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Tasks

Note! There is a compatibility problem in the environment, and this lesson/exercise can be skipped!

R is a very powerful scripting language that is primarily used for advanced analytics tools but also has several integration points within *Power BI*. One such integration is the ability to apply business rules to your data with the *R* language.

In this course, we will leverage Microsoft's distribution, **Microsoft R Open**, the enhanced distribution of **R** from Microsoft Corporation. It is a complete open source platform for statistical analysis and data science. Like **R**, **Microsoft R Open** is open source and free to download, use, and share.



Once **Microsoft R Open** has been installed, you can then configure **Power BI** to recognize the home directory where **R** libraries may be installed.

Task 1 - Installation and configuration of R

Step 1: Before you begin installing Microsoft R Open 4.0.2, make sure the machine on which you will install meets the minimum hardware and software requirements defined below:

- Windows® 10, Windows Server® 2012 and 2016
- 64-bit processor with x86-compatible architecture
- Free disk space: 250 MB
- RAM: 1 GB required, 2 GB recommended.

Ensure that .NET 4.5 is already installed on your machine. If not, install it now by clicking [link](#).

Step 2: Click [link](#) to download **Microsoft R Open** for Windows 10/11 and Windows Server, 2012, 2016.

Step 3: Go to the directory where you downloaded the **Microsoft R Open** installer (e.g. **Downloads**).

Step 4: Launch the **Microsoft R Open** installer as a user with **administrator privileges** and follow the prompts. All package dependencies are installed during the installation of **Microsoft R Open** as long as your machine has **access to the internet**.

Follow the installations steps below:



Microsoft R Open 4.0.2

Let's get started

Microsoft R Open is the enhanced distribution of R from Microsoft Corporation. It is a complete open source platform for statistical analysis and data science.

You can get more information about Microsoft R Open at

<https://aka.ms/microsoft-r-open-docs>

Click Continue to begin the installation.

Continue



Microsoft R Open 4.0.2

Configure the installation

Choose an installation directory:

C:\Program Files\Microsoft\R Open\R-4.0.2

Browse

The following components will be included:

- ☒ Microsoft R Open
 - ☒ MRO
 - ☒ MKL
- ☒ Visual C/C++ Runtime 2015

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Microsoft R Open 4.0.2

License Agreement for Microsoft R Open

Microsoft R Open is an enhanced distribution of R made available by Microsoft under the GNU General Public License v2. The full text of this license is provided in the file COPYING in the top-level Microsoft R Open installation directory.

R is © the R Foundation for Statistical Computing. For more information on R-related products and services, visit <http://r-project.org>.

By acknowledging this license you are choosing to download Microsoft R Open and install it on your machine.

☒ I acknowledge the above licensing information

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Microsoft R Open 4.0.2

License Agreement for Math Kernel Libraries

Microsoft R Services MKL
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Microsoft R Open 4.0.2



Almost there

We are ready to start the installation.

Microsoft R Open will be installed into the directory:

C:\Program Files\Microsoft\R Open\R-4.0.2

Click Install to begin the installation.

Customize

Install



Microsoft R Open 4.0.2



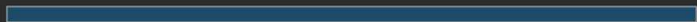
Installing

Overall:



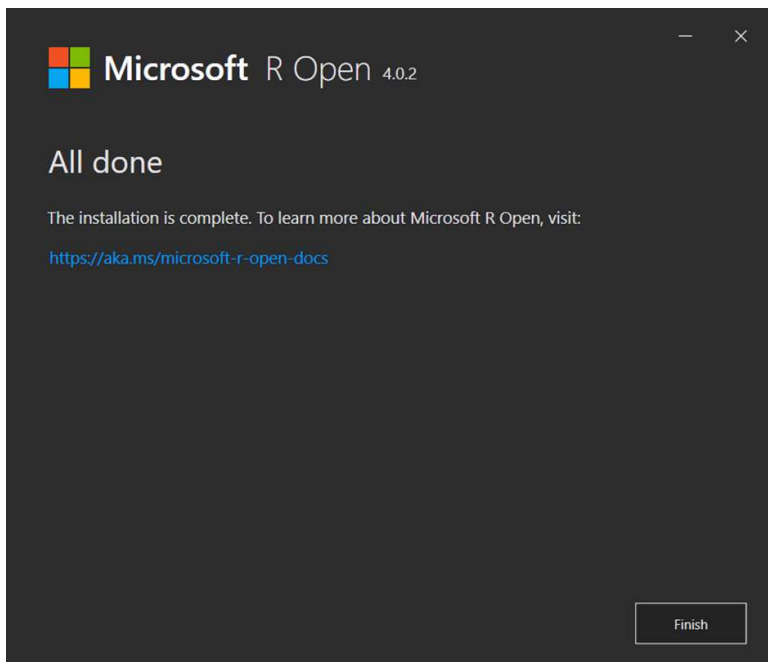
Installing: Microsoft R Open

Component:



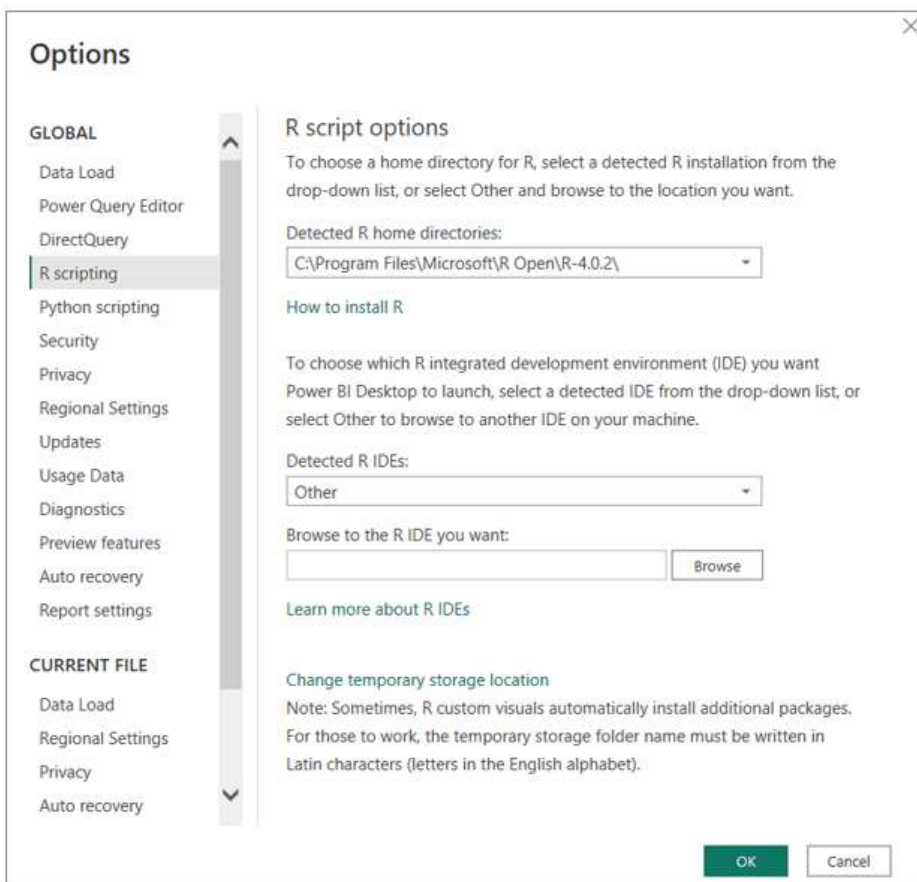
Action 0.40.42: CostFinalize. Computing space requirements

Cancel



Step 5: Launch a new instance of **Power BI Desktop** to set up the **R** integration with **Power BI**. Click the menu options **File | Options and settings | Options**.

Step 6: Choose the **R** scripting section and ensure that the **Detected R home directories** property is filled with the **R** instance you just installed, as shown below.



Step 7: Once this is completed, click **OK**.

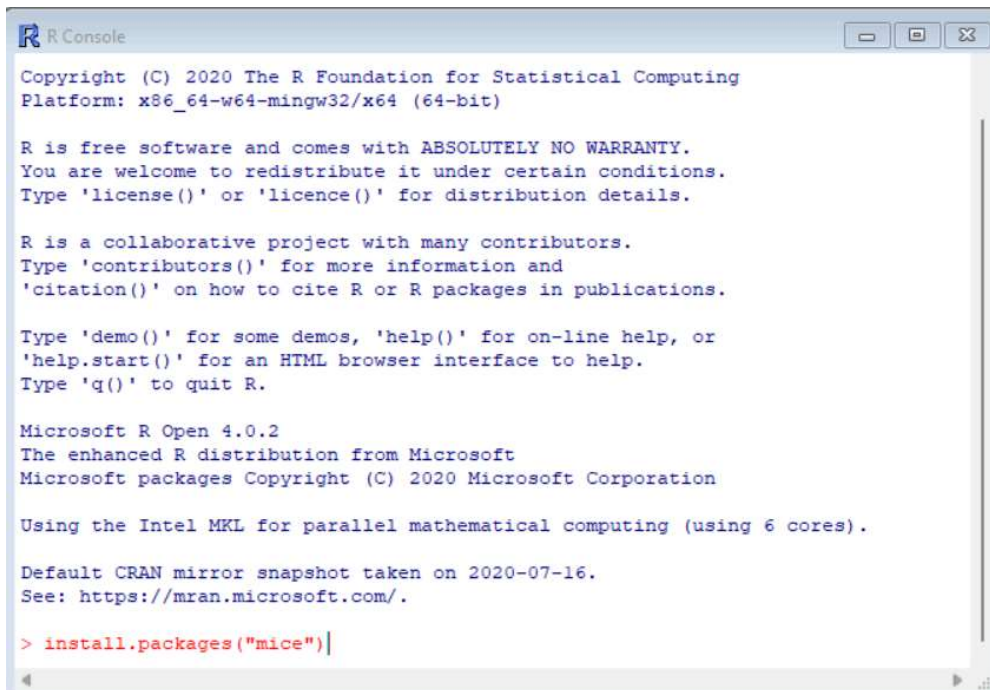
With this setup now complete, let's see how we can take advantage of *R* within *Power BI*.

Task 2 - The R script transform

With the **R** distribution now installed and configured to integrate with **Power BI**, you are now ready to see what's possible with these new capabilities. In this task, you will be looking at data from the European stock market. The problem with this dataset, which calls for it to be corrected with **R**, is that the file provided to you has missing values for certain days. So, to get a more accurate reading of the stock market, you will use an **R** package called *MICE* to impute the missing values:

Step 1: Before beginning in **Power BI**, you should ensure that the *MICE* library is installed and available in the **R** distribution you set up in the previous task. To do this, launch **Microsoft R Open** from your device. This is the basic RGUI that was installed for you to run **R scripts** with. Although we will be using **Microsoft R Open**, for many developers, the preferred method for writing **R scripts** is a free open source tool called **RStudio**. **RStudio** includes a code editor and debugging and visualization tools that many find easier to work with. You can download **RStudio** from <https://www.rstudio.com/>.

Step 2: Type the following script: `install.packages("mice")` in the **R Console** window, and then hit **Enter**:



```
R Console

Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

Microsoft R Open 4.0.2
The enhanced R distribution from Microsoft
Microsoft packages Copyright (C) 2020 Microsoft Corporation

Using the Intel MKL for parallel mathematical computing (using 6 cores).

Default CRAN mirror snapshot taken on 2020-07-16.
See: https://mran.microsoft.com/.

> install.packages("mice")
```

Step 3: If you are prompted to install in a personal library, select **yes**.



Step 4: You can close the **R Console** window and return to **Power BI Desktop** when the installation is finished.

Step 5: Click [link](#) to download **EuStockMarkets_NA.csv**, and save it to **C:\PBExams**.

Step 6: In **Power BI Desktop**, start by connecting to the required data source called **EuStockMarkets_NA.csv** from **C:\PBExams** using the **Text/CSV** connector. Once you connect to the file, click **Transform Data** to launch the **Power Query Editor**.

You will notice that there are a few days that are missing values in the *SMI (Stock Market Index)* column. We would like to replace values that show *NA* with approximate values using an **R script**.

Go to the **Transform** ribbon, and select the **Run R Script** button on the far right.

Step 6: Use the following **R script** to call the *MICE* library that you recently installed to detect what the missing values in this dataset should be:

```
# 'dataset' holds the input data for this script
library(mice)
tempData <- mice(dataset,m=1,maxit=50,meth='pmm',seed=100)
completedData <- complete(tempData,1)
output <- dataset
output$completedValues <- completedData$"SMI missing values"
```

Step 7: Click **OK**. If you are prompted with a warning indicating Information is required about data privacy, click **Continue**. You may also be prompted with a Privacy levels dialog box. If so, select **Ignore Privacy Levels** checks for this file and then click **Save**.

Step 8: Next, click on the hyperlink on the table value next to the *completedData* row to see the result of the newly implemented transform for detecting missing values.

This new output has replaced the missing values with new values that were detected based on the algorithm used within the **R script**. To now build a set of report visuals on this example, you can click **Close & Apply** on the **Home** ribbon.

This is just one simple way that **R** can be used with **Power BI**. You should note that in addition to using **R** as a transform, it can also be used as a data source and as a visual within **Power BI**.

While this course highlights the programming language **R** to extend the capabilities of **Power BI**, some might prefer **Python**. **Python** is another programming language that allows for extensibility into **Power BI** to create new data connectors, transforms, and visuals. So, should you choose **R** or **Python**? That depends on which you are more comfortable with. If you have already spent time learning **Python**, then stick with that!

End-of-Exercise

Olet suorittanut 100 % oppitunnista

100%

◀ Exercise 4 - Advanced transformation options

Siirry...

Exercise 6 - AI Insights ►

Olet kirjautunut nimellä Janne Bragge. (Kirjaudu ulos)
PowerBI

Suomi (fi)

Deutsch (de)

English (en)

Français (fr)

Suomi (fi)

Svenska (sv)

Hanki mobiilisovellus

