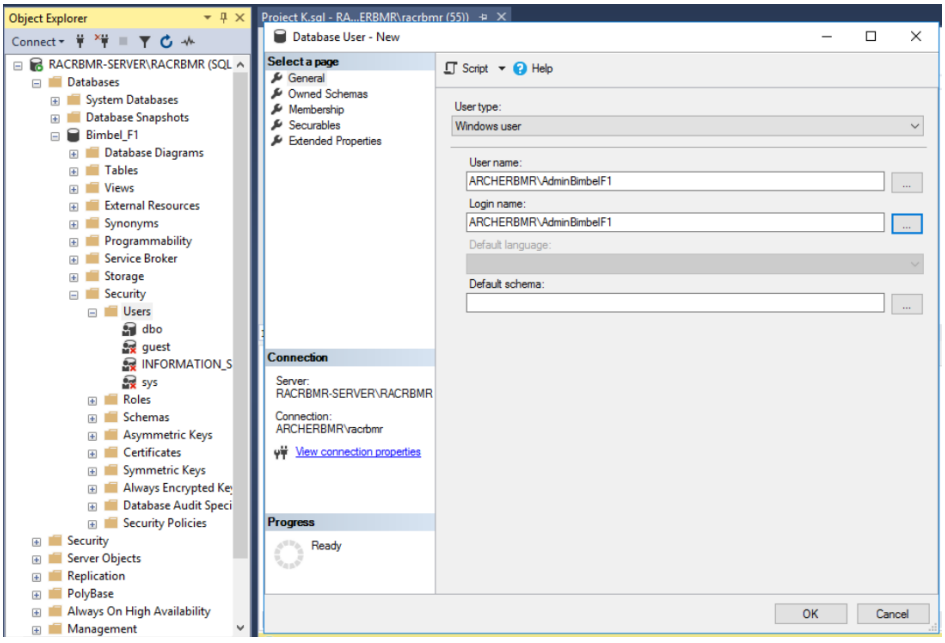


   b. Grant the database AdminBimbelF1 to access the server with administrator account. Select the **Default Database** with **BimbelF1**.

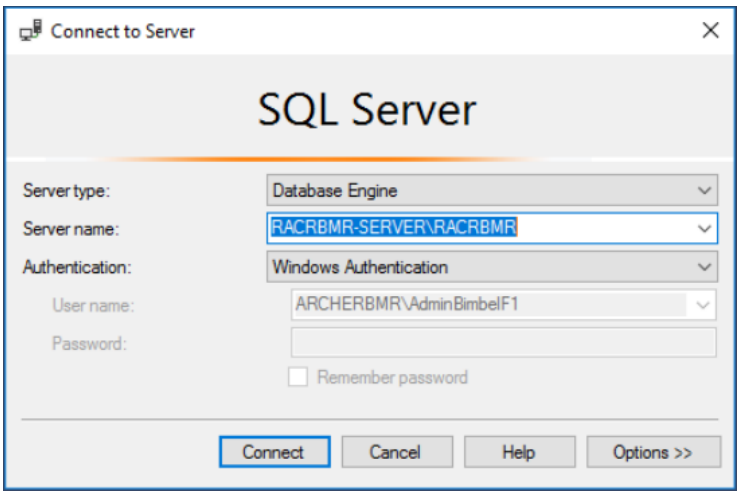


USER ACCOUNT & ROLES

c. Create new user for AdminBimbelF1 at BimbelF1 Database.

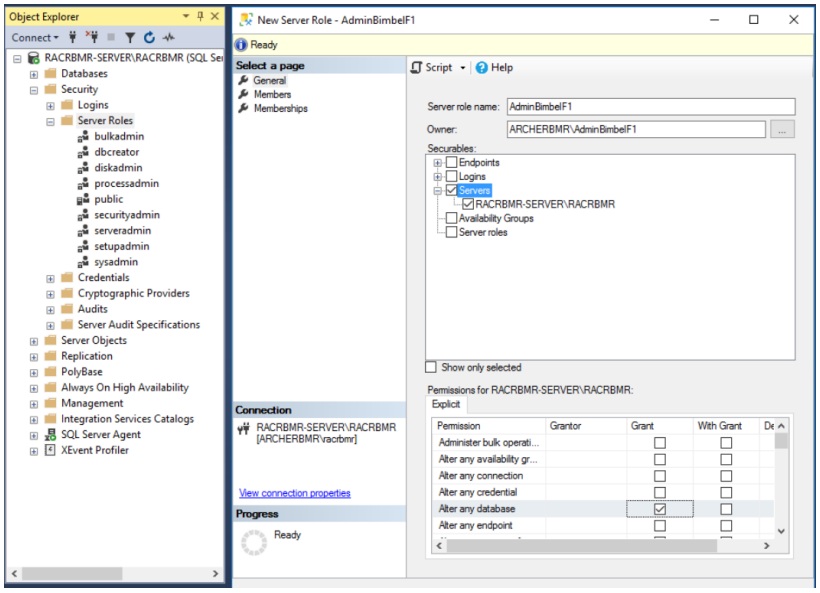


d. Login to SSMS with **AdminBimbelF1** Account. AdminBimbelF1 Account can only access to the selected Database(BimbelF1).

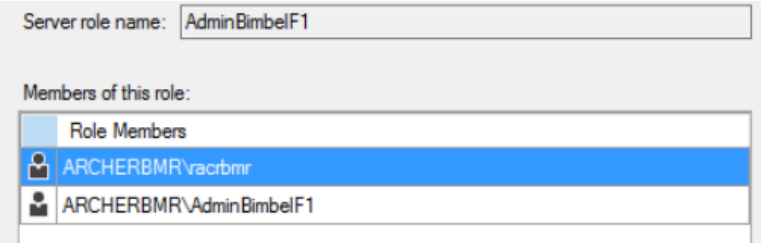


USER ACCOUNT & ROLES

4. Create Server Roles
   a. Login to Administrator Account to granting permissions for AdminBimbelF1 access given function. Check the **Grant** from Alter any database.

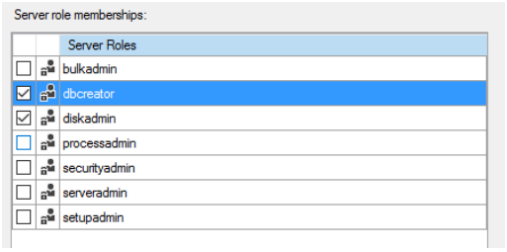


   b. Add role member AdminBimbelF1 and racrbmr in Members Tab.

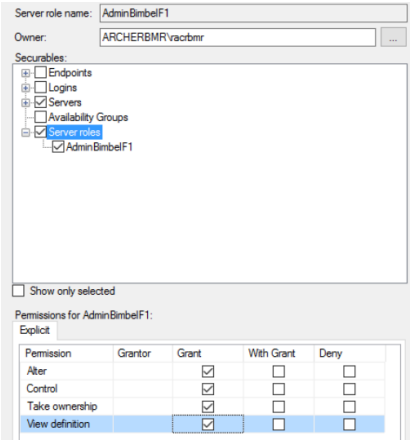


USER ACCOUNT & ROLES

c. On **Memberships** tab check ***diskadmin*** and ***dbcreator***. diskadmin used to manage SQL file on the disk and dbcreator used to add, modify, delete the database. Then click **OK**.

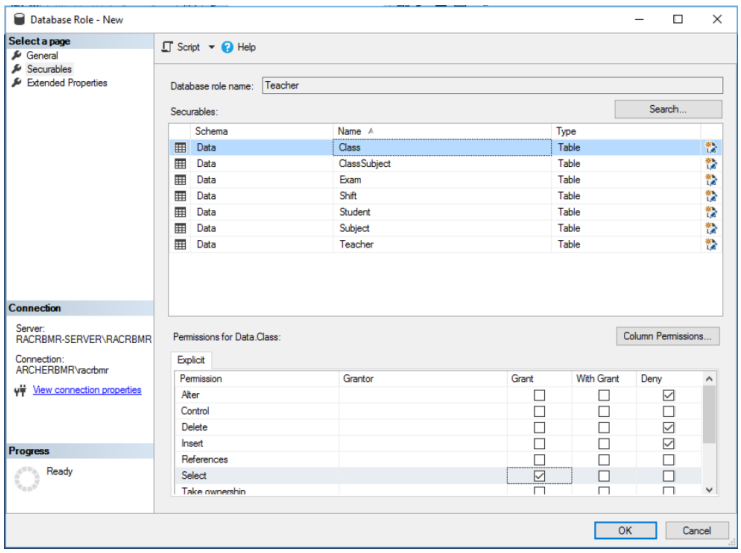


d. Refresh Server Roles, right-click AdminBimbelF1 and click properties. In **secureables** check **Server Roles** chekboxes and **grant** all premissions for AdminBimbelF1.

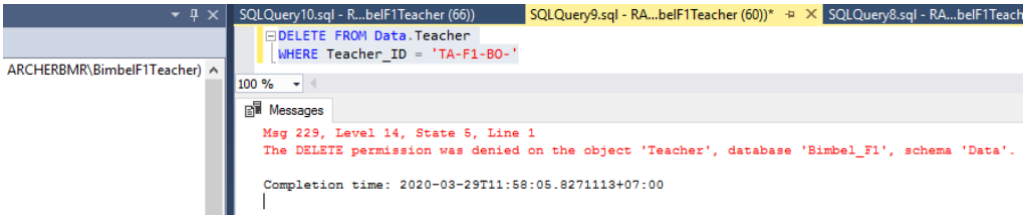


USER ACCOUNT & ROLES

5. Create Database Permission and Security Roles.
   a. Login into Administrator Account and expand **BimbelF1 Database**. Search Database Roles and right click. Click **New Database Role**. Go to **securables** and click All object of the type. Because this is Teacher so Class, ClassSubject, Shift, Subject, Teacher Table with permission 'Grant' is only Select. Exam and Student Table with permission 'Grant' is Alter, Delete, Select, Insert, and Update. Class, ClassSubject, Shift, Subject, Teacher Table with permission 'Deny' is Alter, Delete, Insert, and Update.

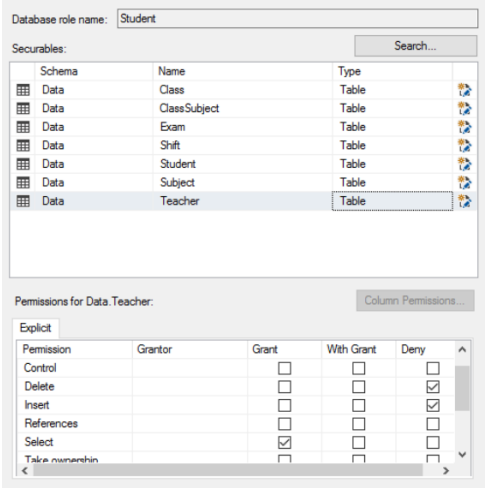


   b. Verify the database roles is working.



USER ACCOUNT & ROLES

c. Login into Administrator Account and expand **BimbelF1 Database**. Search Database Roles and right click. Click **New Database Role**. Go to **securables** and click All object of the type. Because this is Student so All Table in Data Schema with permission 'Grant' is only Select. And All Table in Data Schema with permission 'Deny' is Alter, Delete, Select, Insert, and Update.



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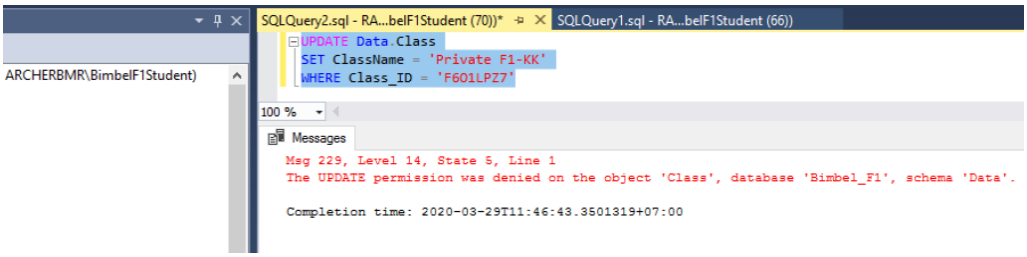
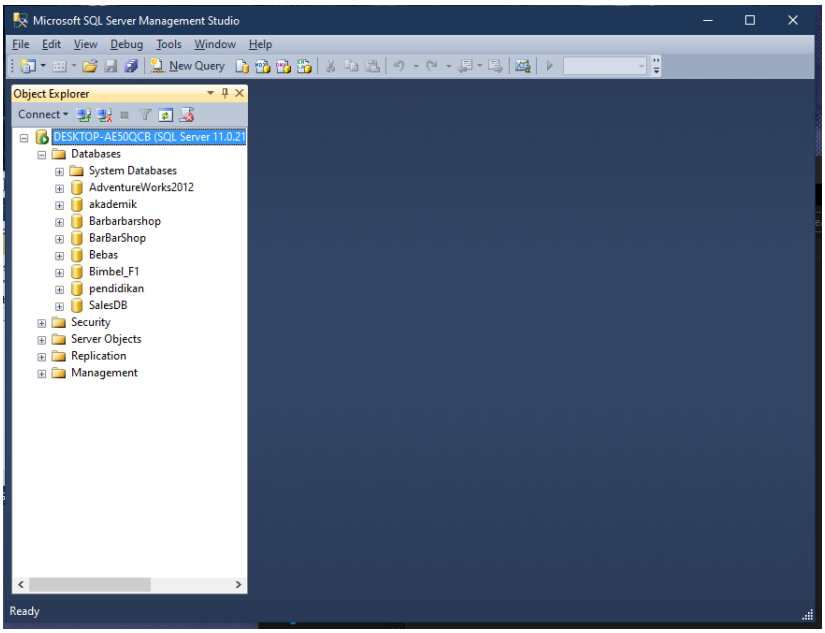
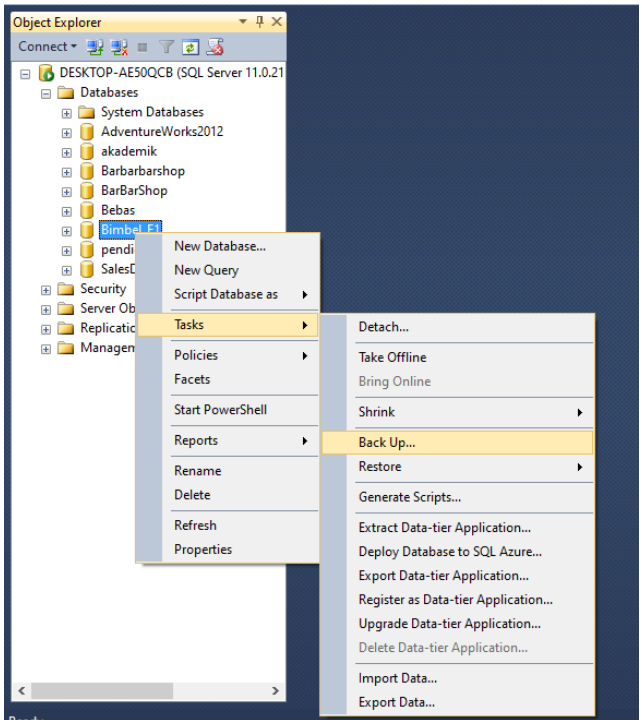


BACKUP

1. Open Microsoft SQL Server



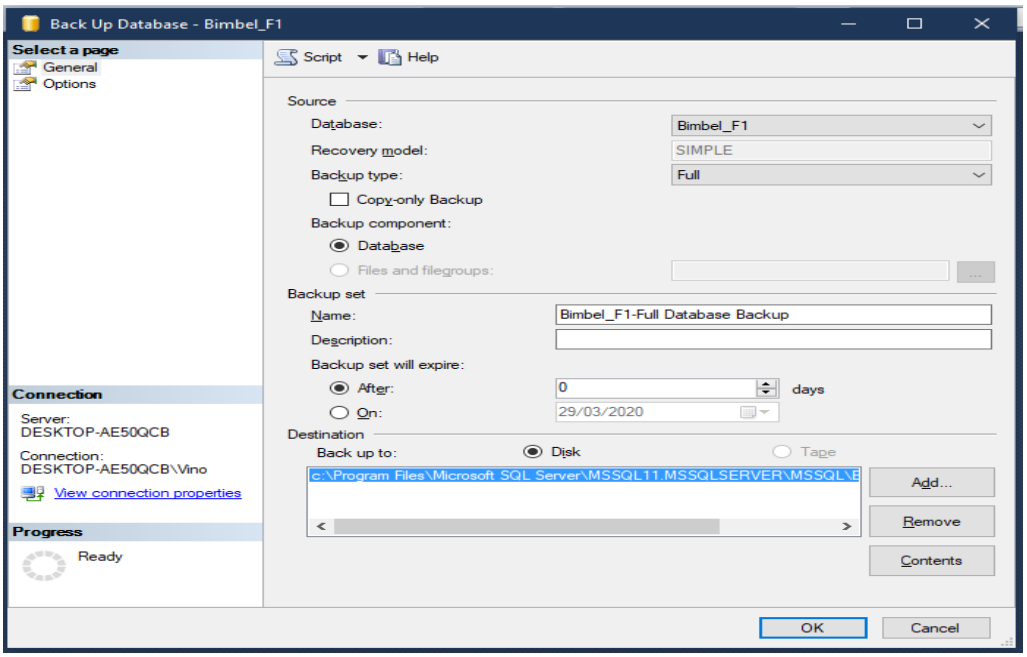
2. Then Right-click on the database that you want to backup, Click “Tasks” and select “Back Up…”



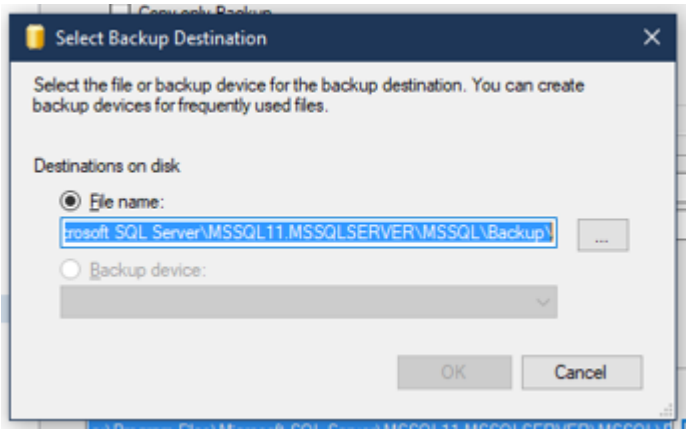
BACKUP

3. Select the database that you want to backup on the “database”, and in “Backup Type” is Full.

4. Then you click “Add…” to indicate the location to save.

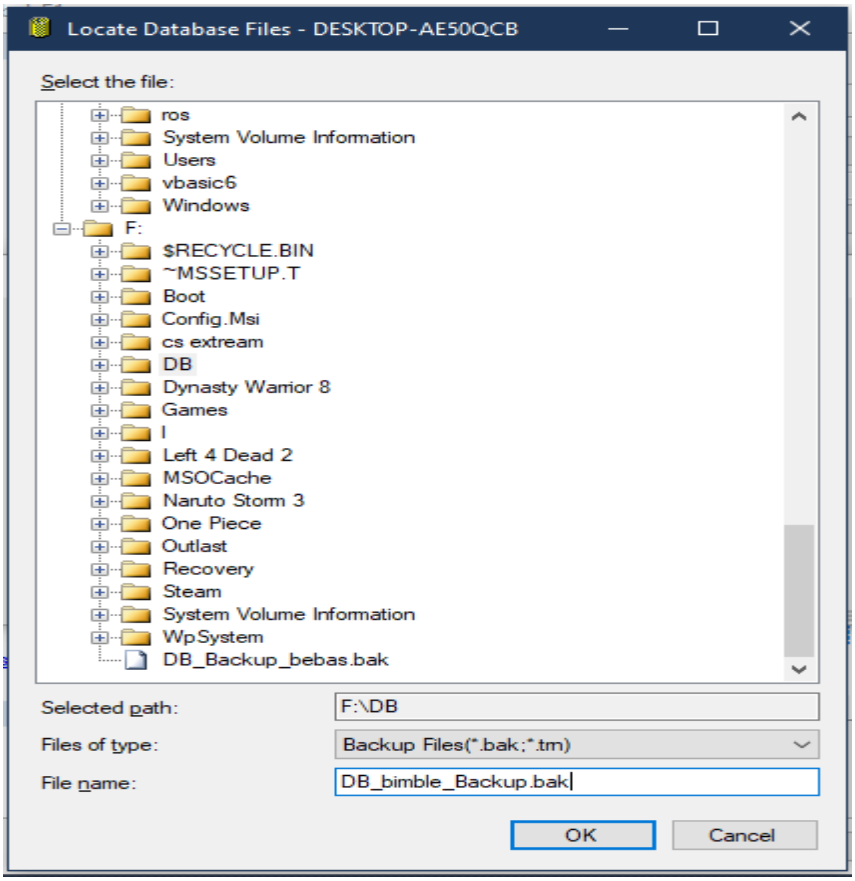


5. Click “…” to determine the storage location

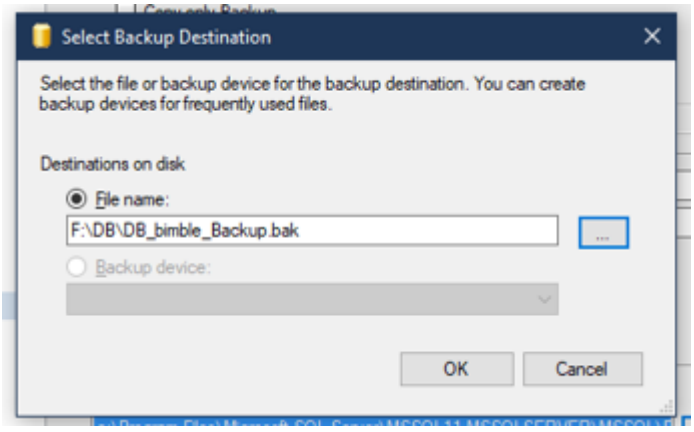


BACKUP

6. Select the Storage folder, then name it with the extention “.bak”

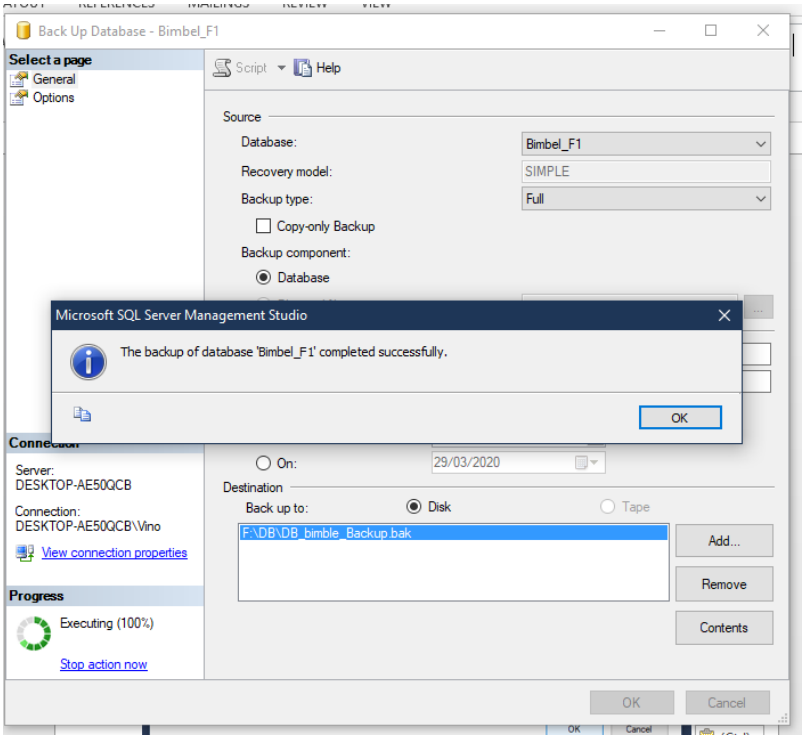


7. Click “OK”



BACKUP

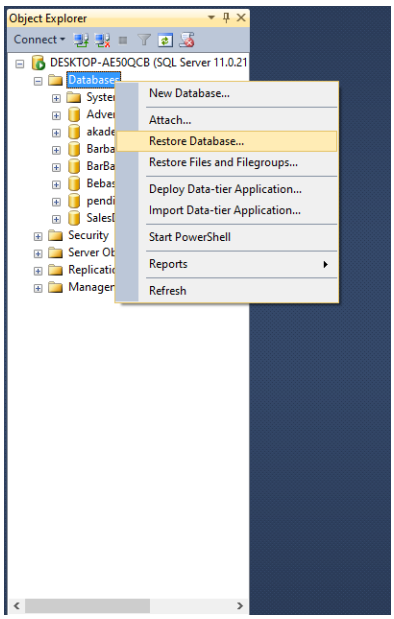
8. Click “OK”
9. And Successfully your backup



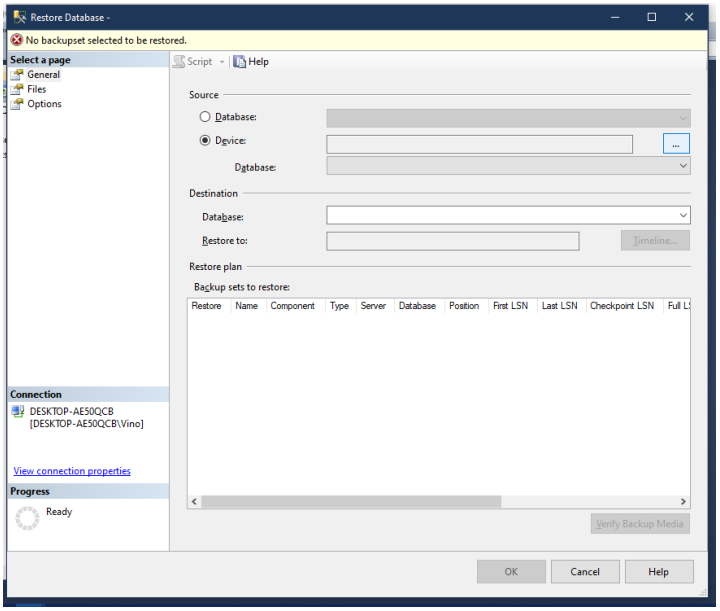
10. Check again in the folder that was selected for backup

RESTORE

1. In **Object Explorer** Right Click on Database then select “Restore Database”

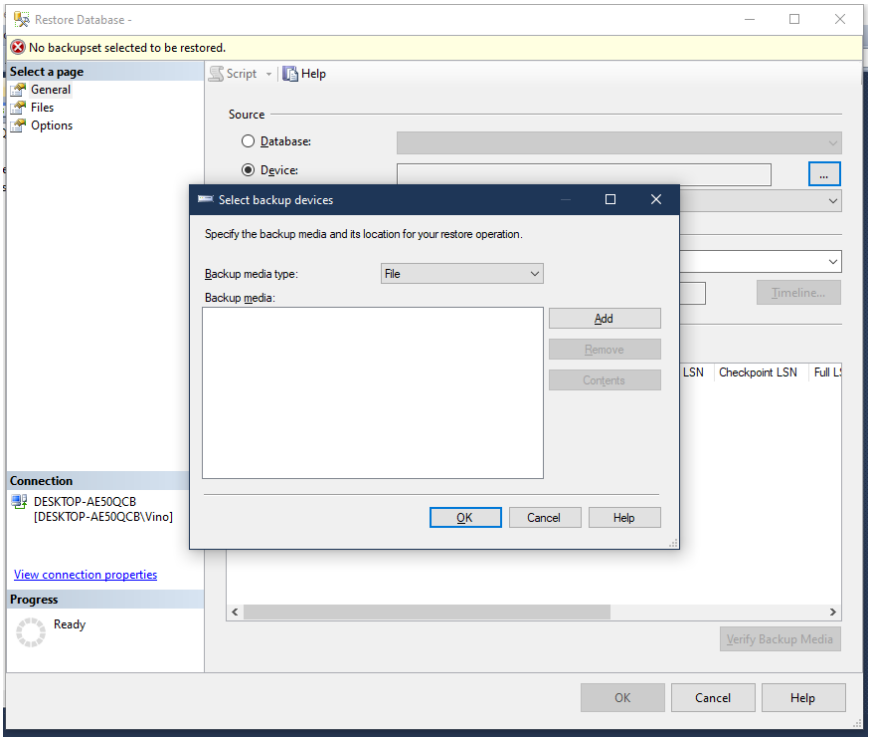


2. Select “Device” In Source and Click “…”

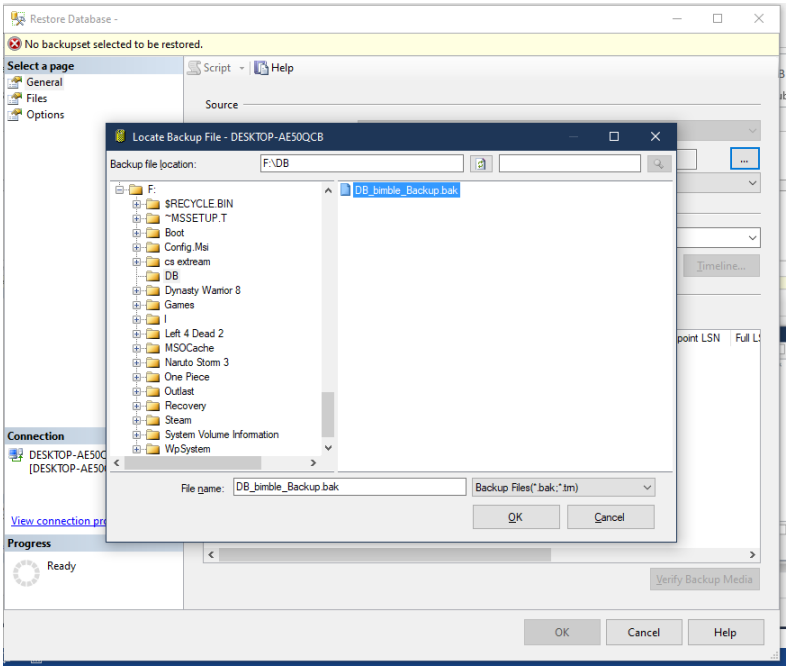


RESTORE

3. Click “Add” in **Backup media**

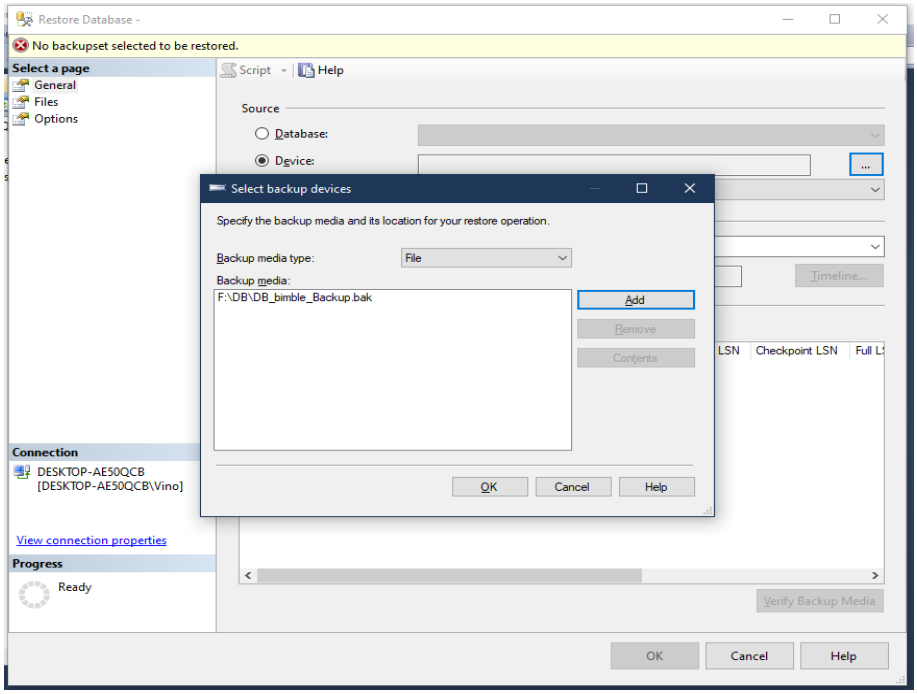


4. Find the file you want to backup

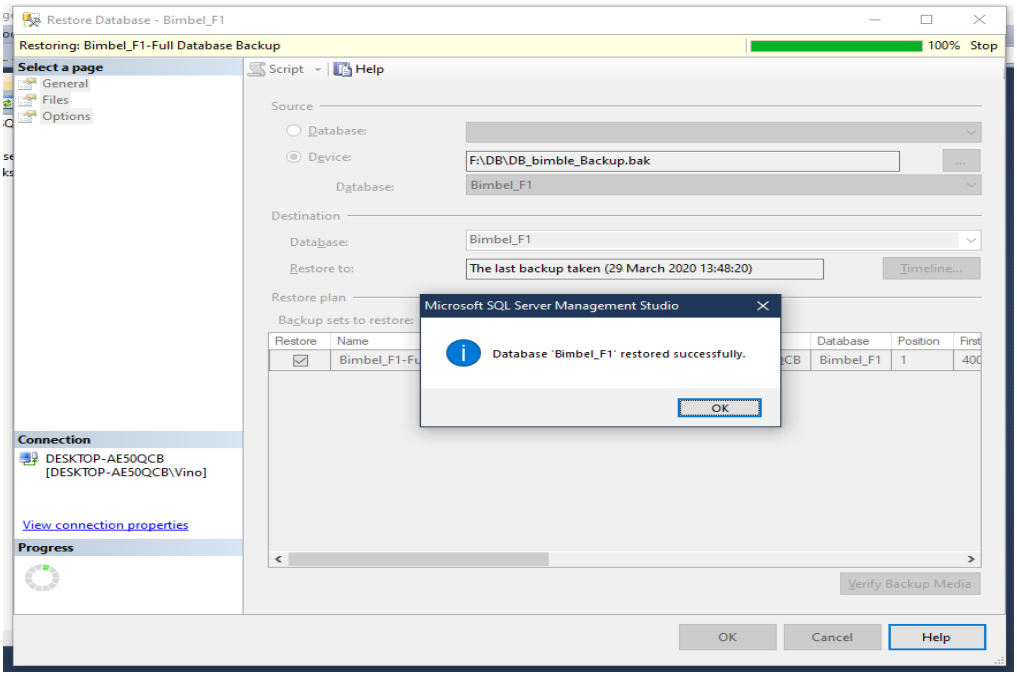


RESTORE

5. Click “OK”

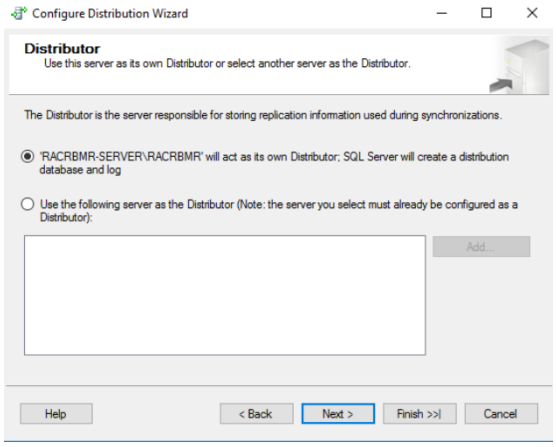


6. Then Click “OK” and Successfully Restore

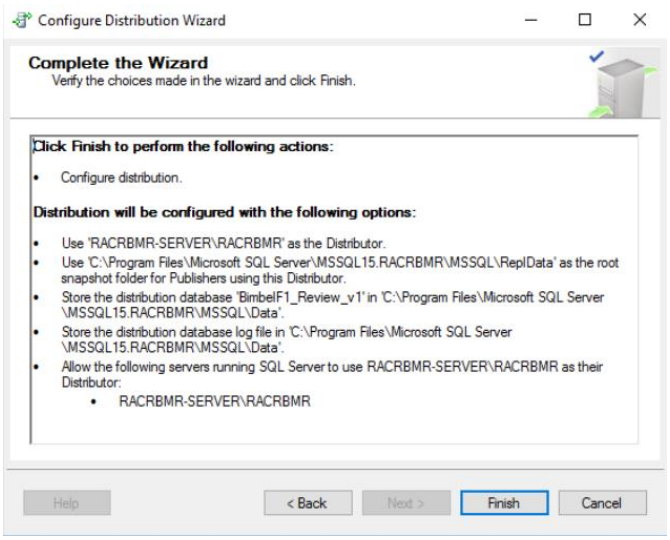


REPLICATION

1. Configure the Distributor
    a. Login into Administrator Account select right-click **Replication** then click **Configure Distribution**, Choose **'[server] will act as its own Distributor** then click Next, Next again.

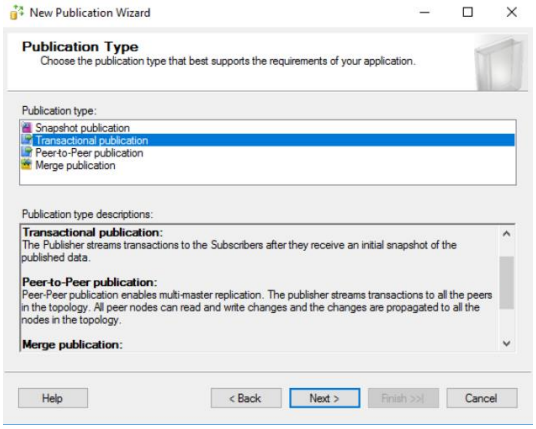


    b. On **Distribution Database** name, pick a name for the distribution in my case it is 'BimbelF1_Review_v1' v1 means it is version 1, then Next. At the **End of wizard** check **Configure distribution** checkboxes and then click Next and Finish.

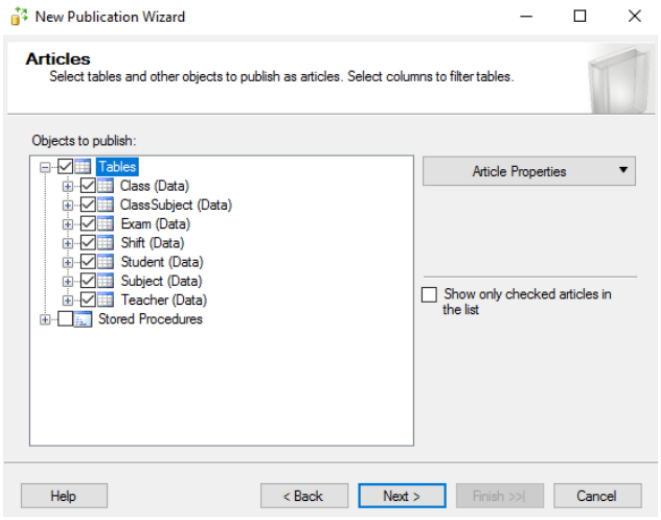


REPLICATION

2. Publishing Database for Replication
    a. Before do this step verify that SQL Server Agent **is running**, in my database it's configured to Automatically. Expand **Replication** right-click **Local Publication** click N**ew Publication** in the welcome wizard, click next then choose Bimbel_F1 database then next, for publication type choose **Transactional publication**.

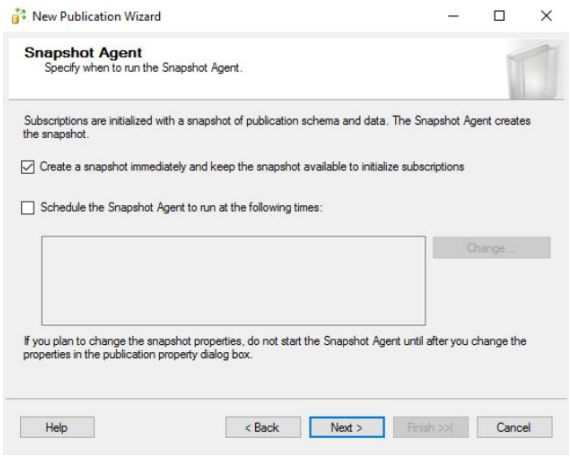


    b. Select which object to publish in Articles wizard, in my case Tables after that next

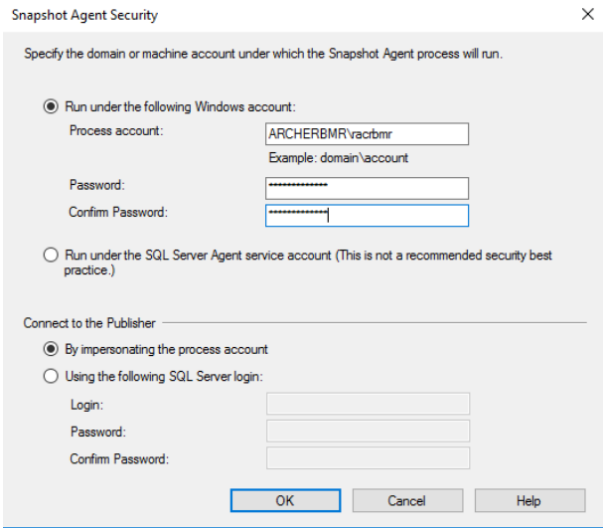


REPLICATION

c. At Filter Table Rows click next, on **Snapshot Agent** check the **Create a snapshot immediately and keep the snapshot available to initialize subscriptions** checkbox and then next.



d. Click **Security Settings** in **Agent Security** section, specify the **domain to Run under the following Windows account**, then input the **administrator account** in my case it's 'racrbmr' as well the password. On **Connect to publisher** choose By **impersonating the process account**. Then click **OK**.



REPLICATION

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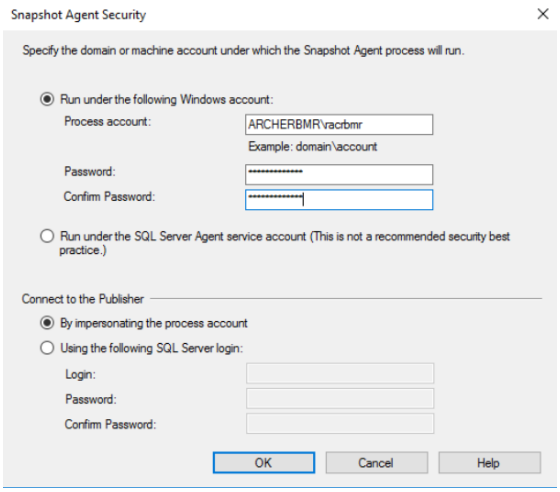
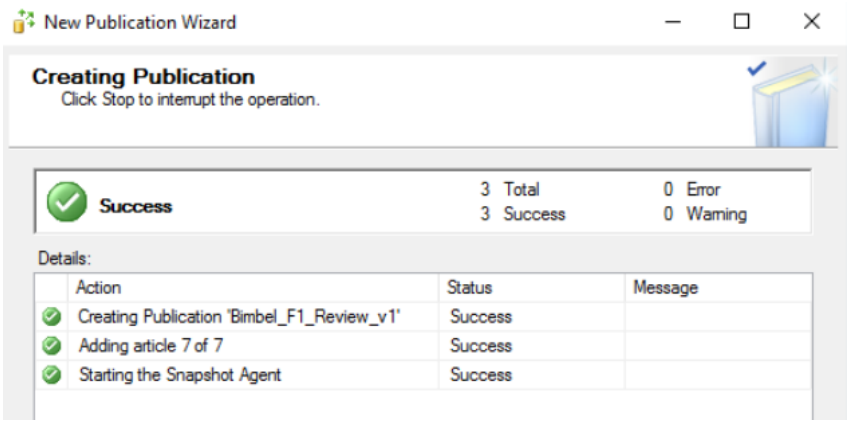
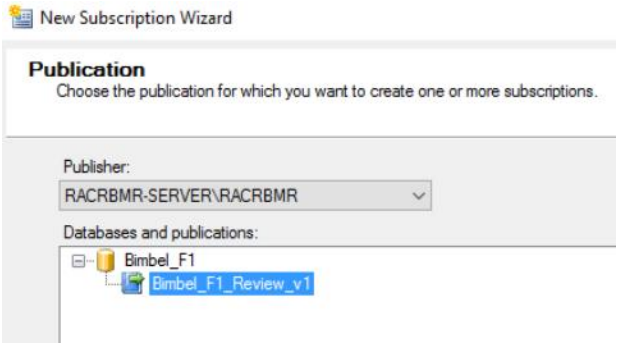


f. At the end of the wizard check **Create the publication** checkbox and click next, give name for the publication in Publication name in my case it's 'Bimbel_F1_Review_v1' then click finish.

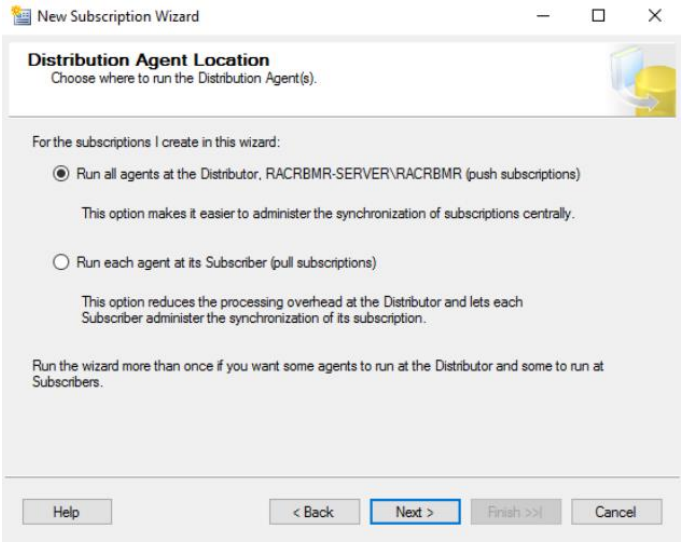


REPLICATION

3. Subscribing to a Publication
    a. Verify that SQL Server Agent **is running** in **both of the server**. Expand **Replication** right-click **Local Subscription** click **New Subscriptions**. Welcome wizard click next, for **Databases and Publication** choose ‘Bimbel_F1_Review_v1’ under ‘Bimbel_F1’ database. Then click **next**.

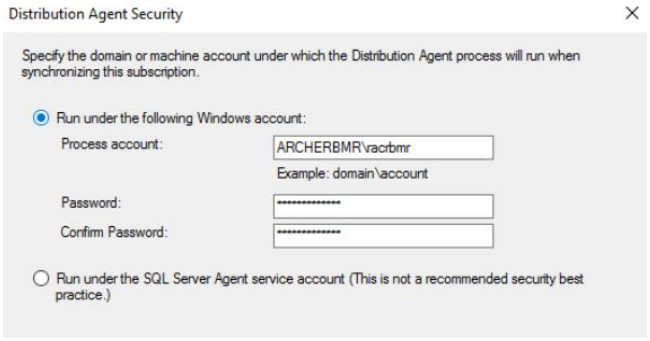


    b. For **Distribution Agent Location** choose the **Run all agents at the Distributor (push subscription)**. Click **next**.



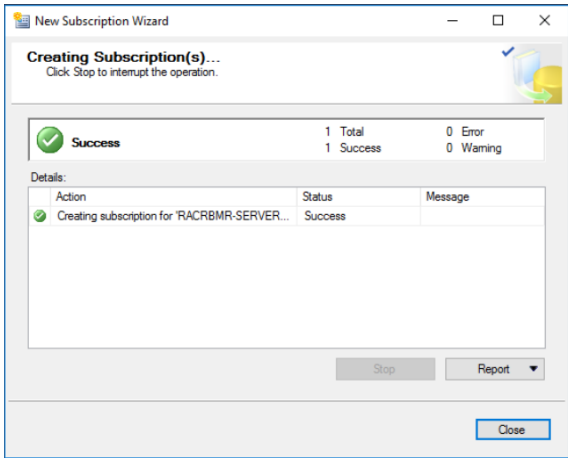
REPLICATION

c. On **Subscribers** click A**dd Subscriber** choose Add SQL Server Subscriber in the server name choose '..\SECONDRACRBMR' and for the database name type 'Bimbel_F1' then click **Next**. Click the **"…"** at **Connection to Subscriber**. **In Run the following Windows account**, input **administrator account** like before after that click **OK** then **Next**.



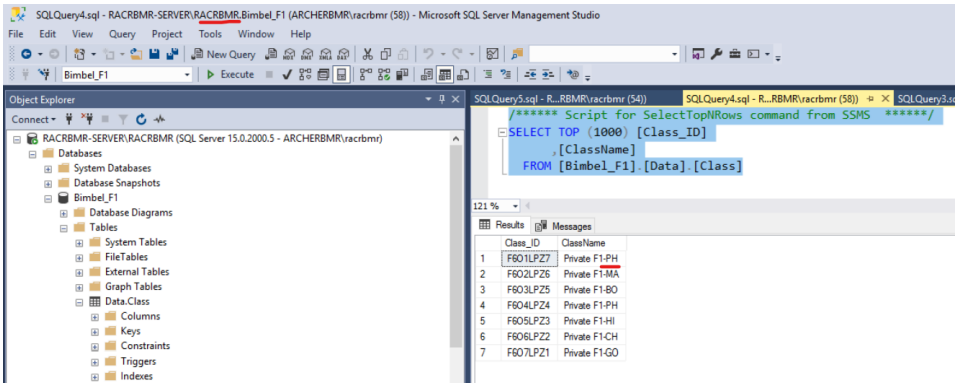
d. On the **Synchronization Schedule** verify that it's selected to Run continuously in **Agent Schedule** then click next.

e. On **Initialize Subscription** verify in **Initialize** checkbox is checked then click **next**, at the end of the wizard create **Subscription** then **next**, **Finish**.

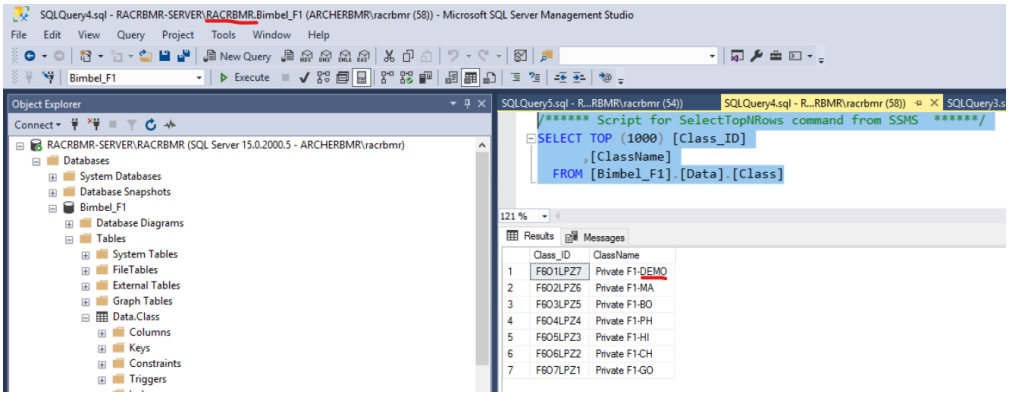


REPLICATION

4. Testing Replication of Data Between Servers
    a. **Expand Bimbel_F1** database in main '\RACRBMR' server, and create a new query to update Data.Class the query is "UPDATE Data.Class SET ClassName = 'Private F1-DEMO' WHERE Class_ID = 'F6O1LPZ7' " then Execute.
    b. Here's before the Data.Class is updated in '\RACRBMR' server



    c. Here's after the Data.Class is updated in '\RACRBMR' server



REPLICATION

d. Here's after the Data.Class is updated in '\SECONDRACRBMR' server