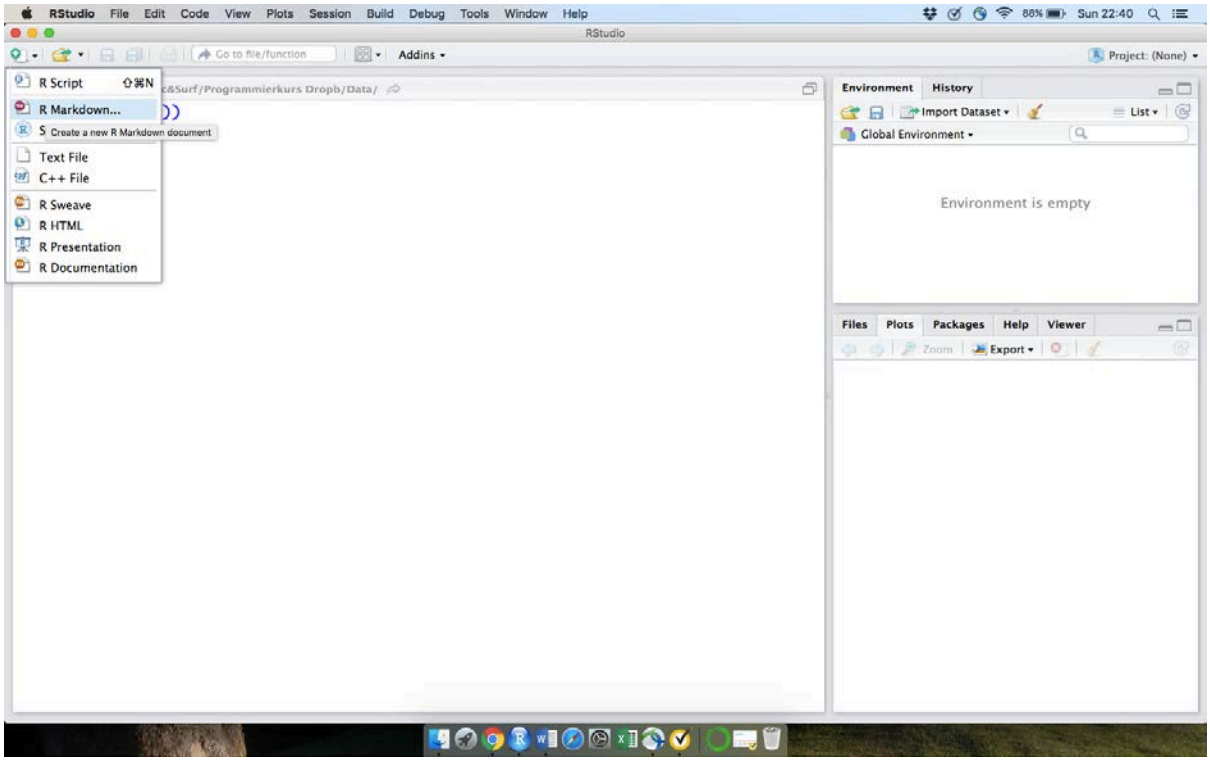
Getting ready for RMarkdown

RMarkdown is a framework that is integrated into RStudio. It allows for producing documents that directly integrate output from running R code, as well as text. Importantly, it is possible to program pieces of text, such that the text can react to output from running R code.

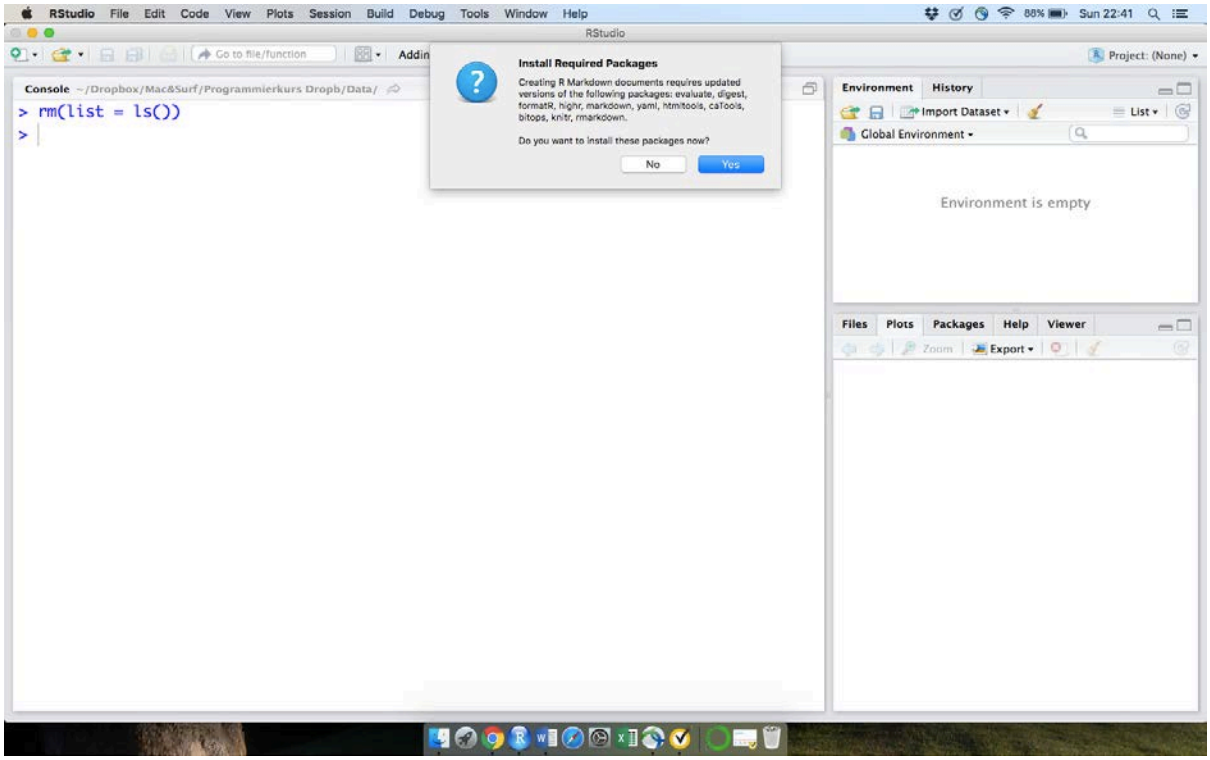
RMarkdown allows for compiling documents into html and pdf format. Word is also a possibility, but the functionality is quite reduced, compared to html and pdf. In order to enable RMarkdown, you have to install the RMarkdown package (see below). To compile documents to pdf format you may also have to install Latex, depending on your system. All relevant installations are explained below, separately for Macs and Windows.

Getting ready for RMarkdown on a Mac

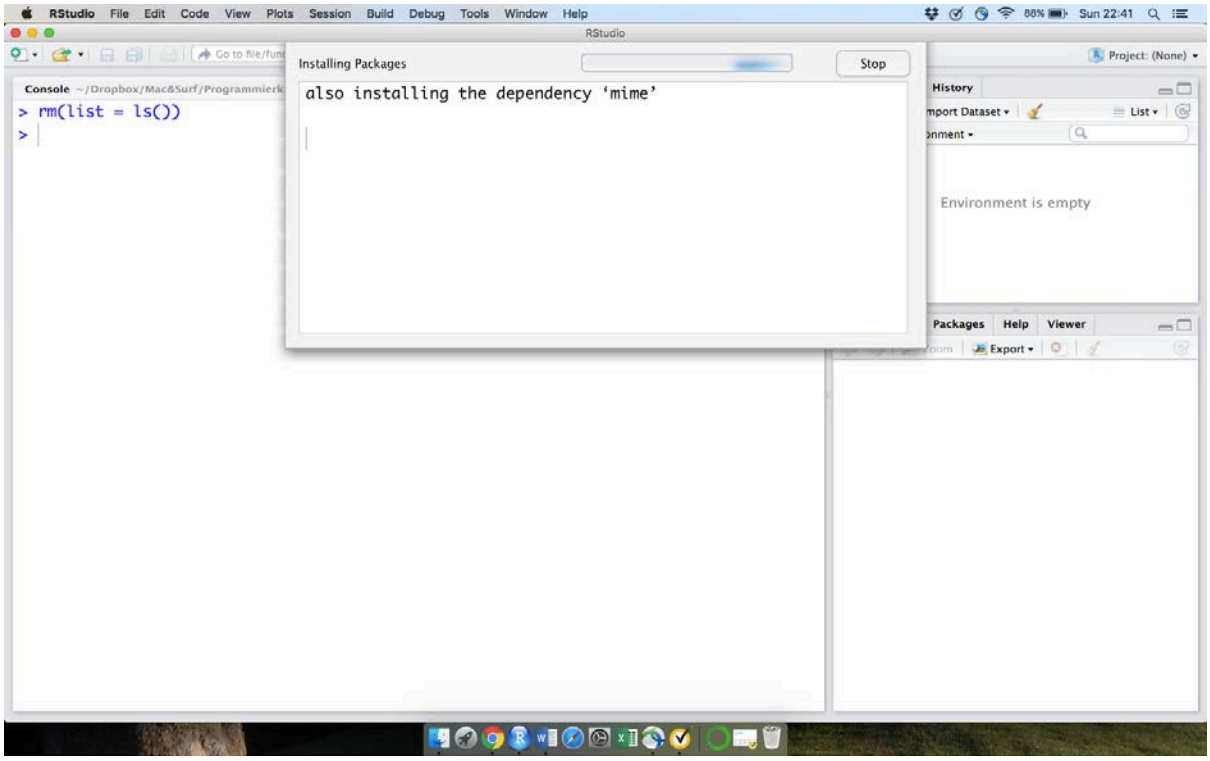
Open RStudio and choose “R Markdown” from the little plus menu as shown below.



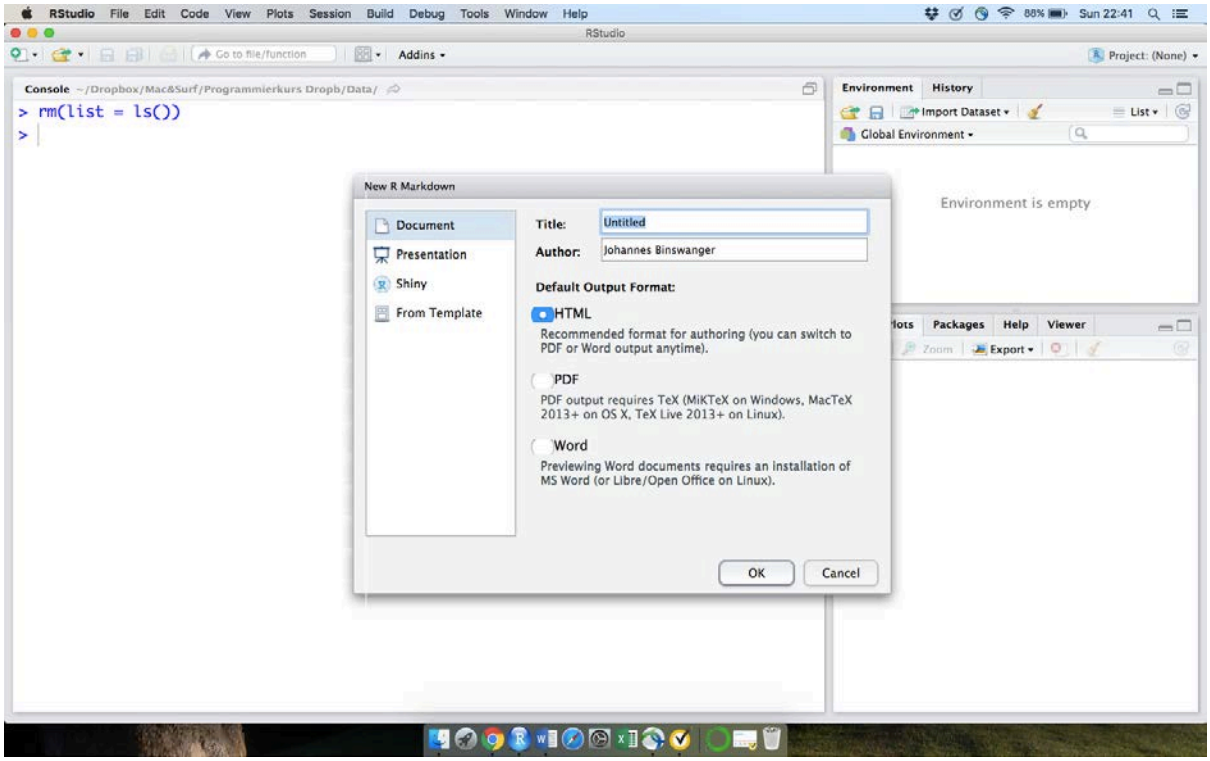
RStudio notices that this requires some new packages. Just click Yes.



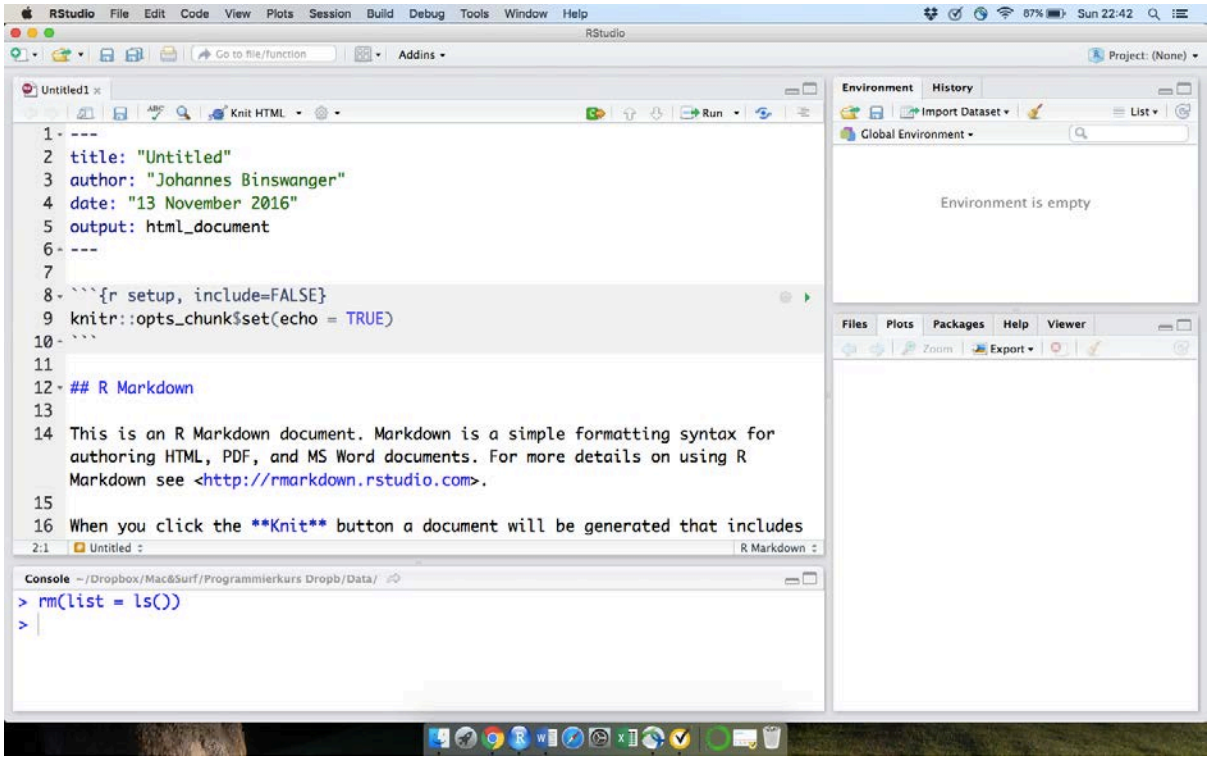
The installation is then running…



Now RStudio is ready for the compilation of a sample document that it provides. Just check it out, keep title and author as suggested, and choose HTML. Confirm with OK.

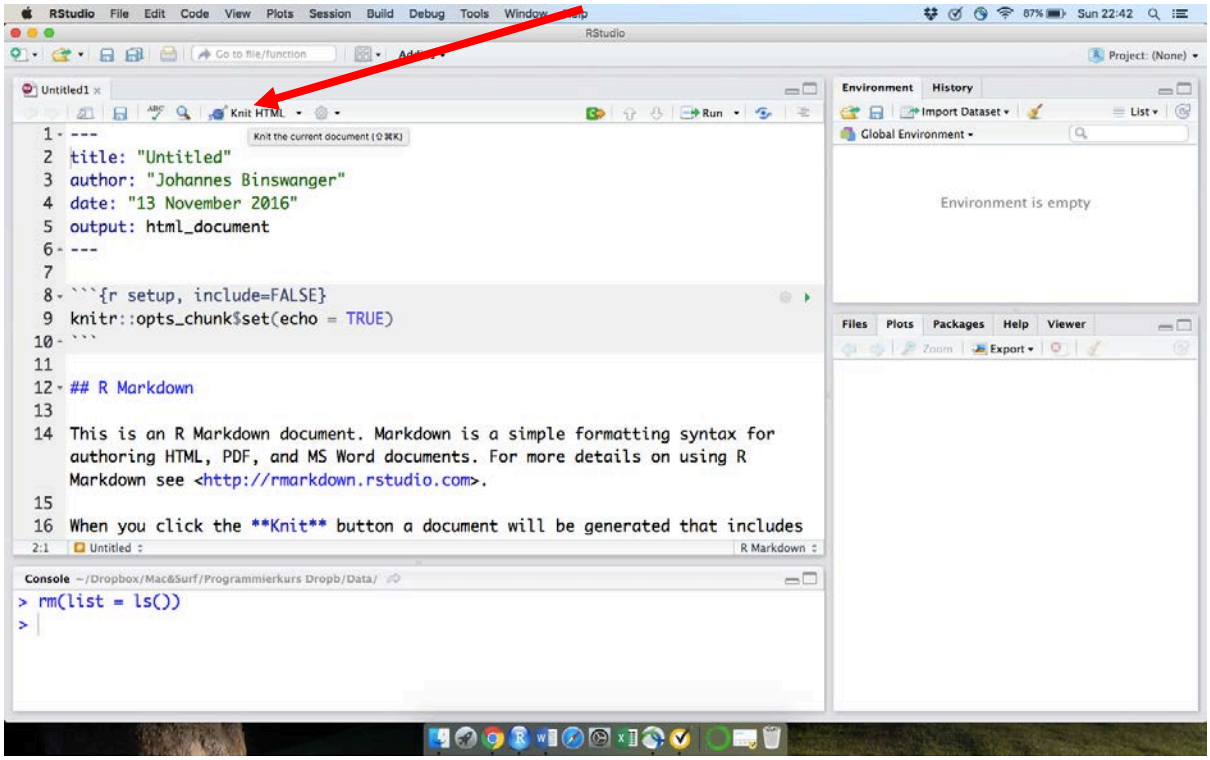


What you get is then the following sample document.

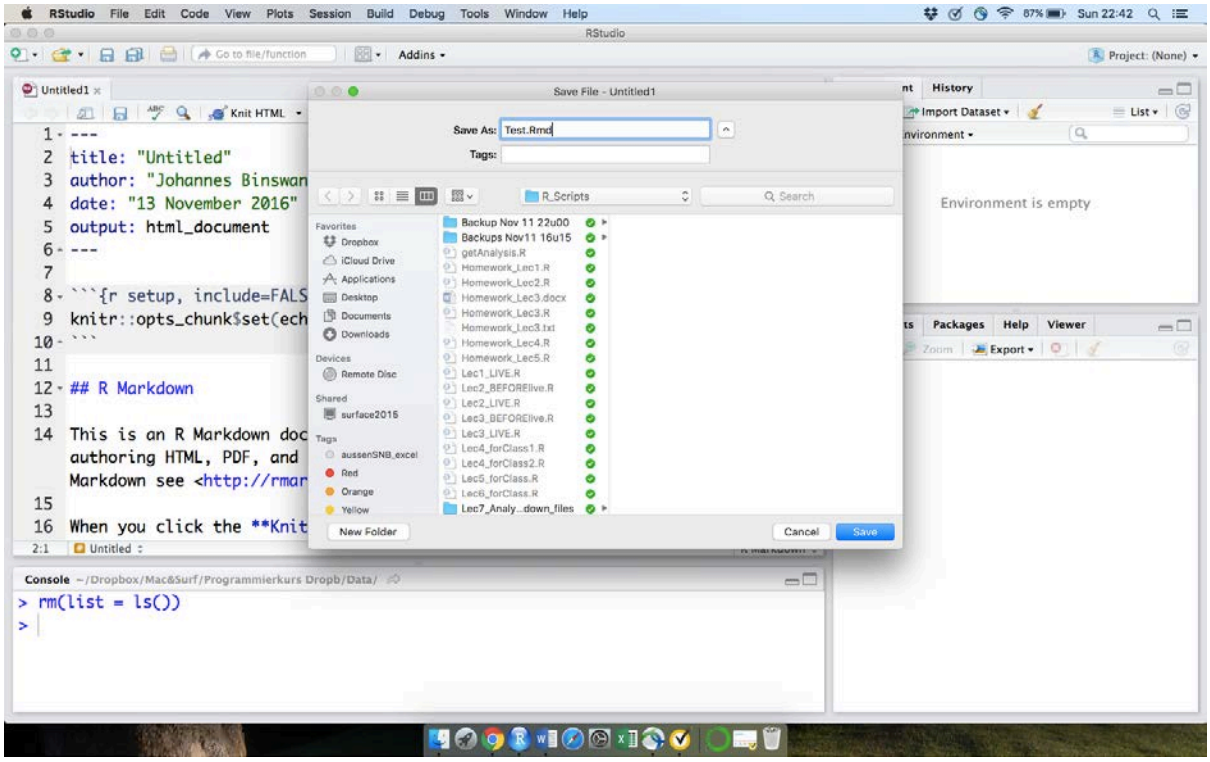


Choose Knit HMTL

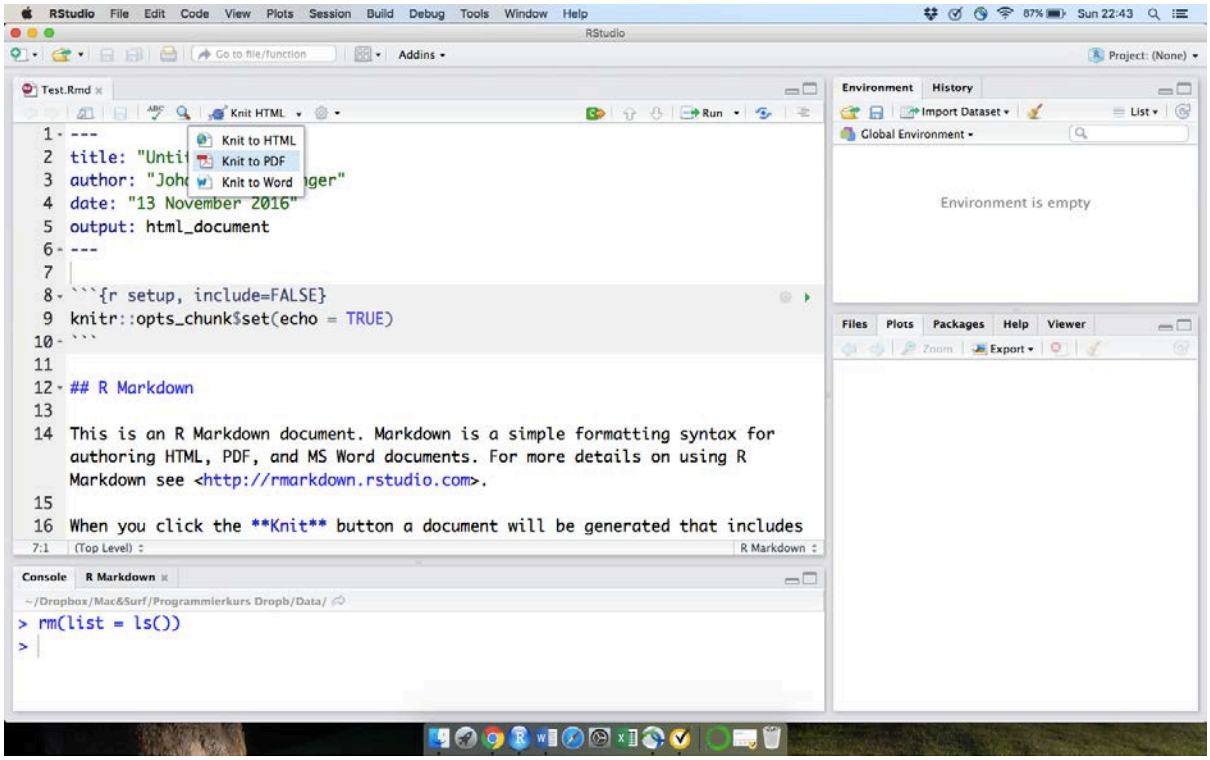
IMPORTANT: If there is any dot (“.”) in the date line (e.g. because your date appears in German in the form of “13. November 2016”, make sure to remove the dot! Otherwise, you will get a compilation error.



You are asked to save your document. Choose a name such as “Test”. It is very important that you provide the extension `.Rmd`! Then save and enjoy the output.



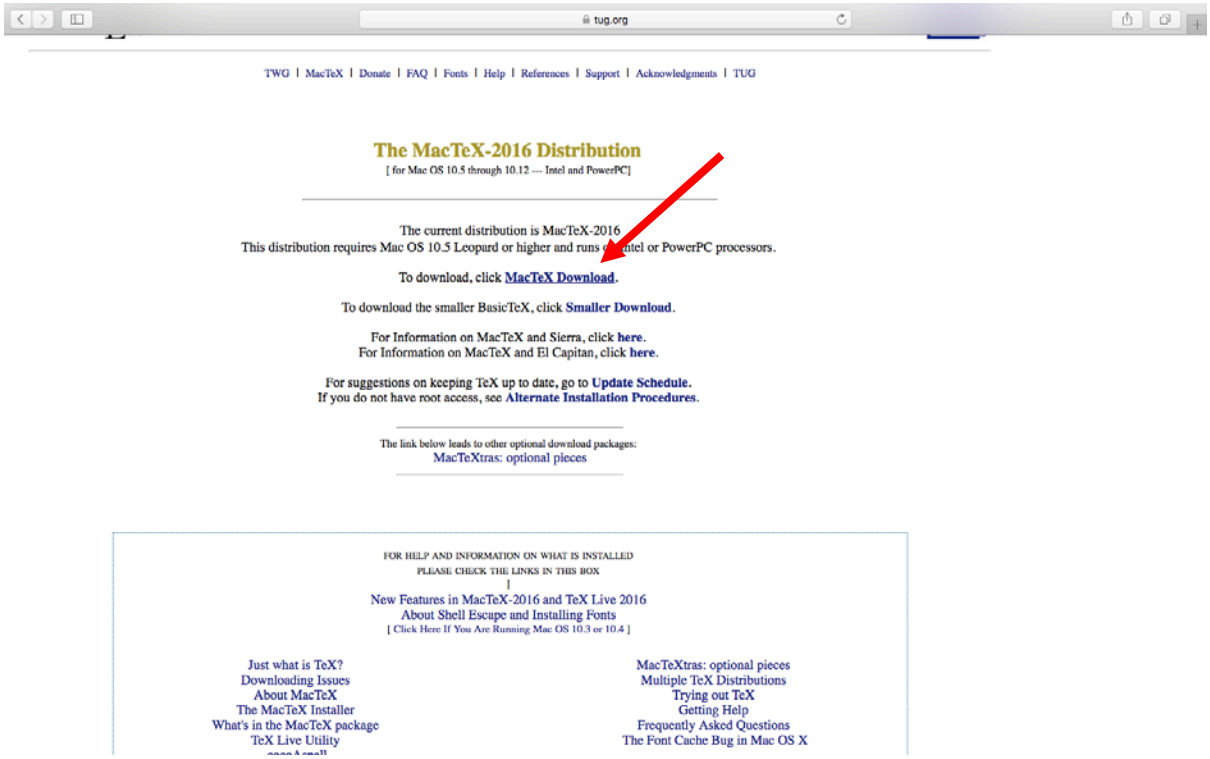
Now we want to compile to PDF, instead of HTML. Choose “Knit to PDF” from the menu.



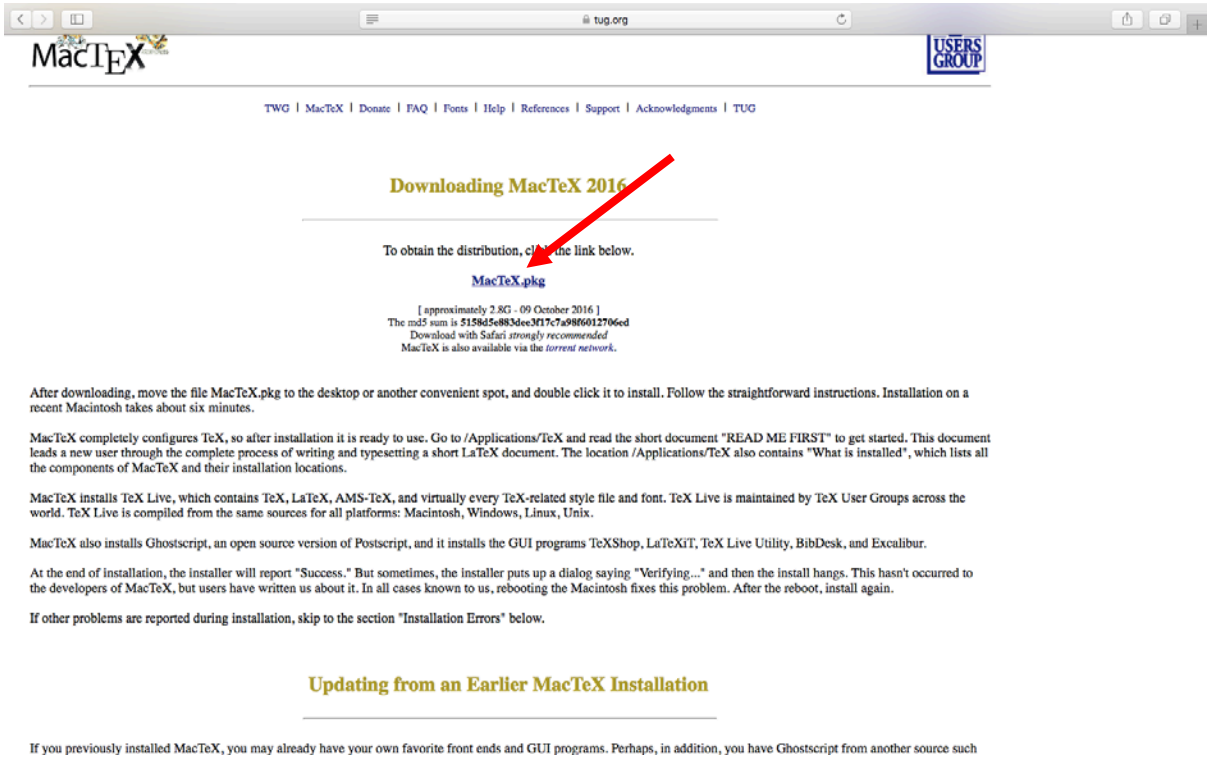
I expect that for some, if not most, of you this works. If it does not work, you have to go on with the below steps and install Latex. If you feel you have a flair for programming and consider using a very powerful open-source text editing program that is widely used among scientists, then you should install Latex anyway!

So, to install Latex on a Mac, go to https://tug.org/mactex/. The people from RStudio strongly suggest using Safari as a browser, not Chrome. I haven’t tried whether it makes any different but used Safari.

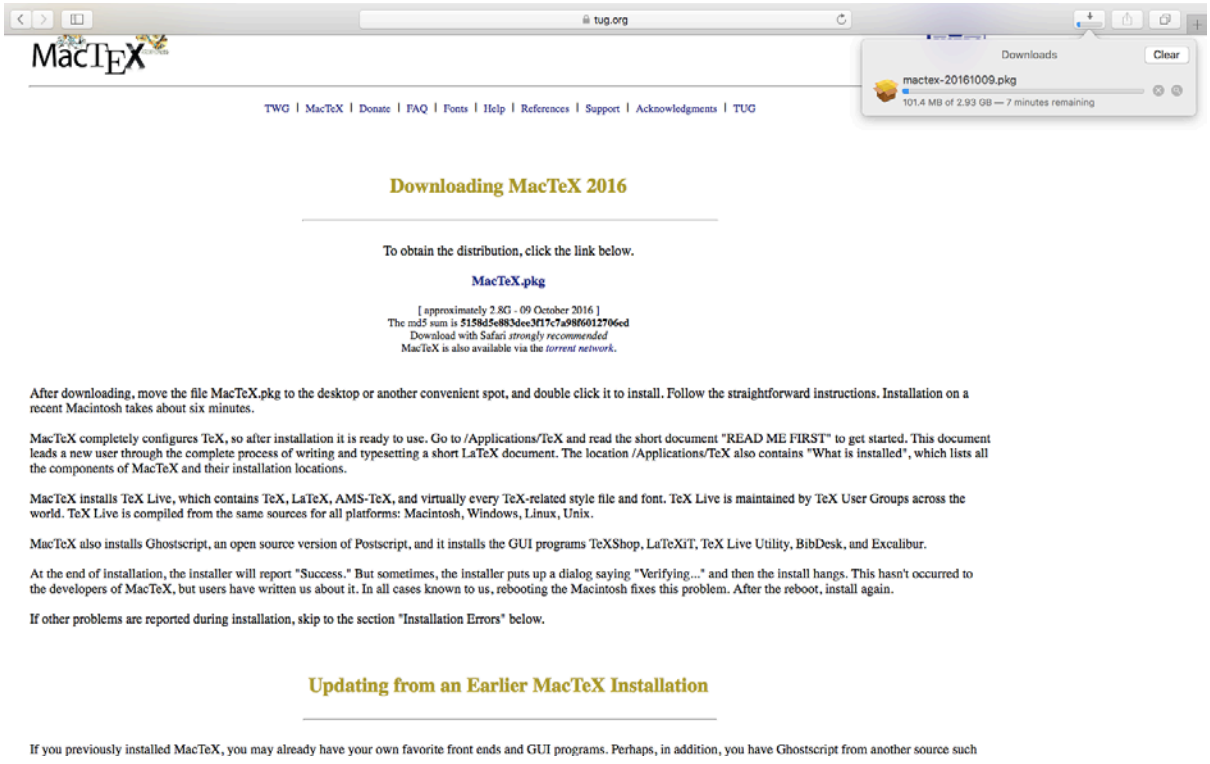
The tug.org page looks like this. Go to MacTeX Download (which will install Latex on your system).



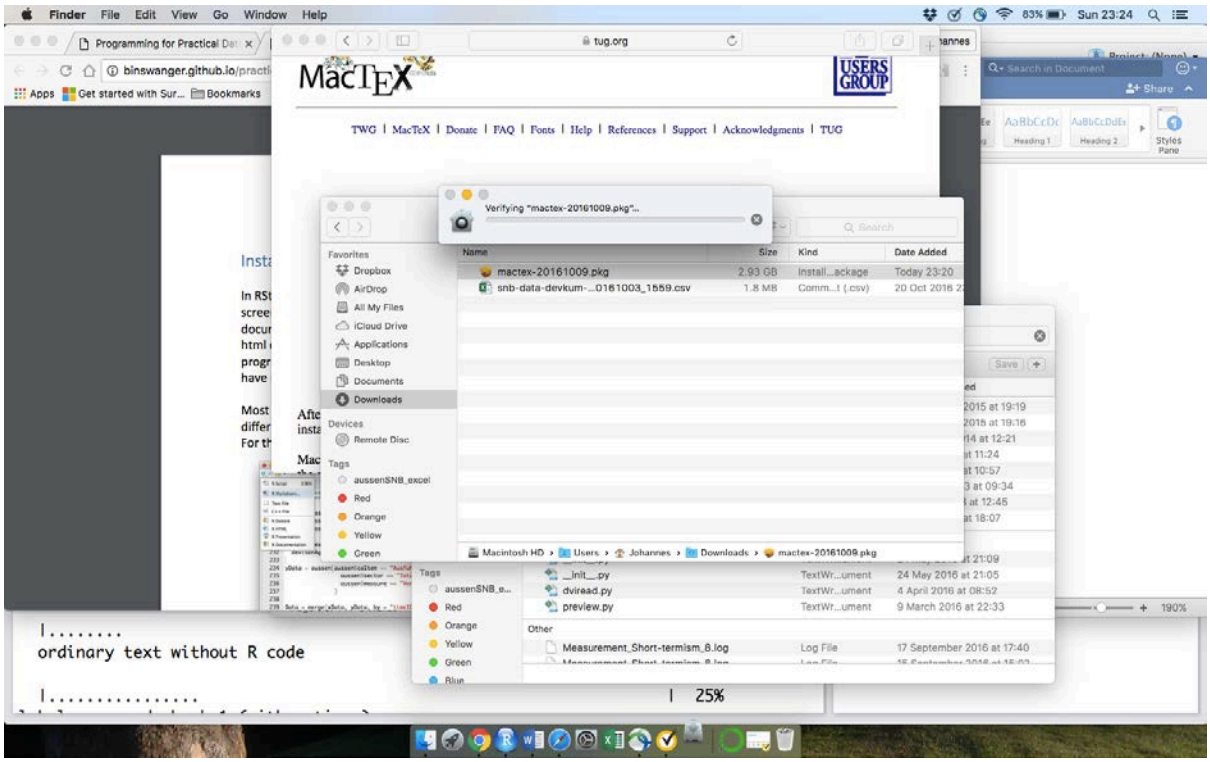
Click on MacTeX.pkg



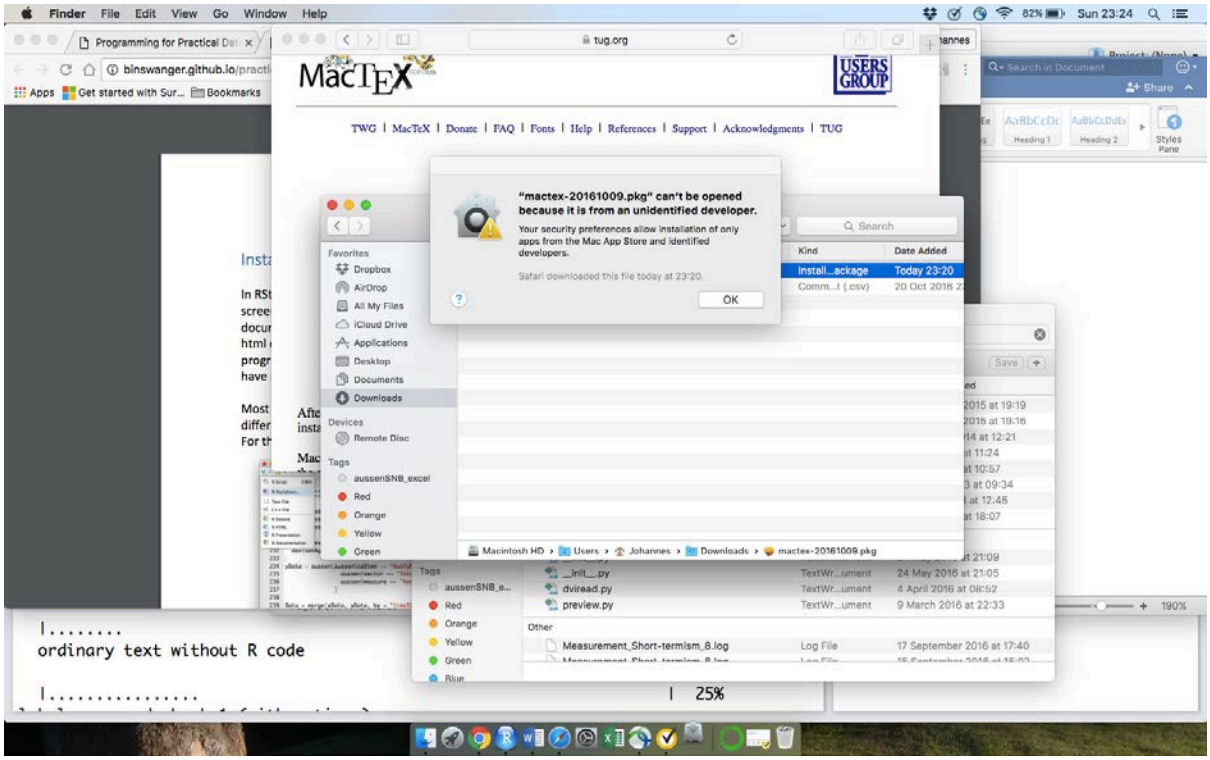
The download starts… It takes plus/minus 10 minutes. It may take (much) longer if your internet connection is slow.



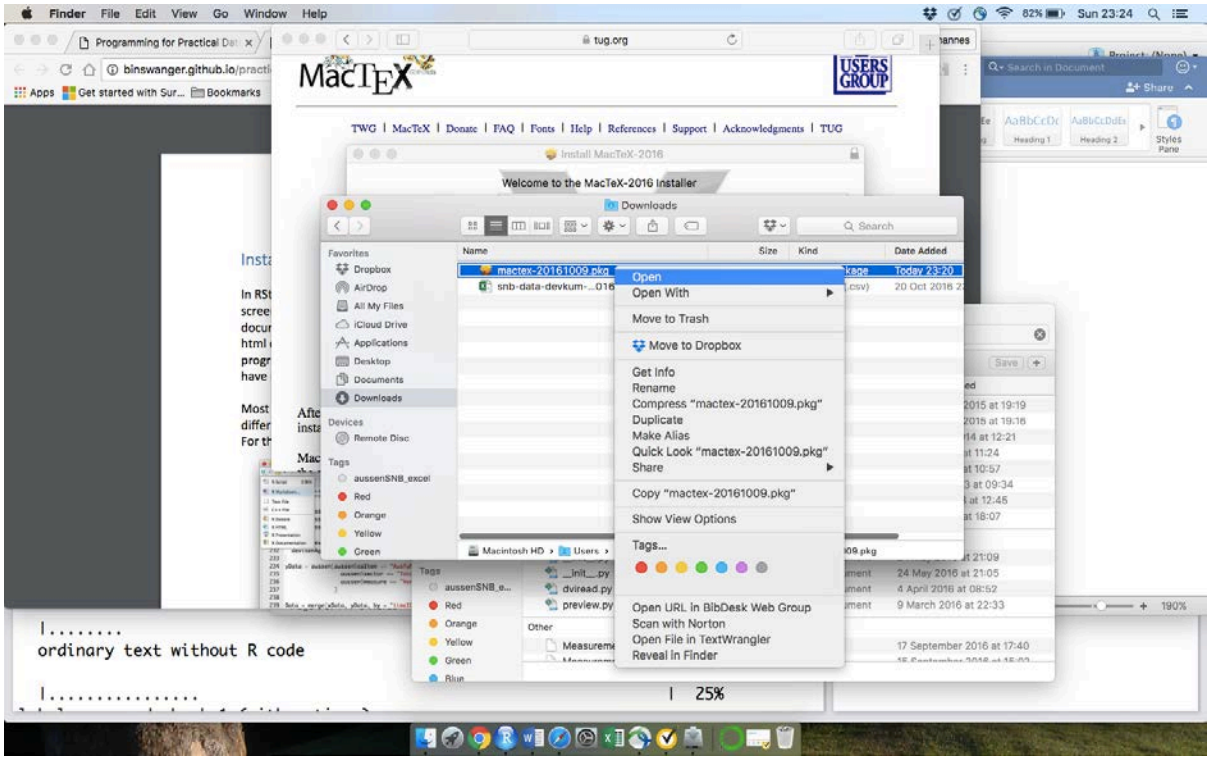
If you then just double click on the resulting item `mactex-20161009.pkg`, Apple may try to prevent you from doing harm to your machine….



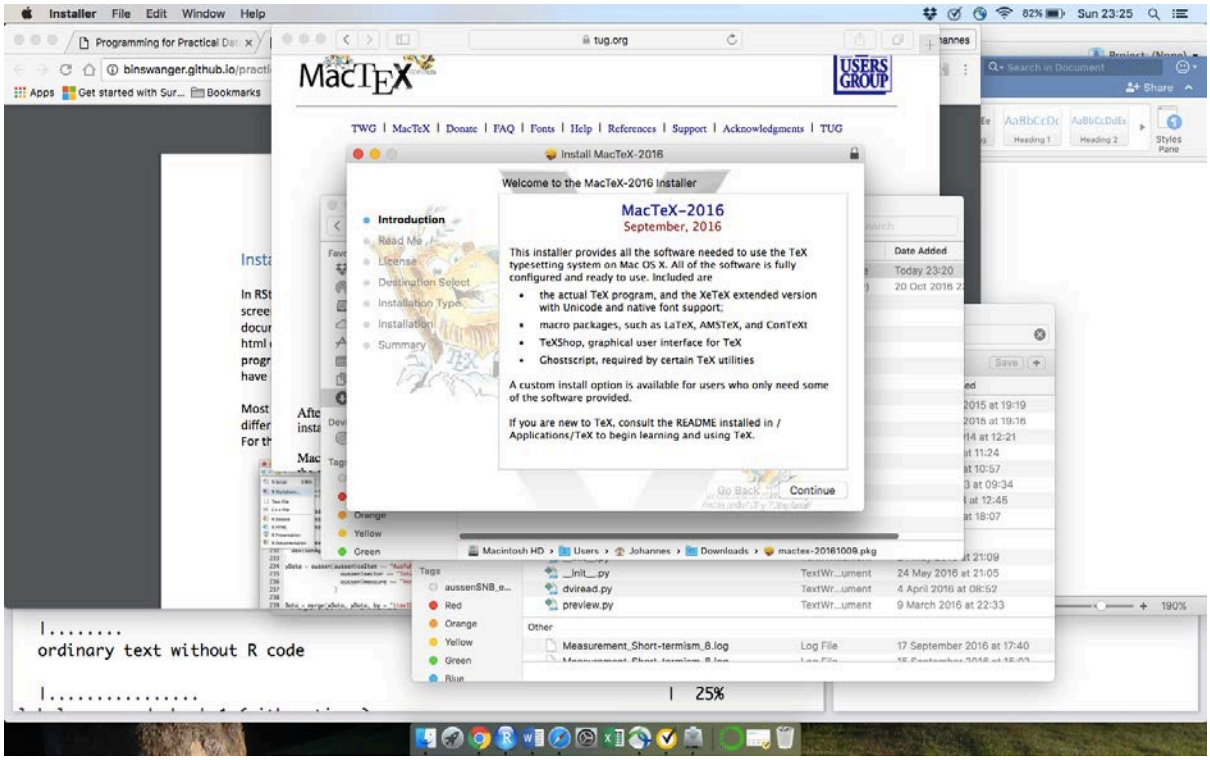
Apples paternalistic attitude…



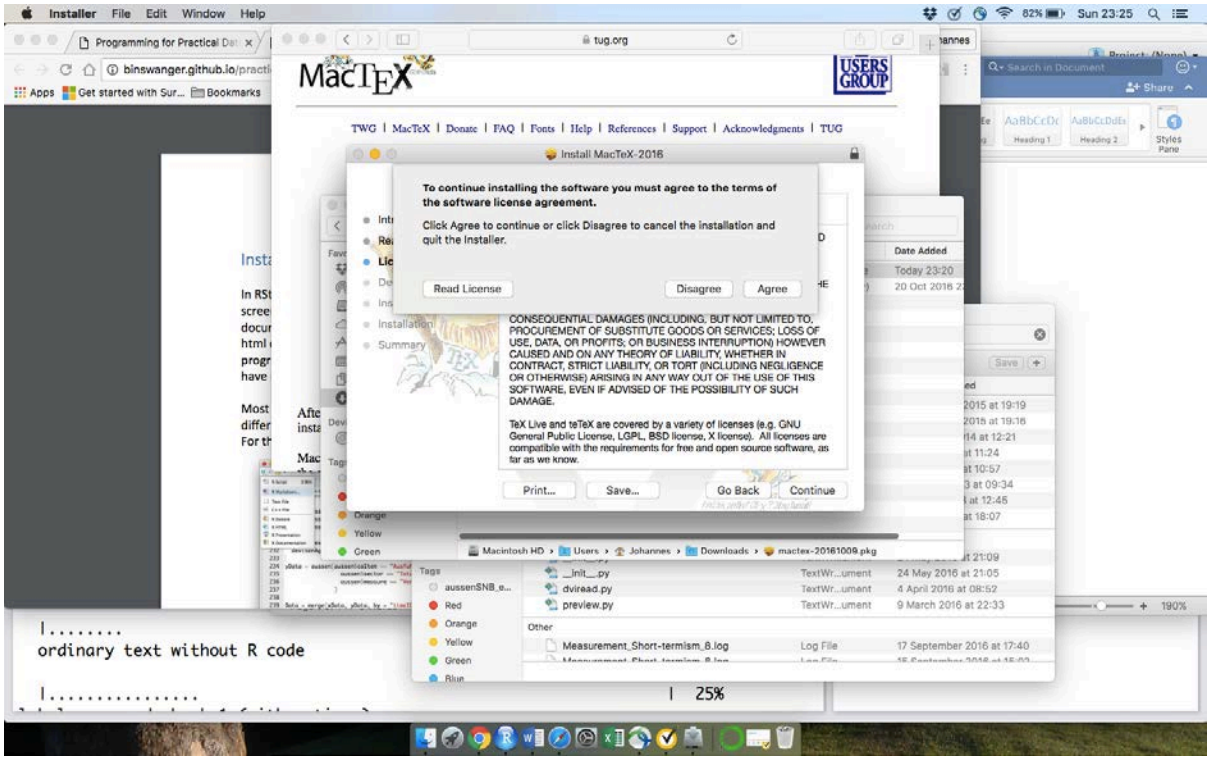
However, you are a grown-up and know how to work around it. Just right-click on the item and choose open.



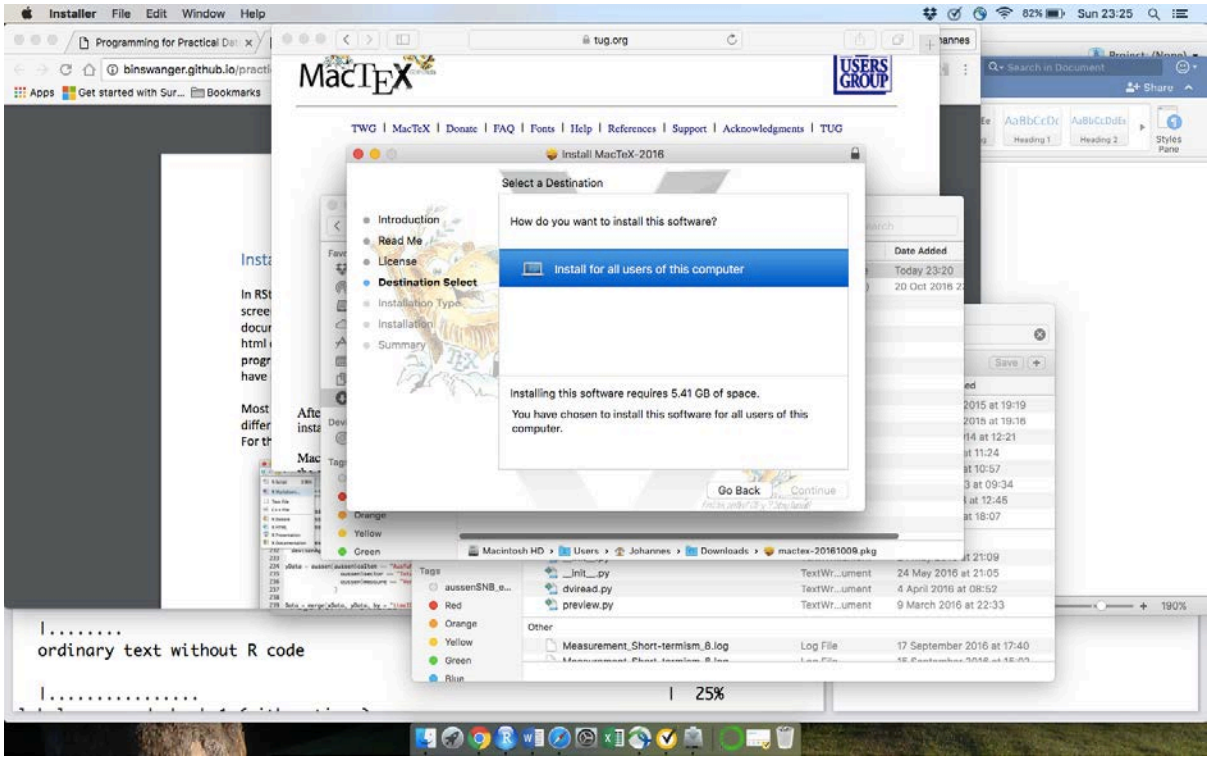
And the installation starts!



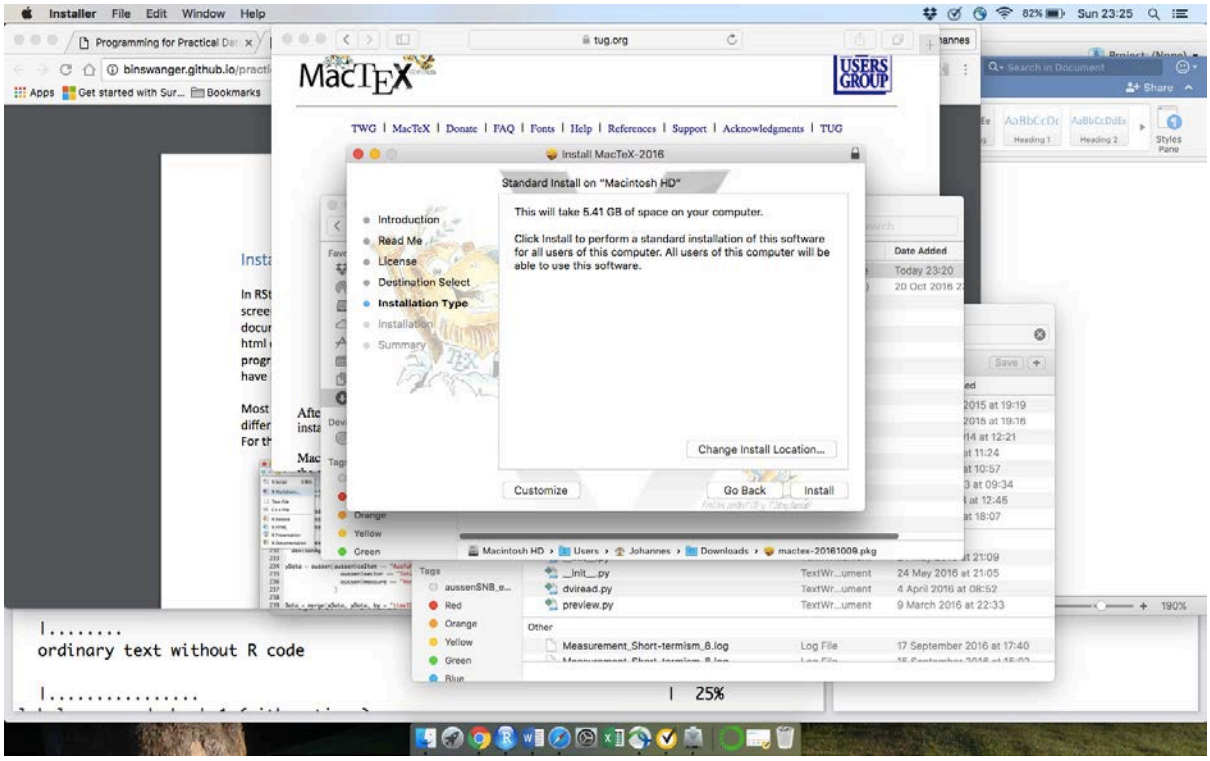
Agree…

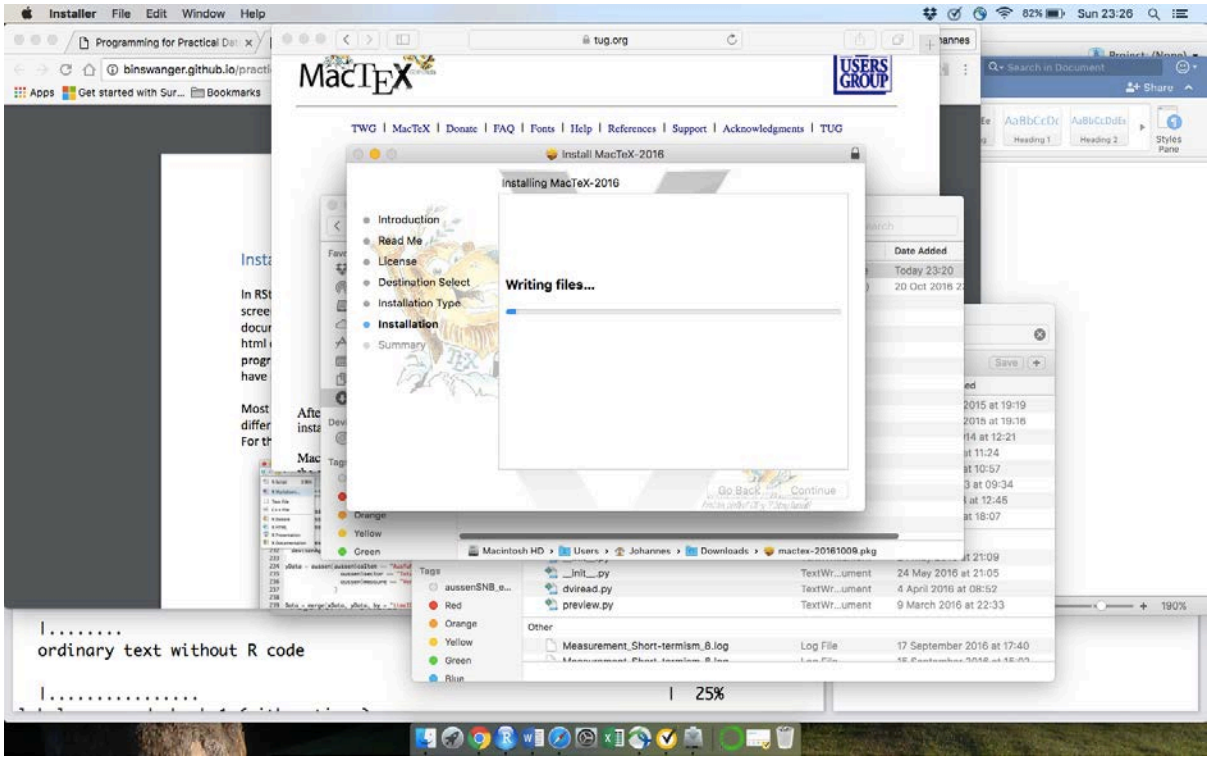


Choose some default settings as shown on the screenshots…

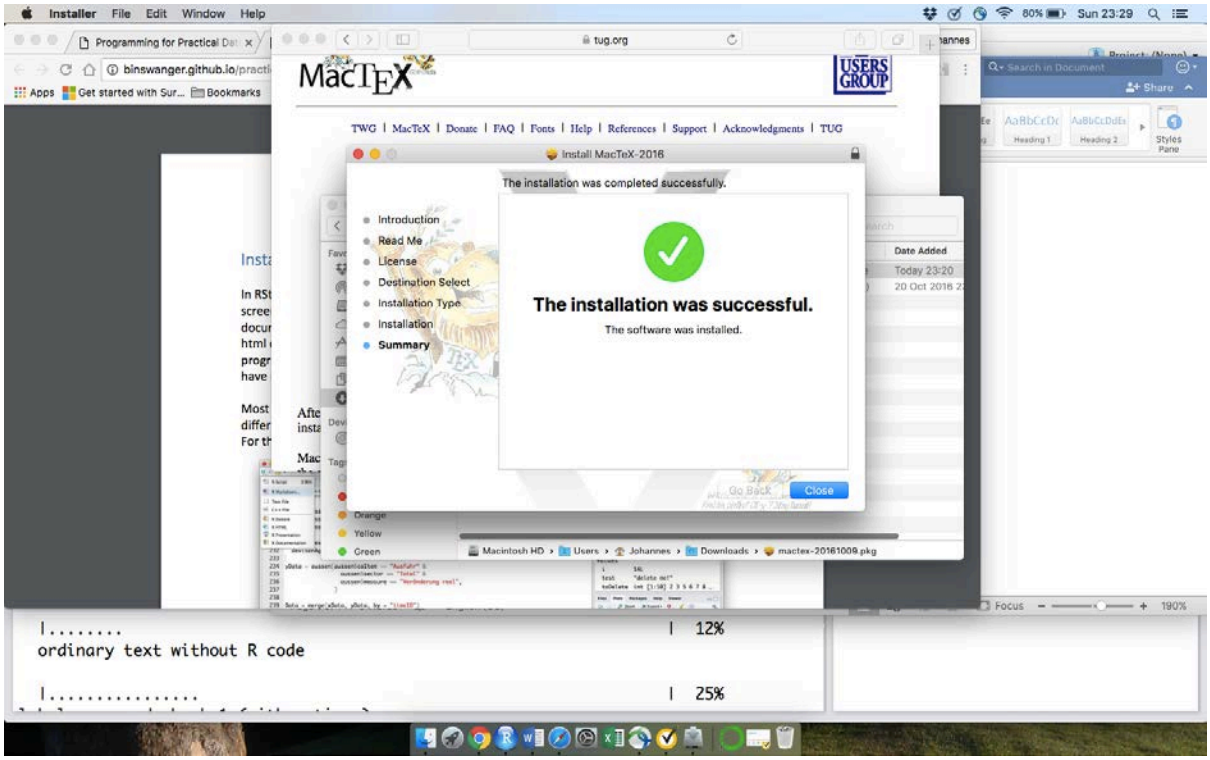


Accept the default…

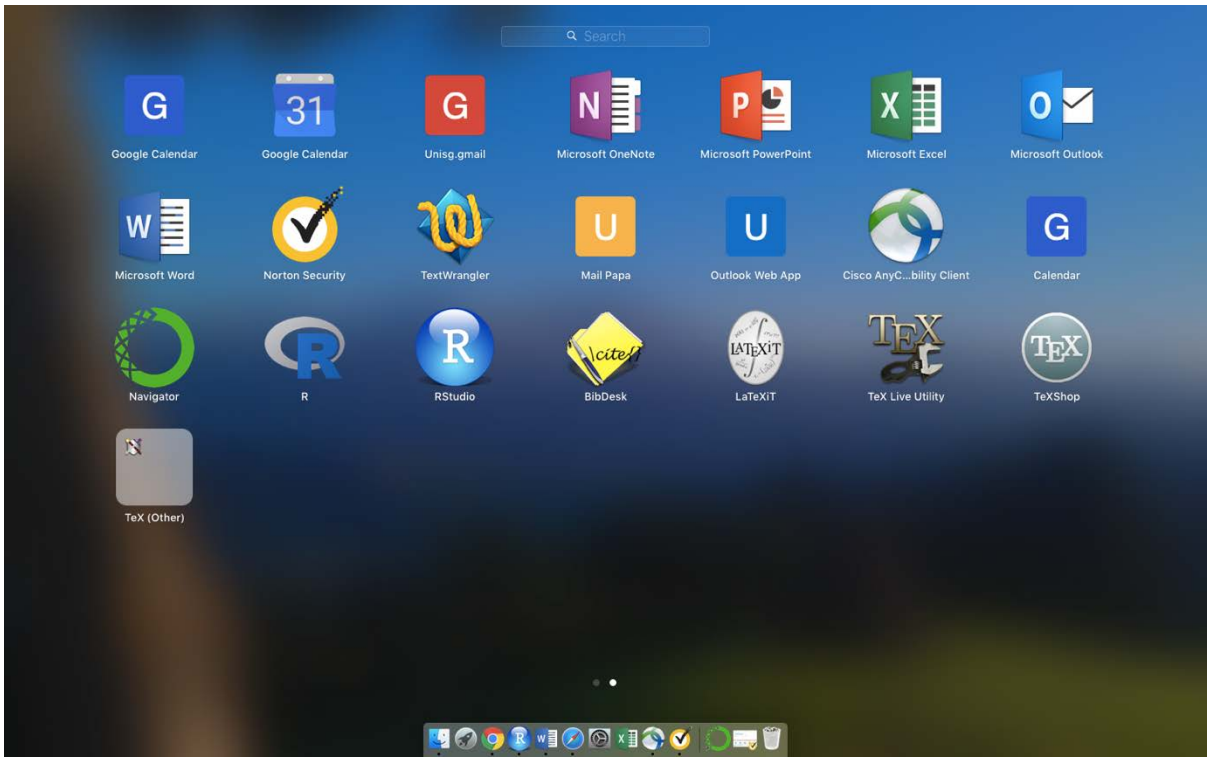




And, hopefully, you will get a success message.



If you go to the Launchpad, you can see some new items (it may look slightly different in your case).

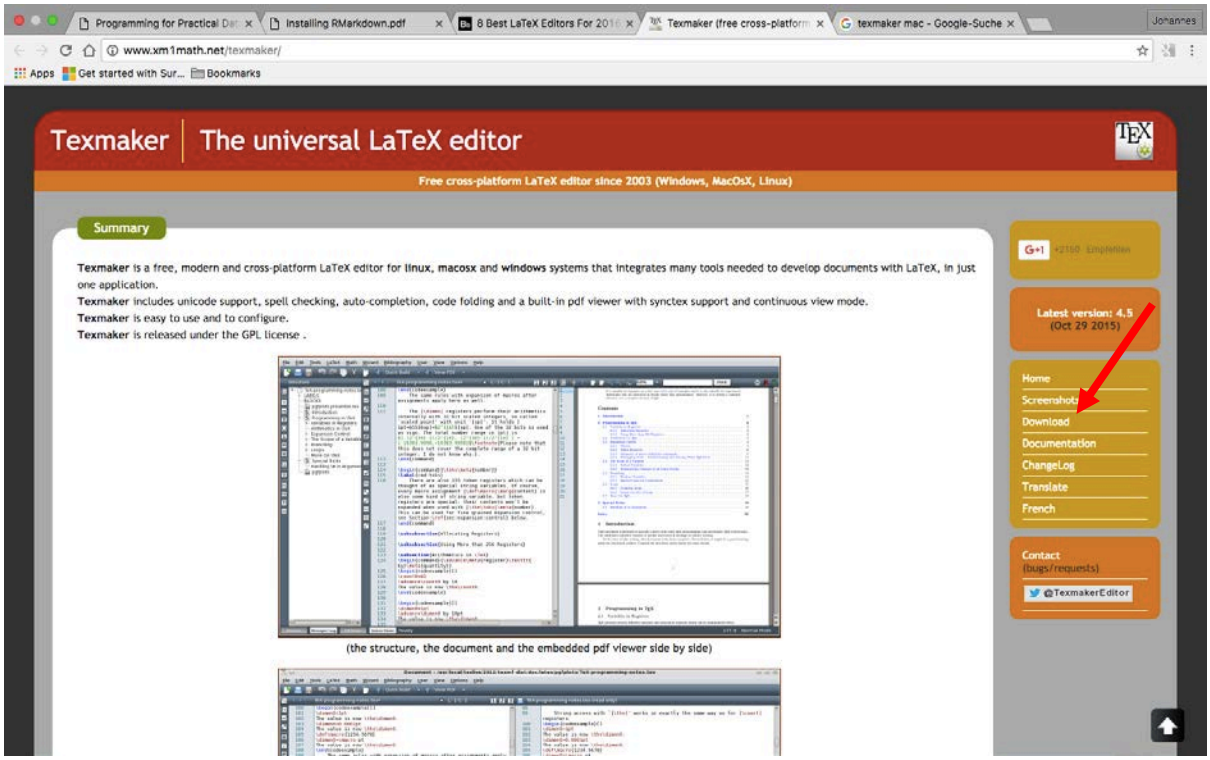


If you go now back to RStudio and your file “Test.Rmd” (or however you called it) and try “Knit to PDF”, it should work (if it did not already do so). If not, close RStudio and reopen it. If it still not works, restart your device.

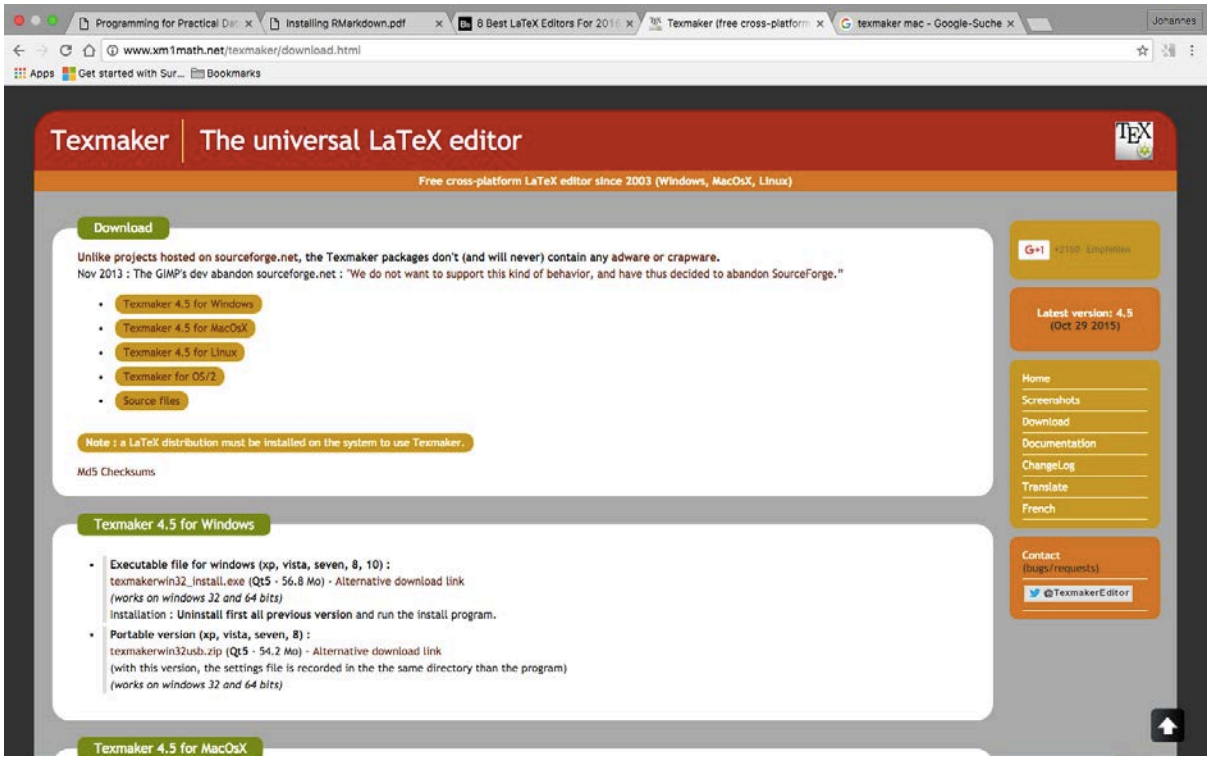
Installing the Texmaker editor

If you are curious about using Latex, or are interested in editing Latex documents, it makes sense that you download an editor. An editor for using Latex is what RStudio is for using R! There are several good editors. One of them is Texmaker. The screenshots below show you how you can download and install Texmaker, in case you are interested (it is not mandatory for this course).

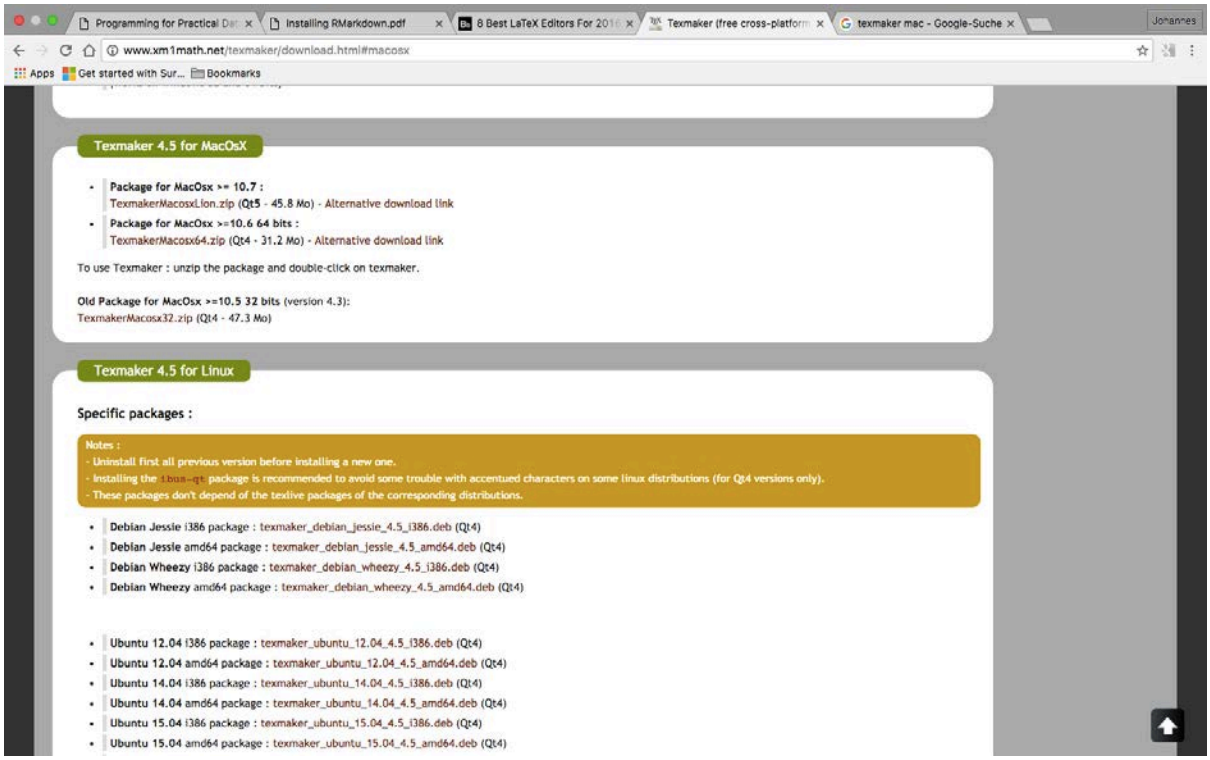
To install Texmaker, go to its website as shown below, and go to Download.



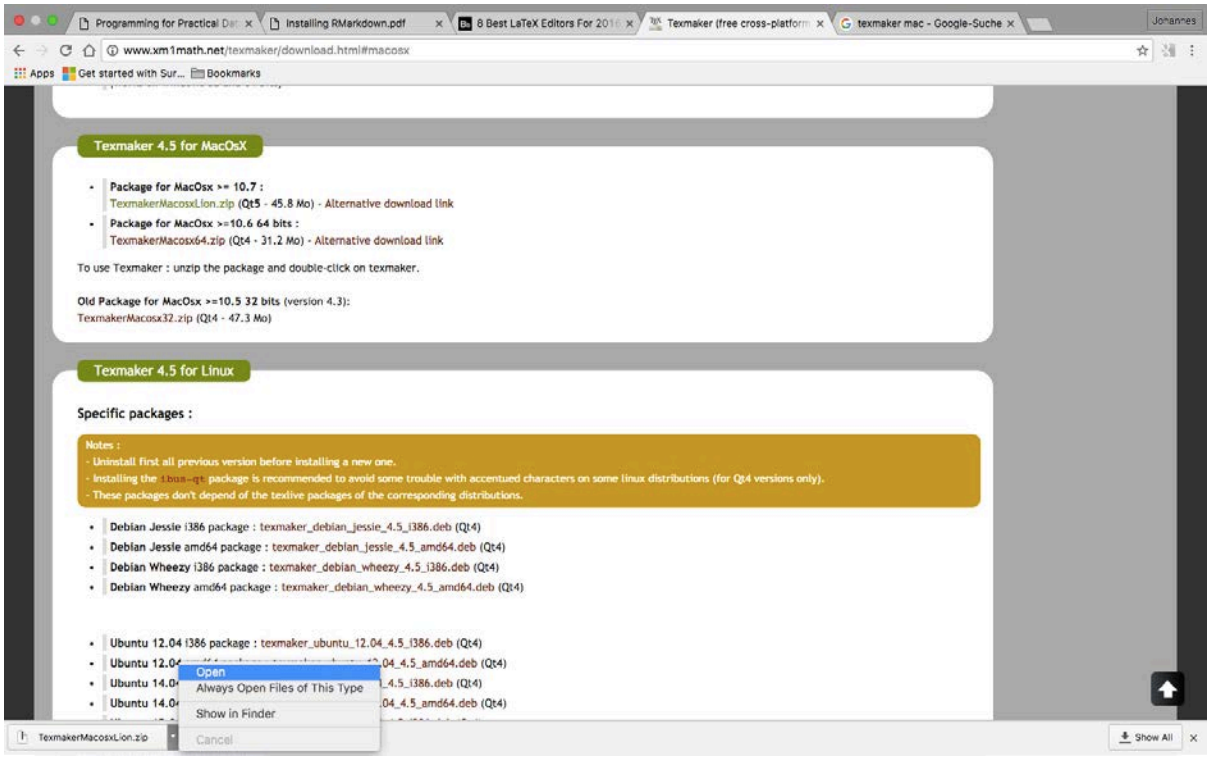
Then choose Texmaker for MacOsX



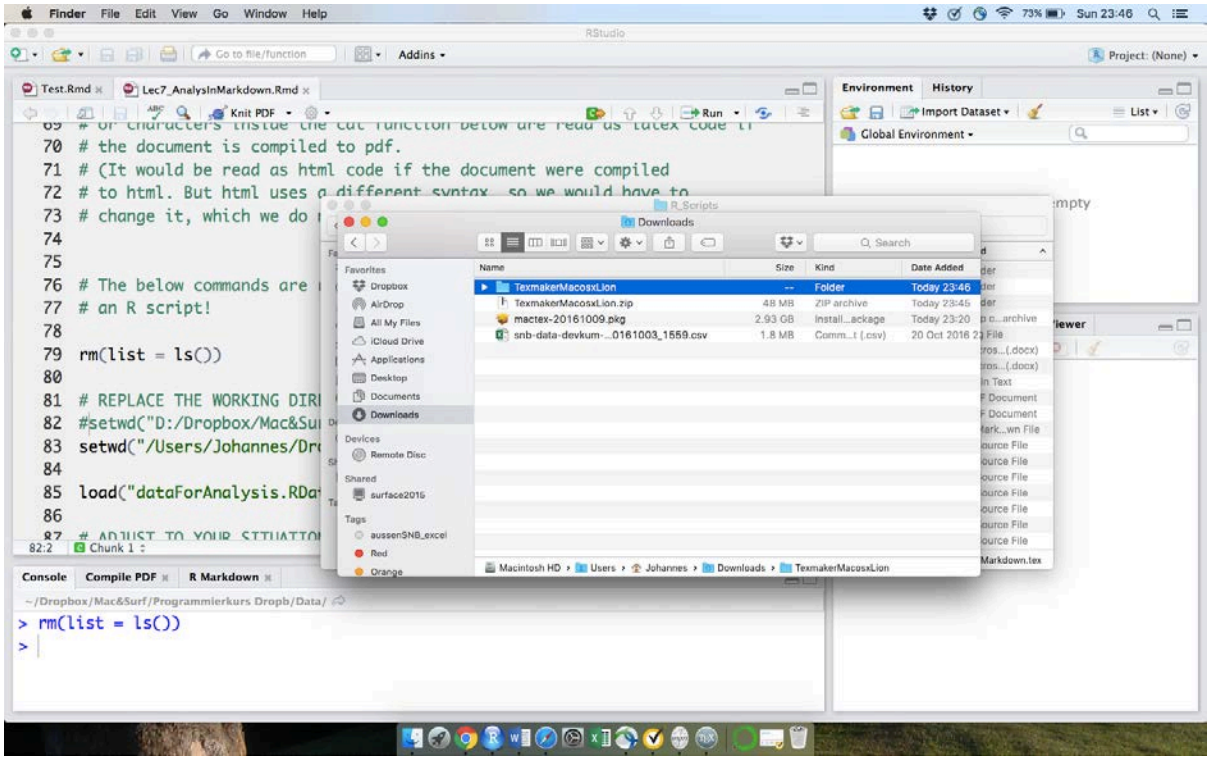
Check what system you have. My version of MacOsx is >=10.7. Click on the `zip` link there.



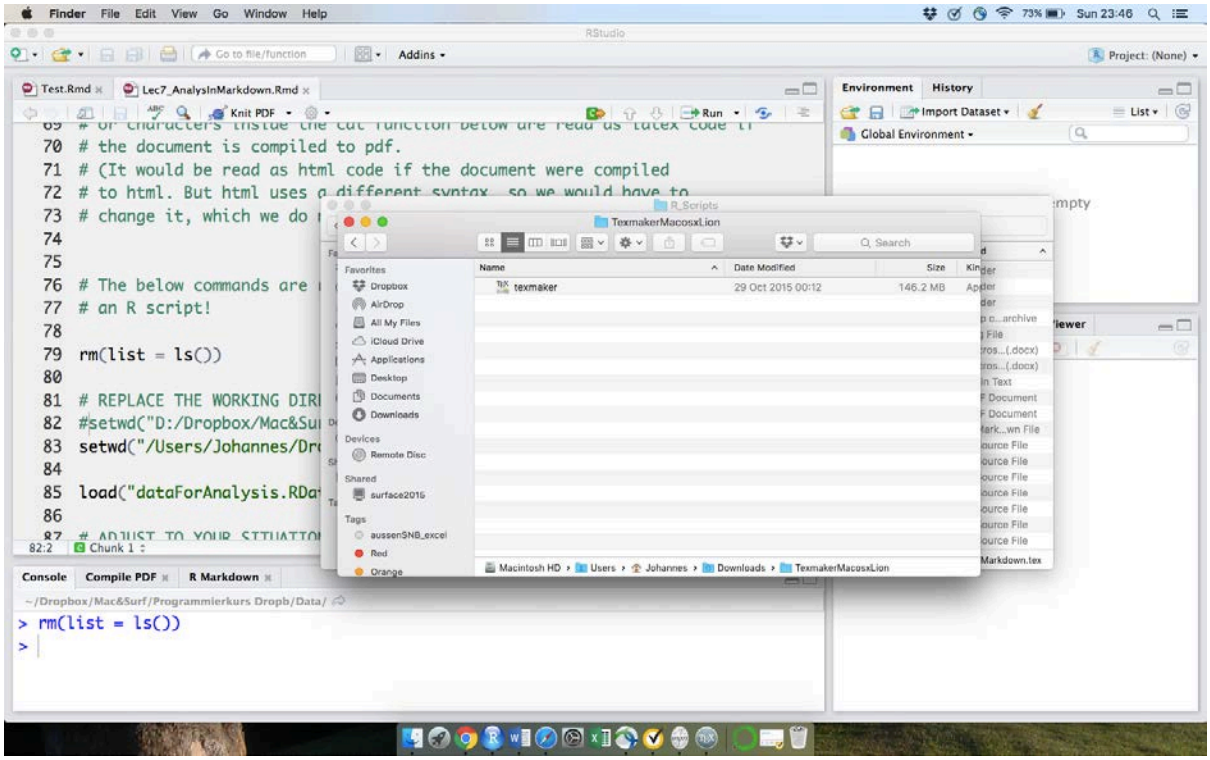
After the zip file is downloaded, open it.



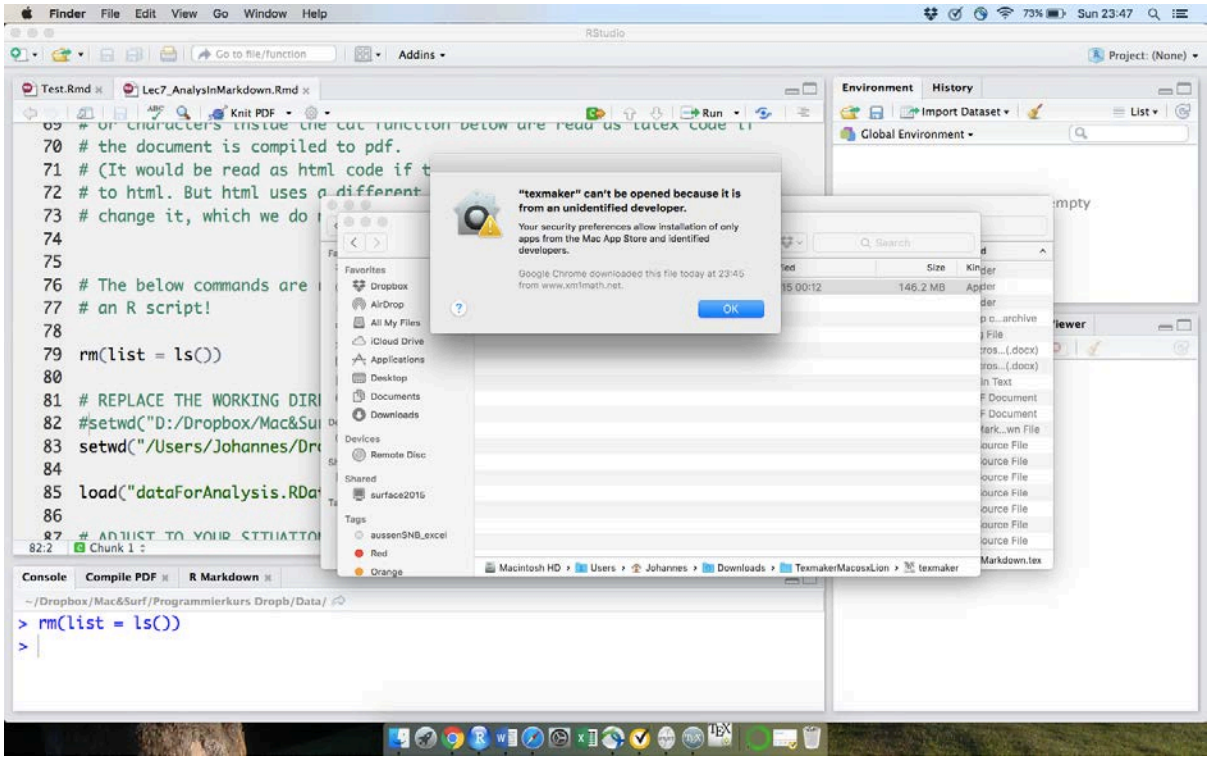
This extracts a folder called TexmakerMacosxLion. Click on that one.



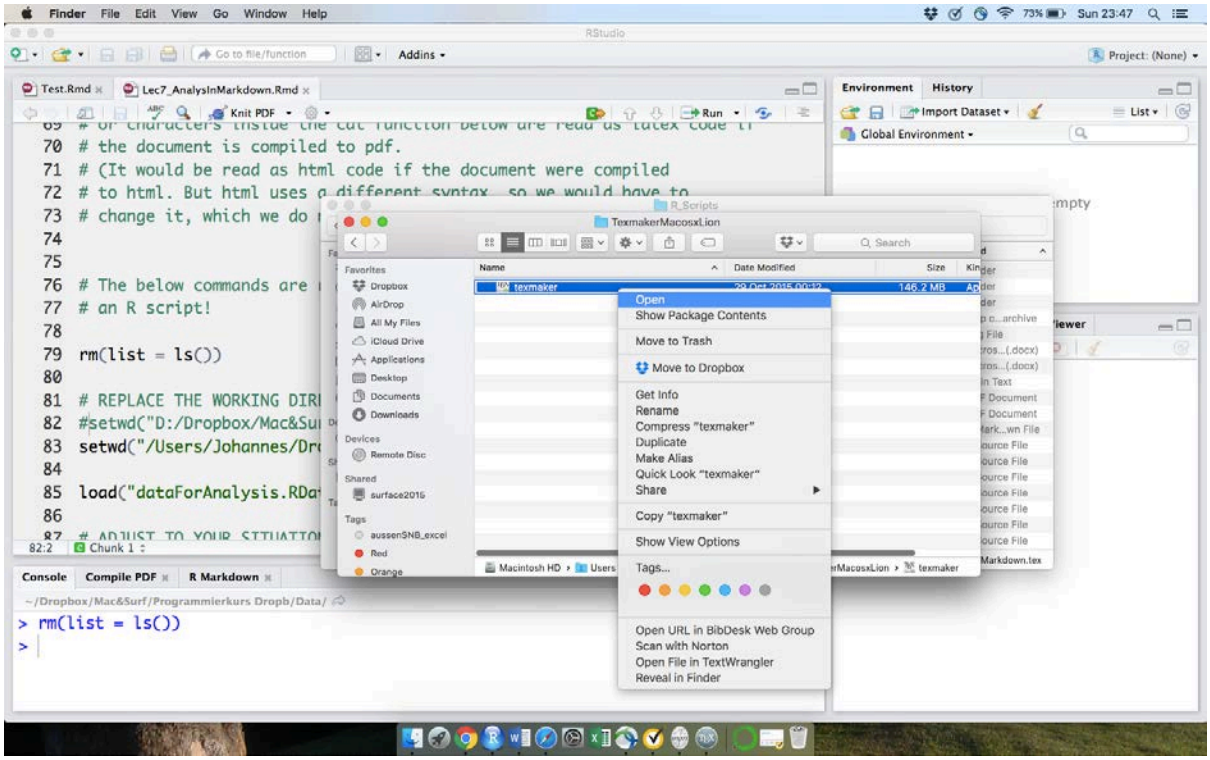
The folder contains an installation file called texmaker.



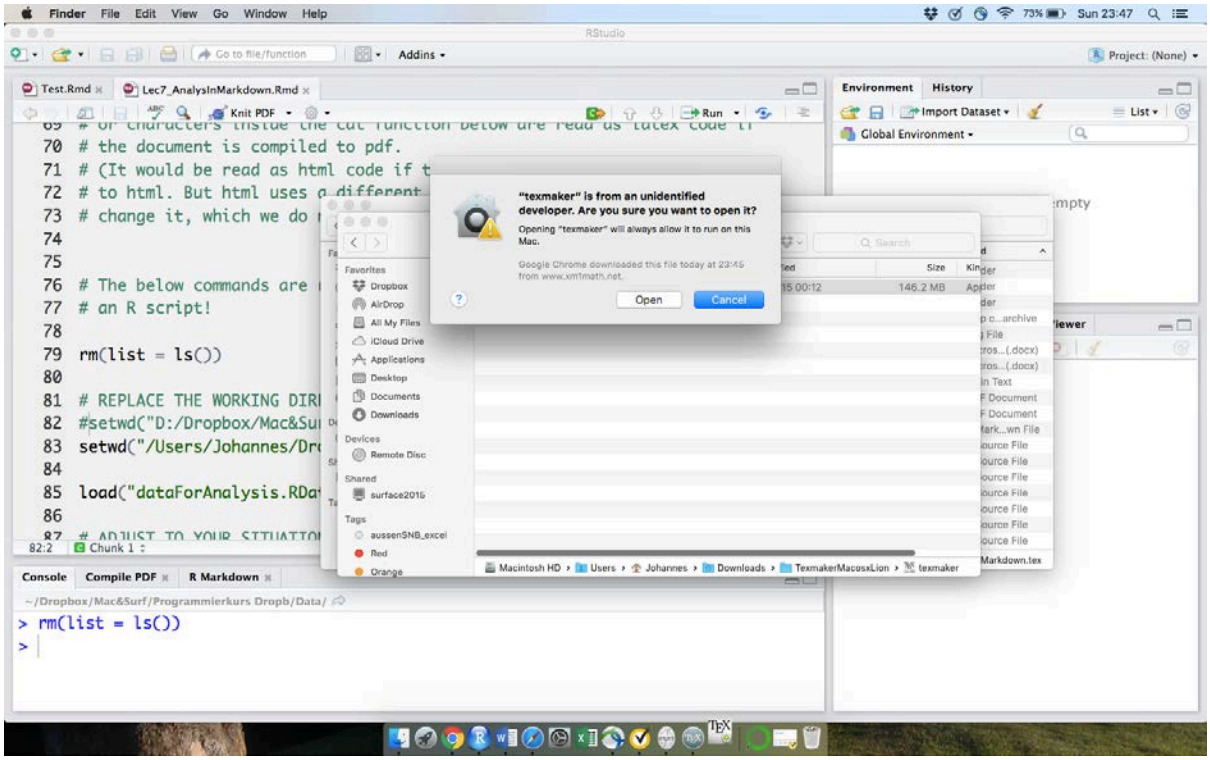
If you double-click it, Apple will block you.



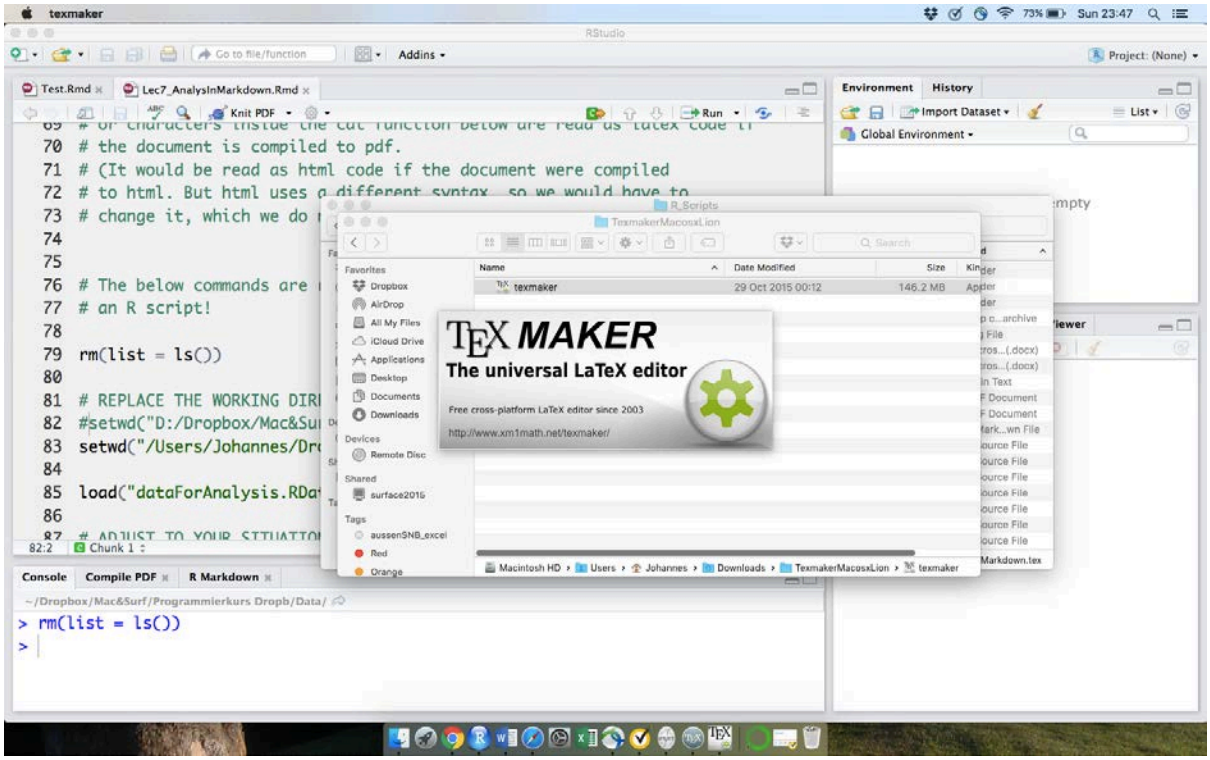
But since you know what you are doing, just right-click on it and choose Open.



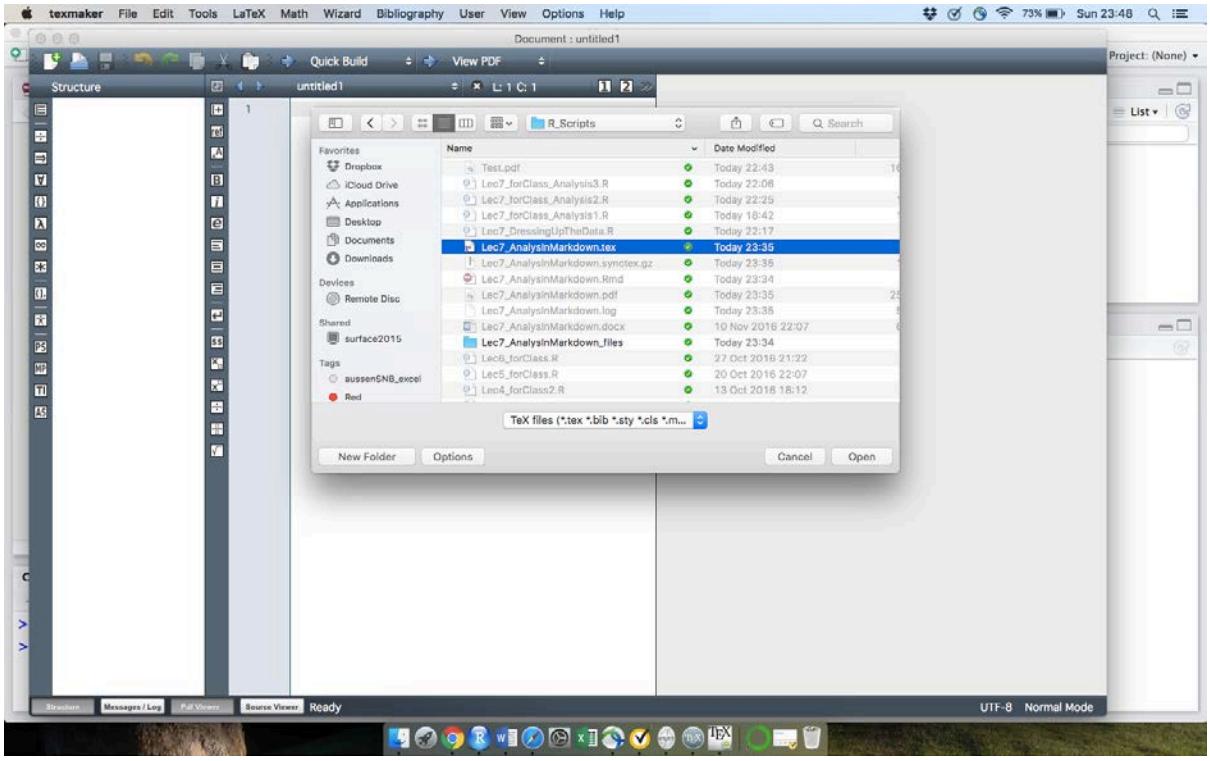
Conform Open and don't worry…



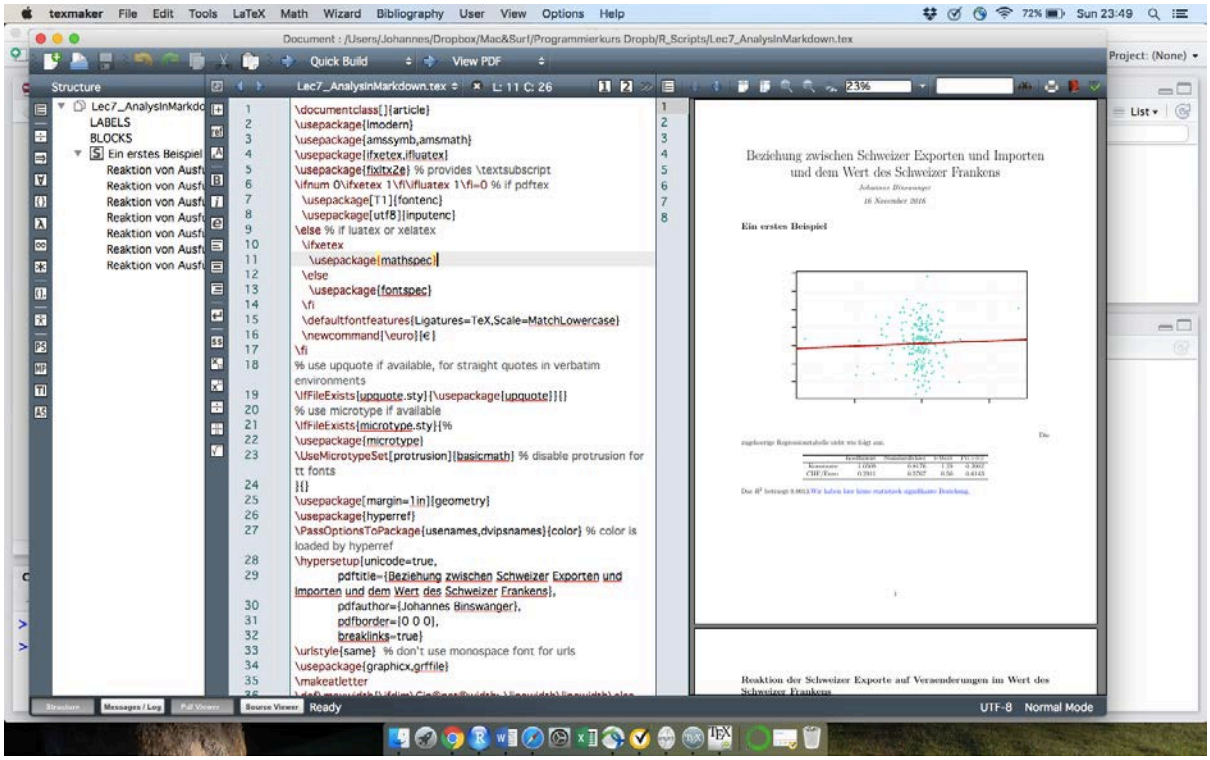
Now, Texmaker starts.



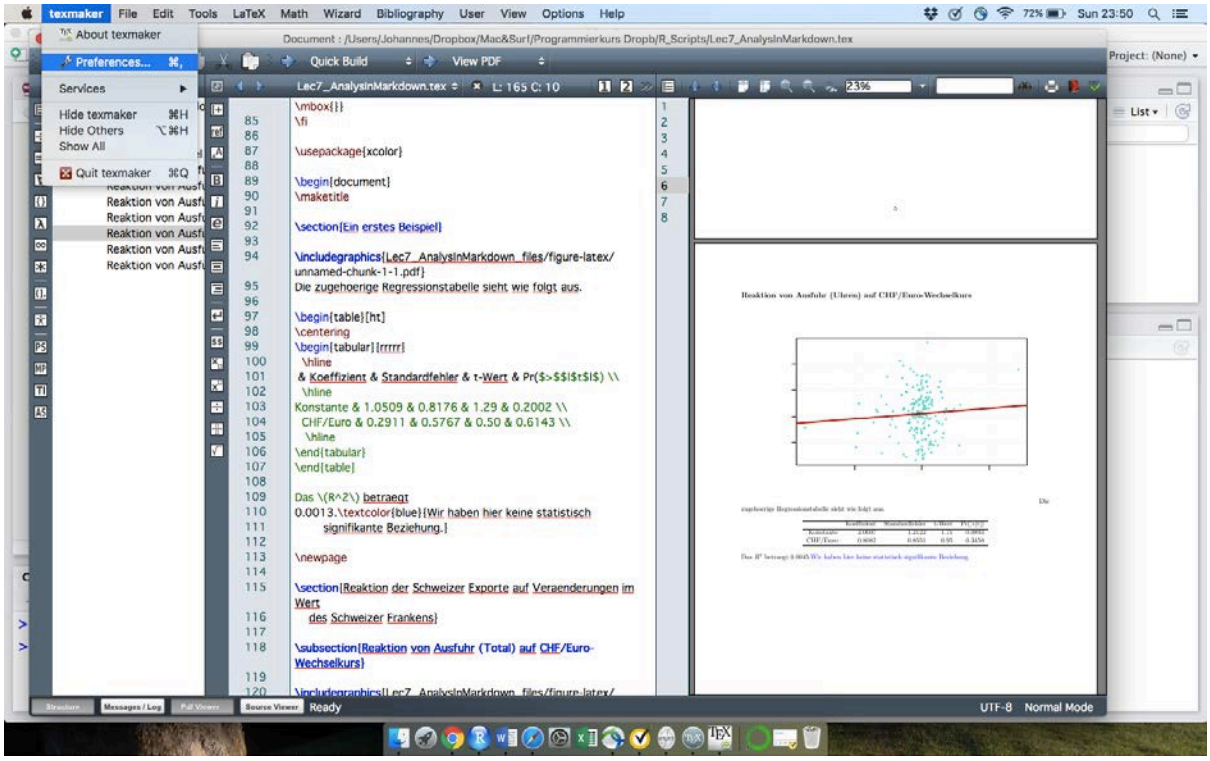
You can now open a texdocument. If you do not have any yet, wait until the lecture.



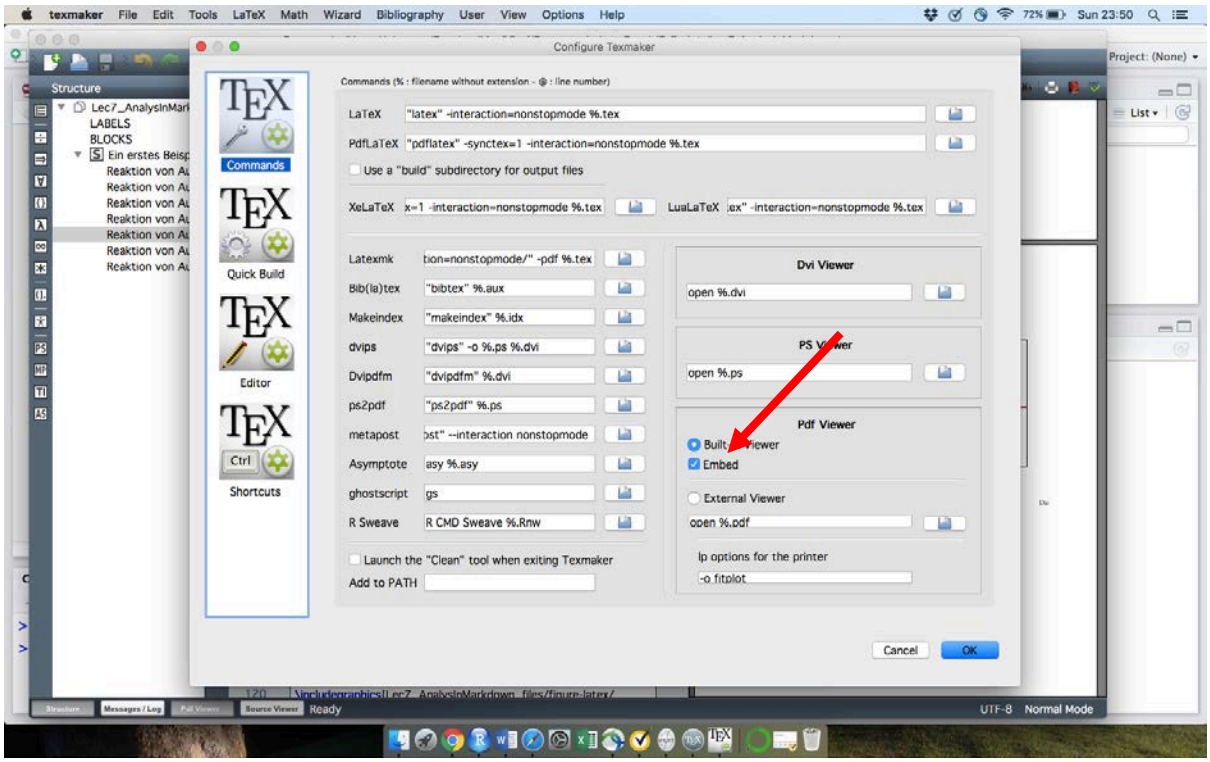
This is how the file that we will produce with RMarkdown looks when opened in Texmaker.



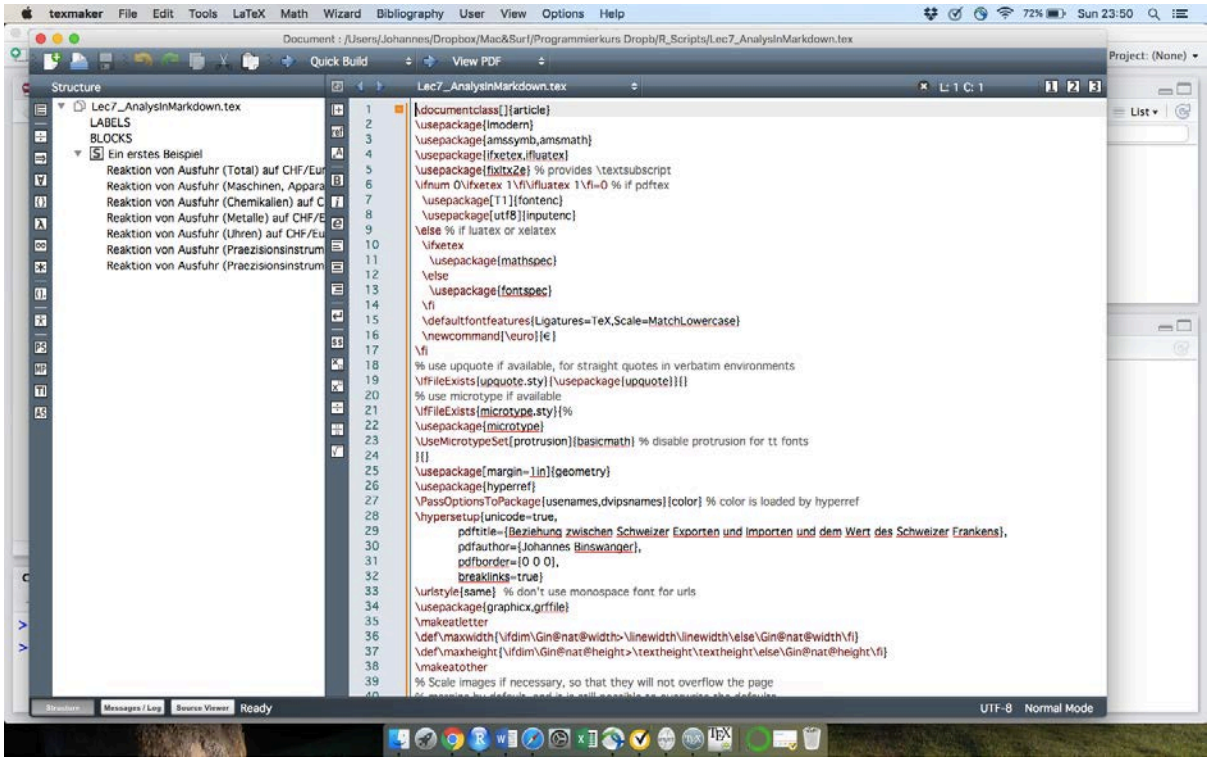
In the menu “texmaker” under Preferences you can customize Texmaker.



Personally, I like to uncheck the Embed option under “Commands”. But this is really just a personal preference.



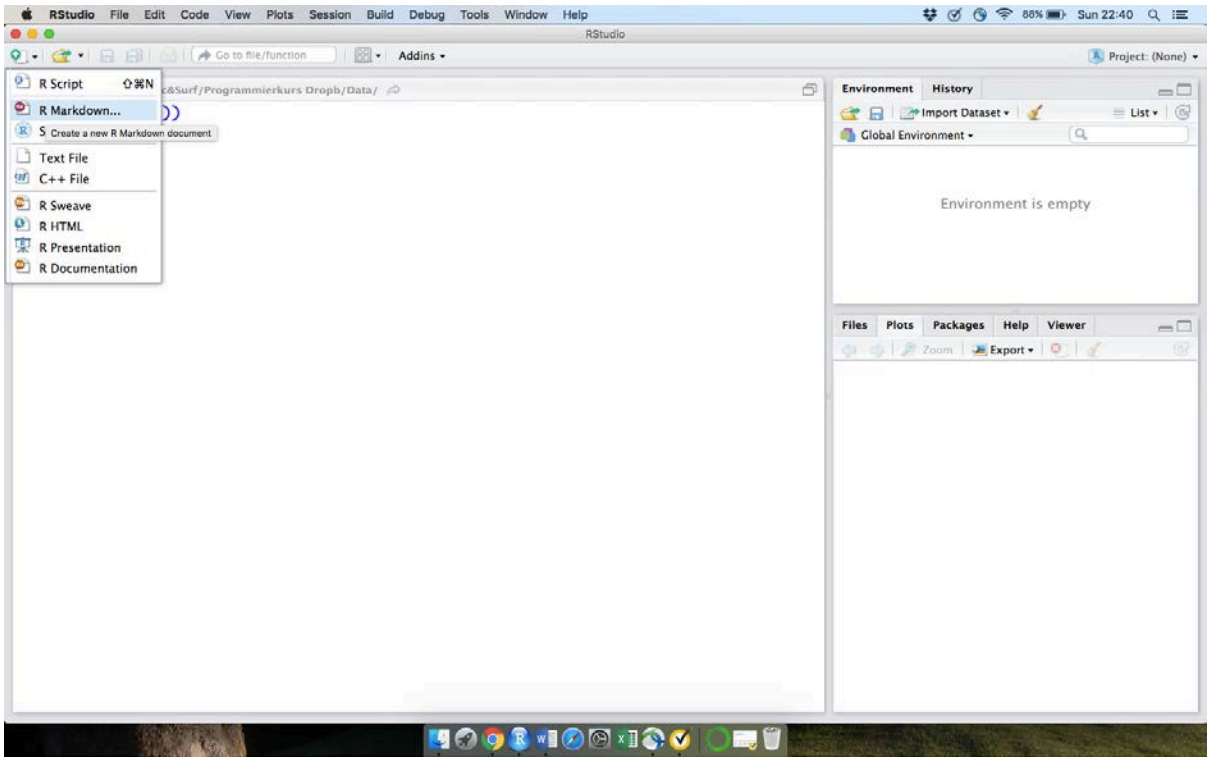
After unchecking the embed option, you only see the editor, the pdf is separate. I find it easier to edit the text this way.



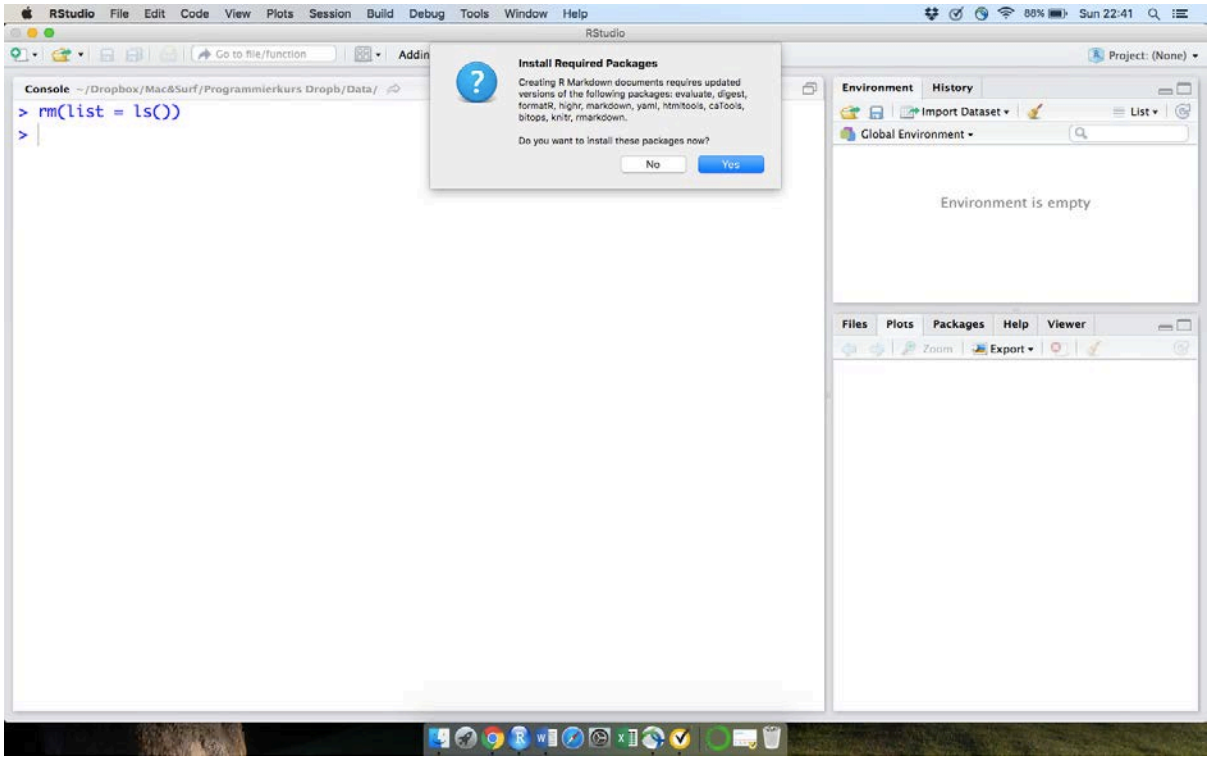
Getting ready for RMarkdown on Windows

Please note, the download and installation will take about 1 hour, and even more if your internet connection is a bit slow. So take your time!

The first steps are identical to the Mac case, so I reproduce some Mac images. Open RStudio and choose “R Markdown” from the little plus menu as shown below.

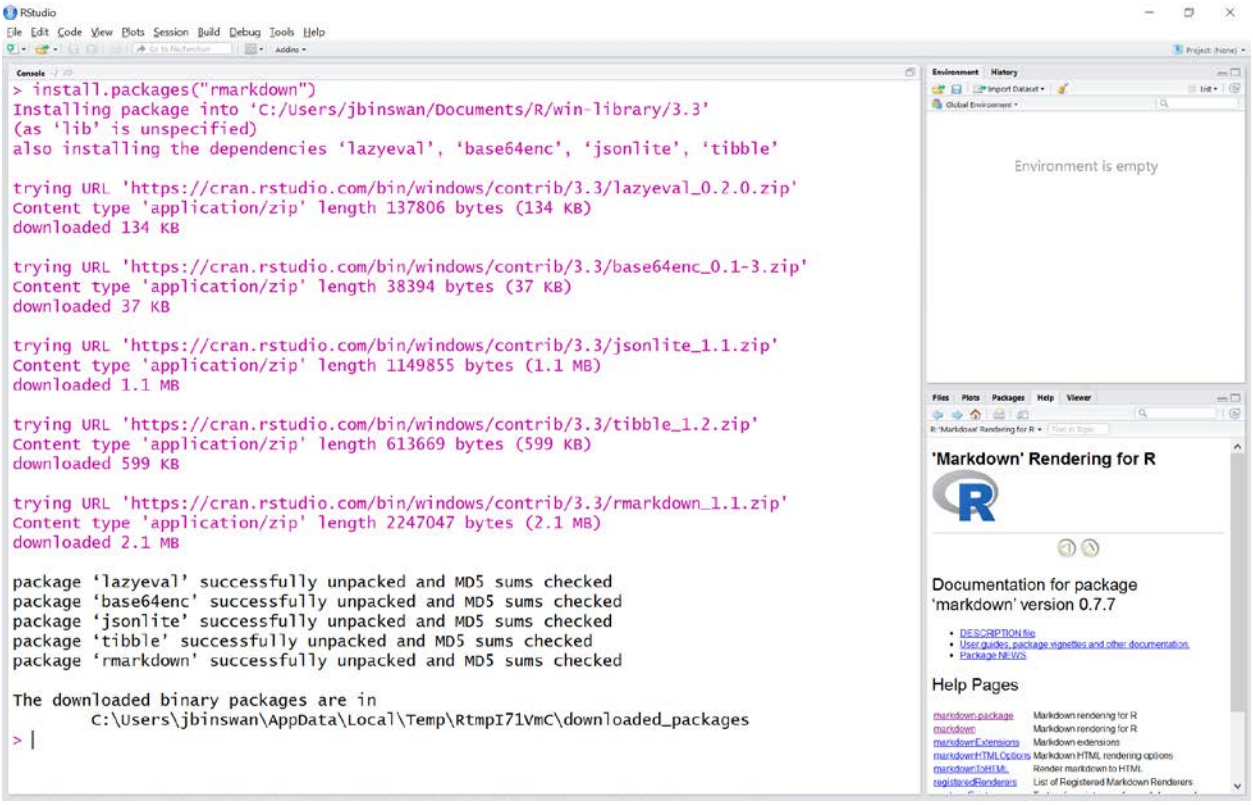


RStudio notices that this requires some new packages. Click Yes. If you are lucky, the packages get installed.

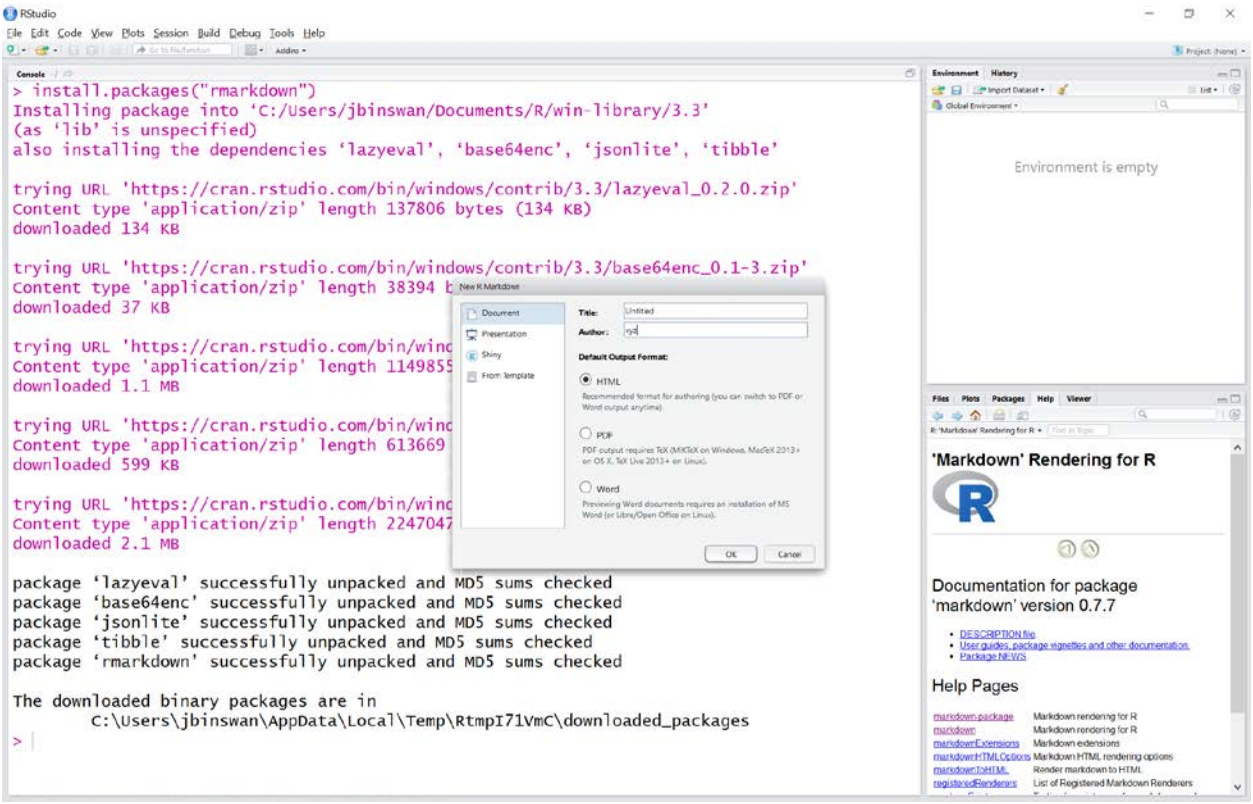


In my case of Windows 10, I saw numerous errors passing on the screen, and then nothing happened. And when I tried to repeat the process, I just got the same results. Luckily, I quickly got a workaround.

As a workaround, type `install.packages("rmarkdown")` into the **console**. Hopefully, this works.

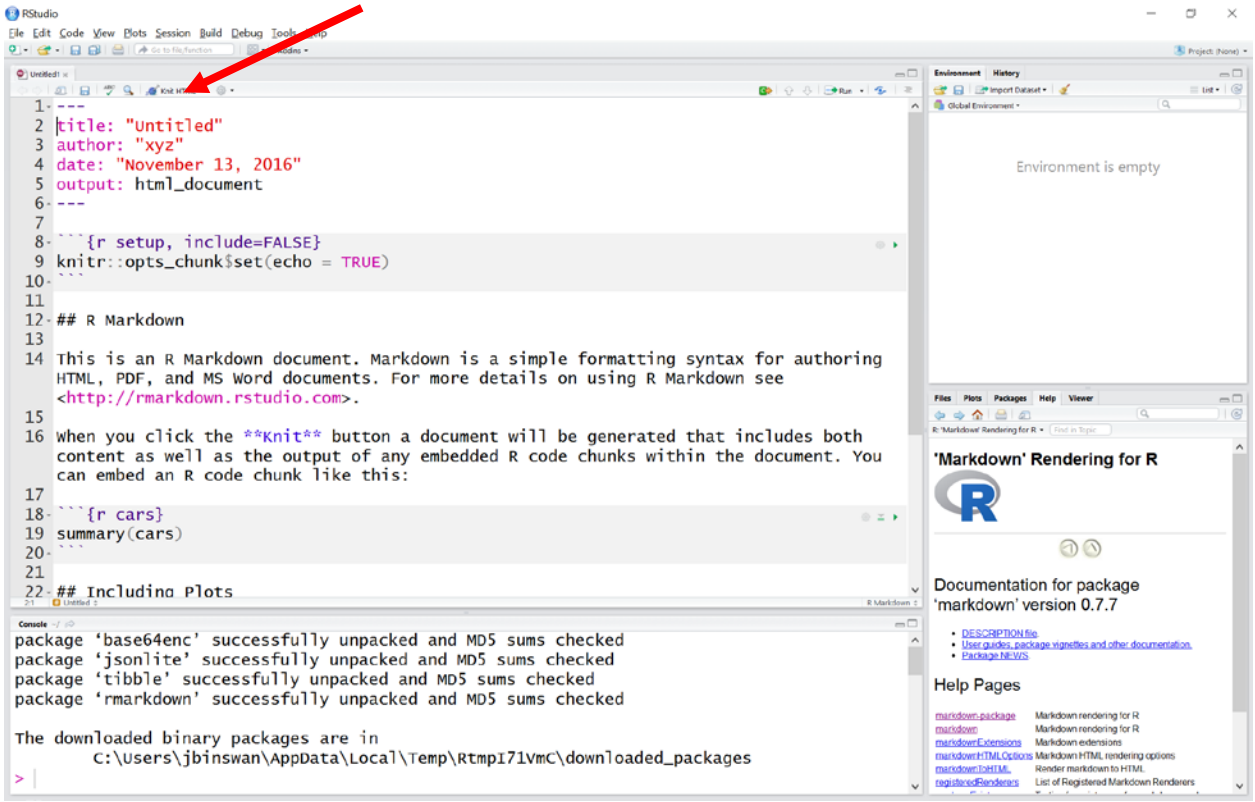


You are asked for some input. On the left side, keep Document selected, and keep HTML. Choose whatever Title or Author you like.

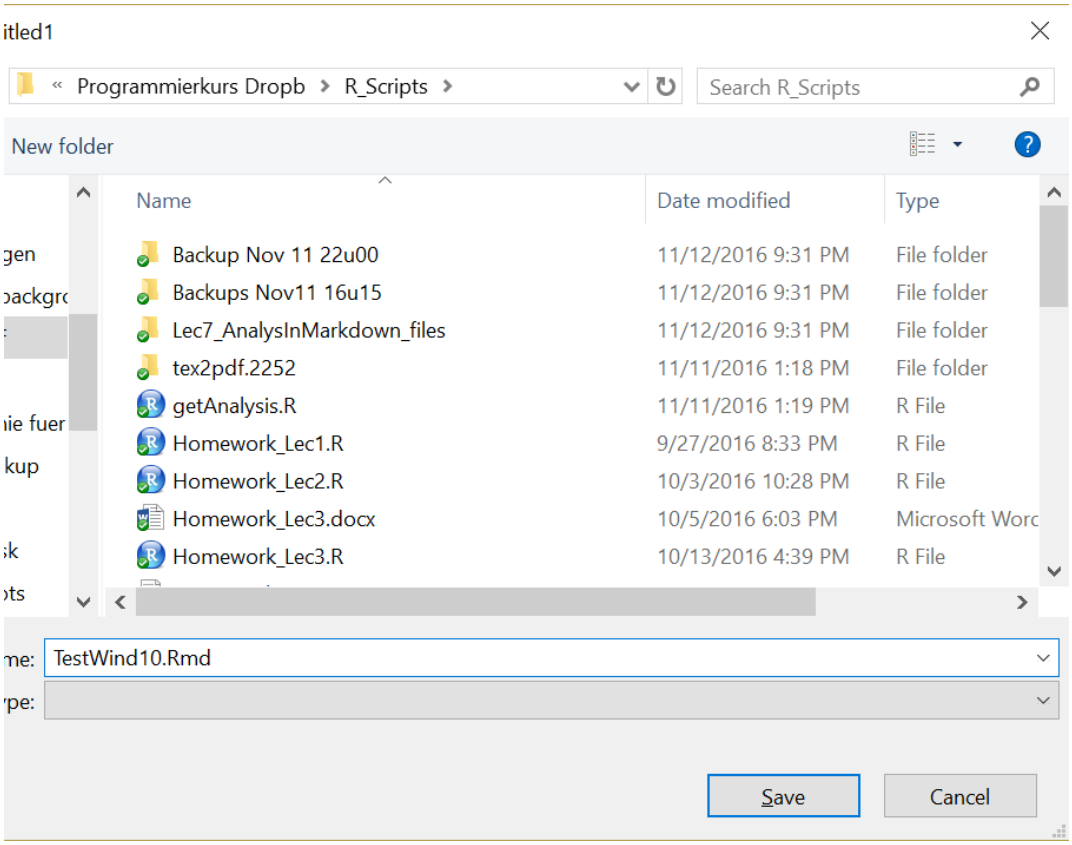


The result is as follows. This is just a sample provided by RStudio. Click “Knit to HTML”.

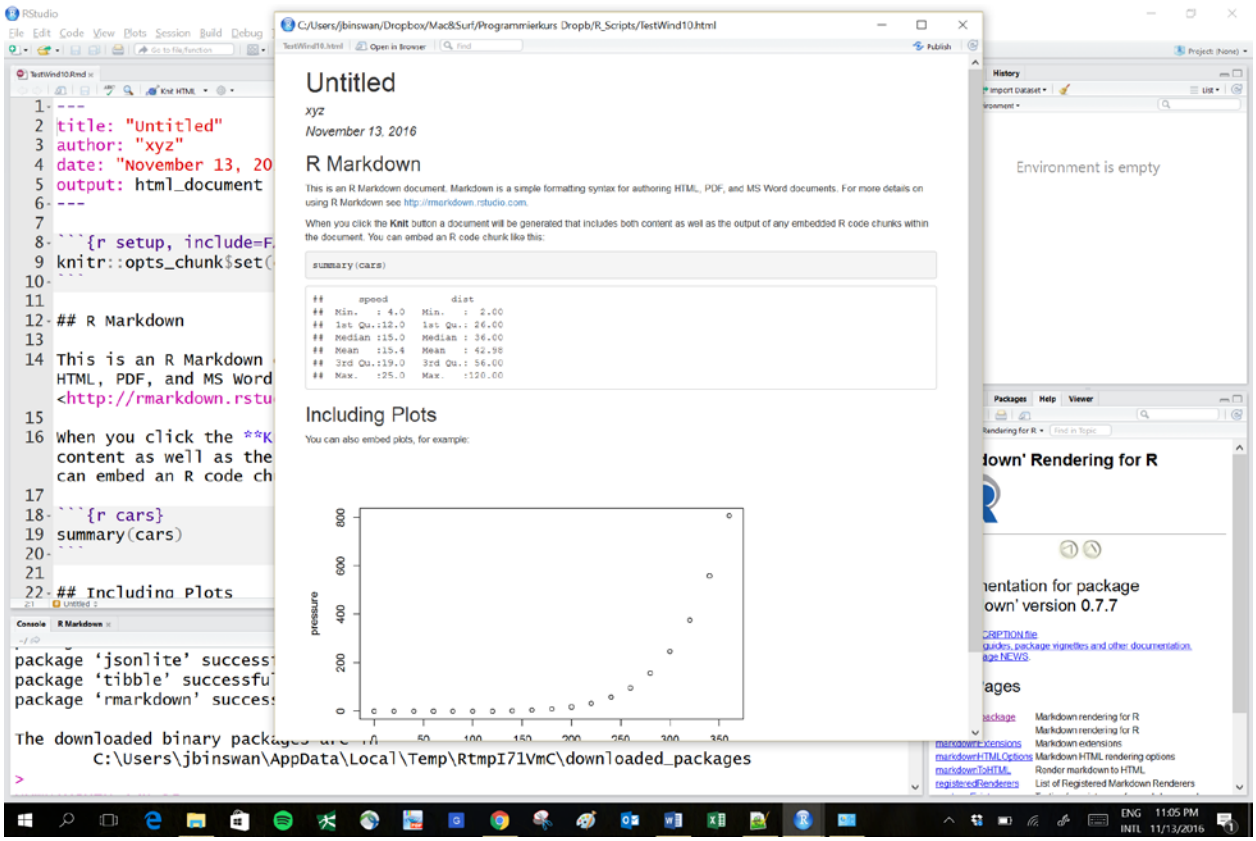
IMPORTANT: If there is any dot (“.”) in the date line (e.g. because yours appears in German in the form of “13. November 2016”, make sure to remove that dot! Otherwise, you will get a compilation error.



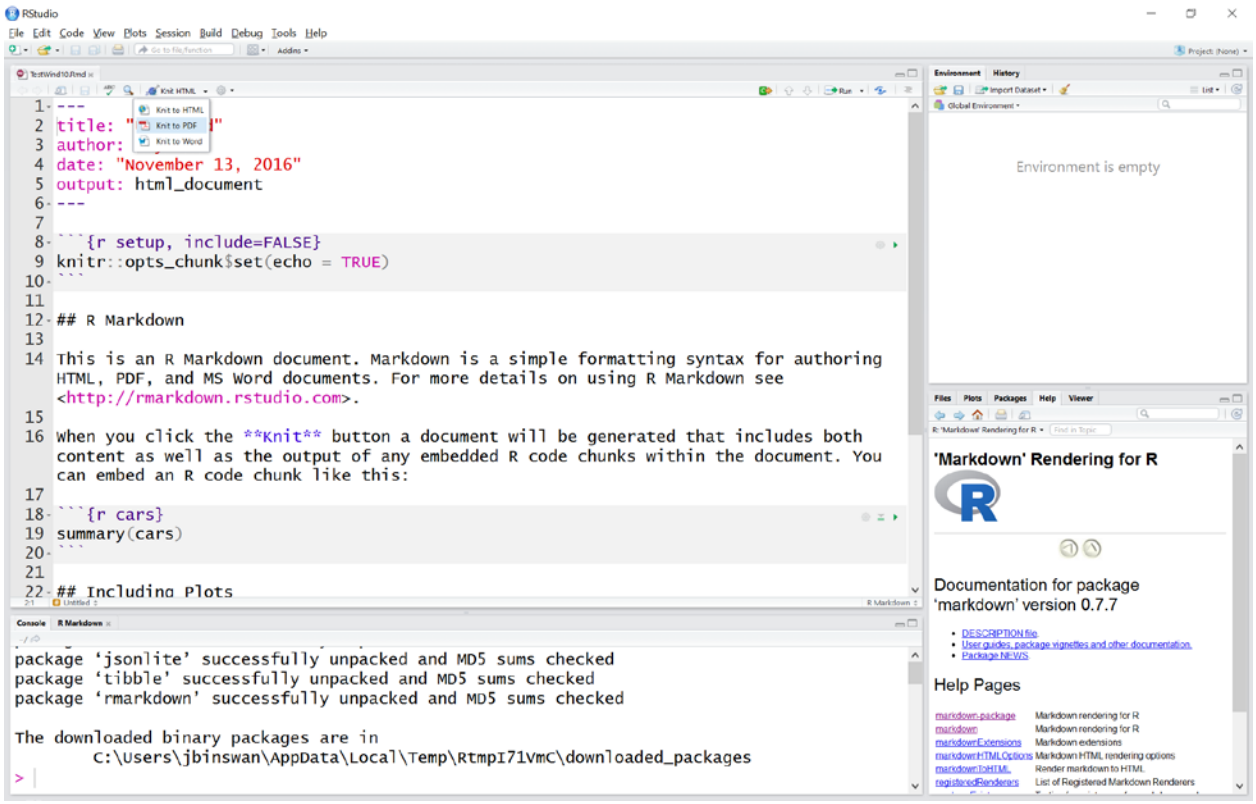
You are asked to save the above-shown file first. Choose whatever filename you like e.g. “Test”. It is very important the file extension is `.Rmd` as shown below.



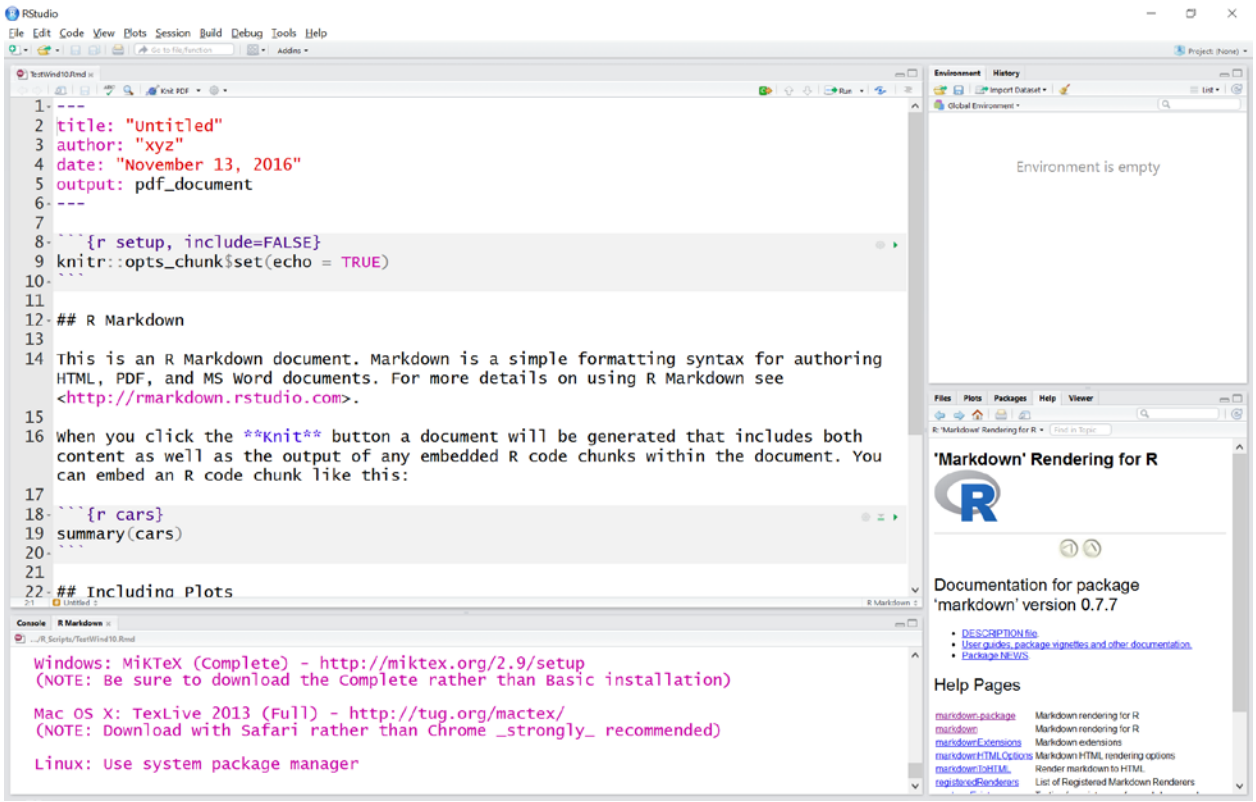
The resulting HTML file looks as follows.



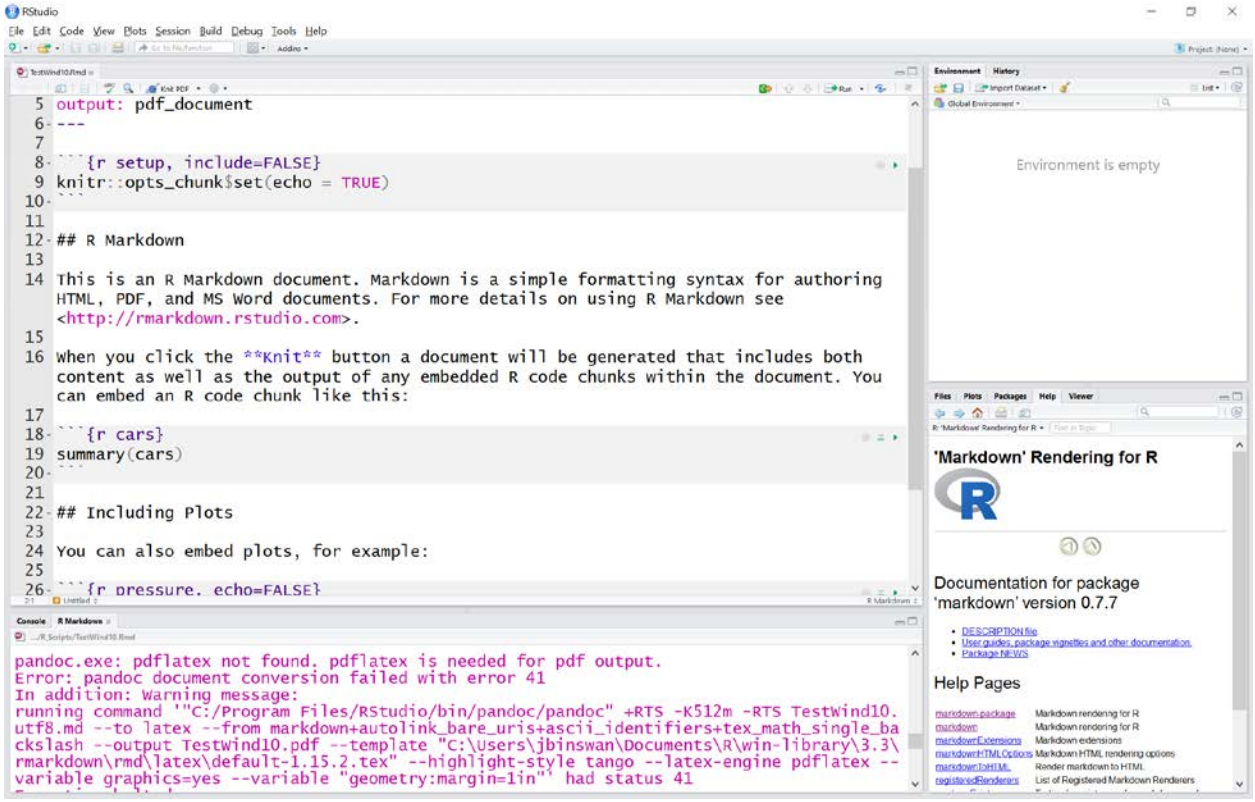
Now, try “Knit to PDF”.



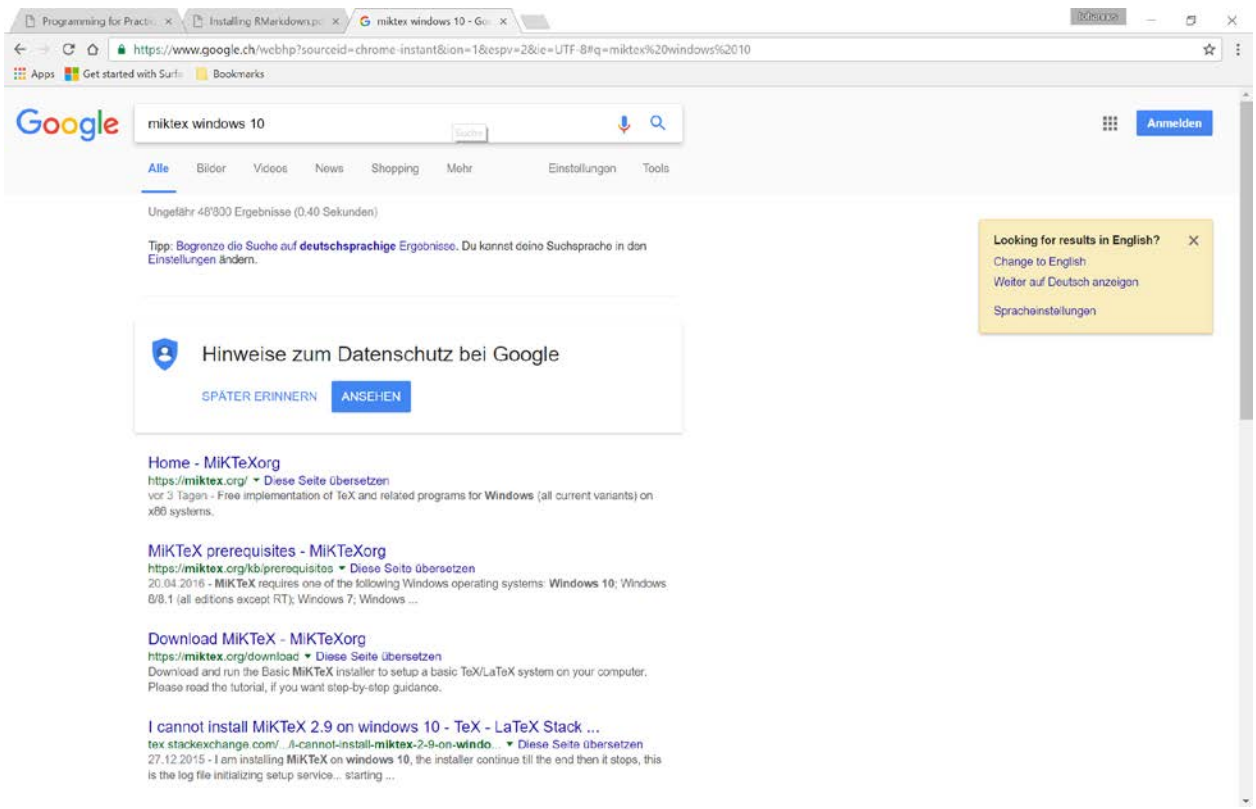
Most likely, this will not work. But, friendly as it is, the RStudio console gives you a hint how to proceed. Also, it give the advice to download the Complete rather than the Basic installation of MiKTeX. This is why it will take so much time…



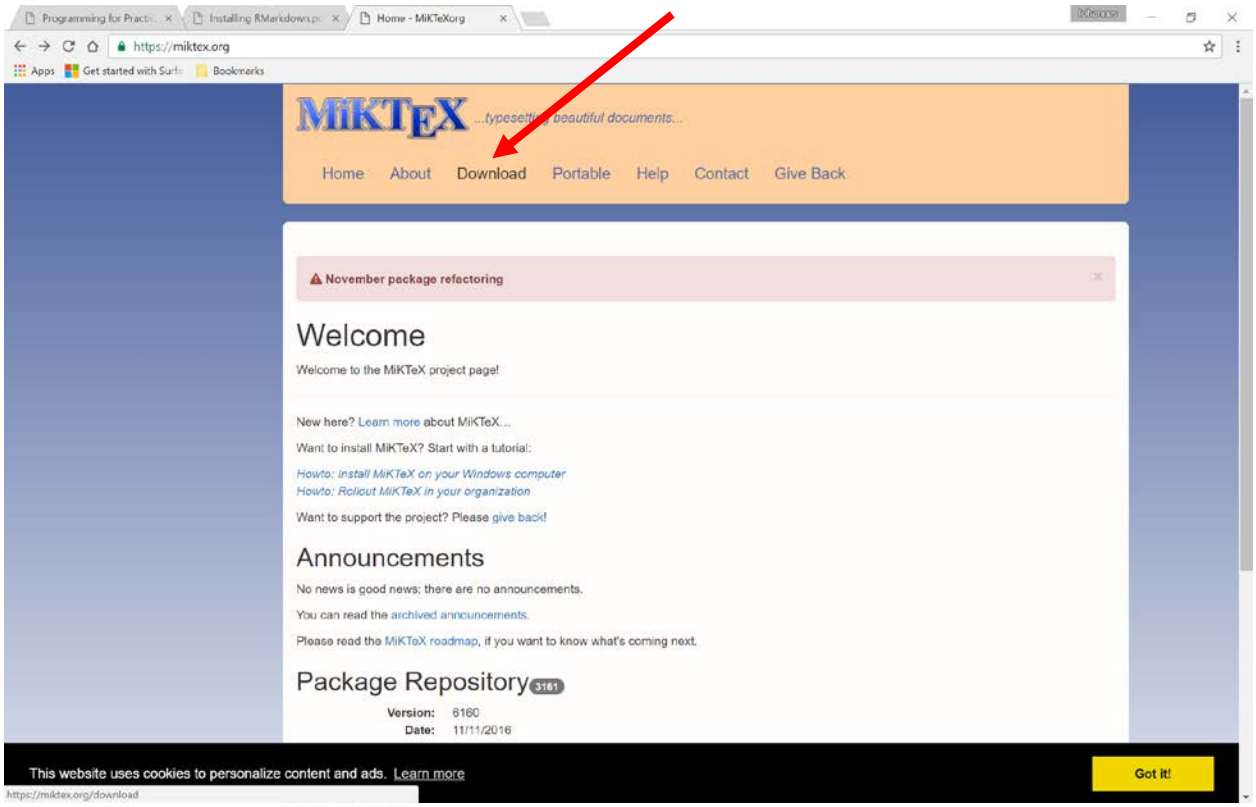
If you nevertheless insist on trying the compilation to pdf, you get an error.



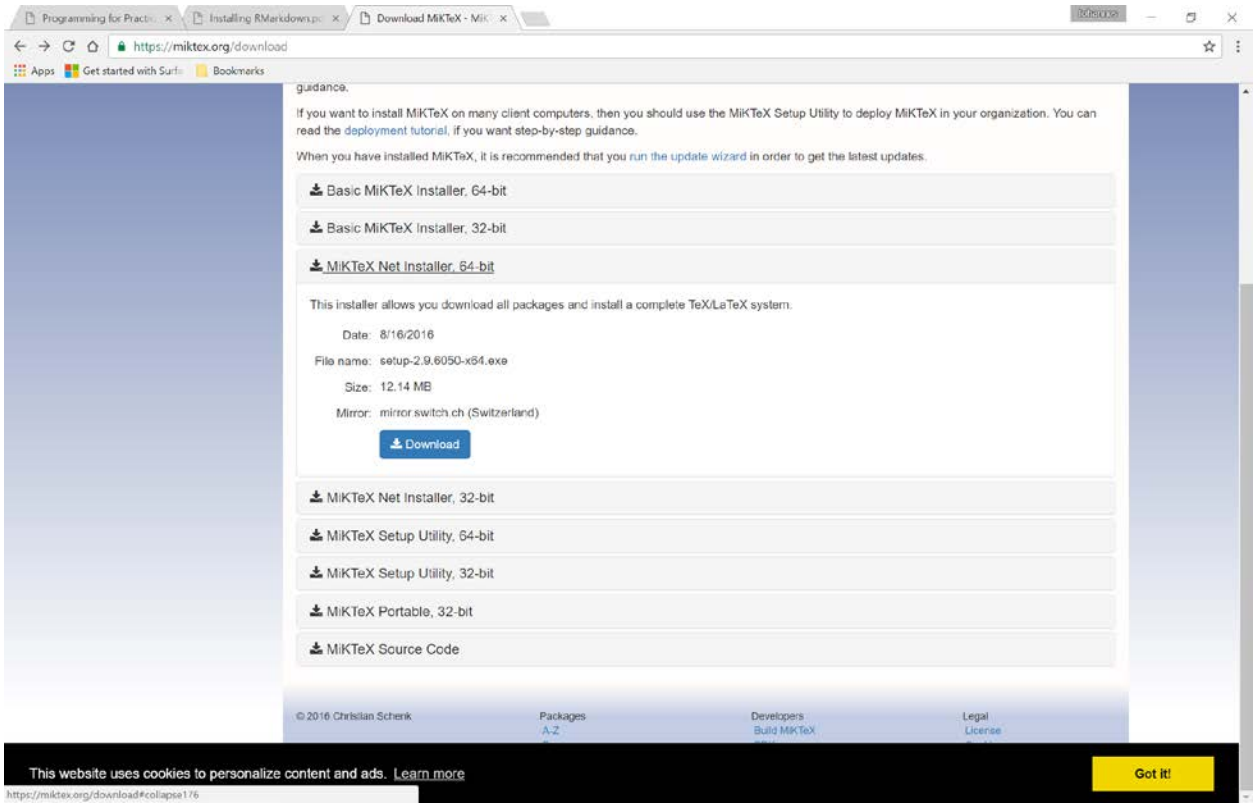
Go to the MiKTeX website.



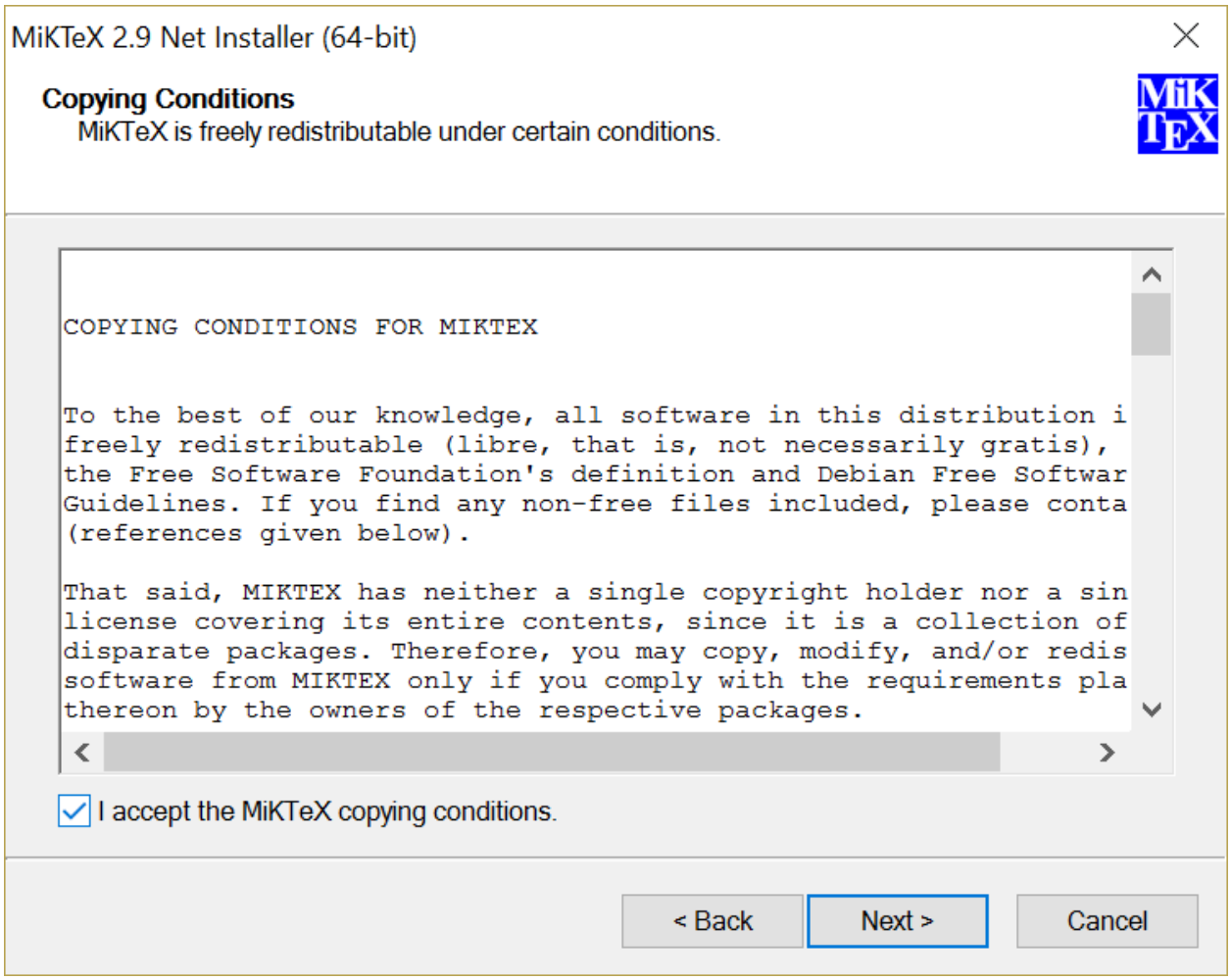
Go to Download

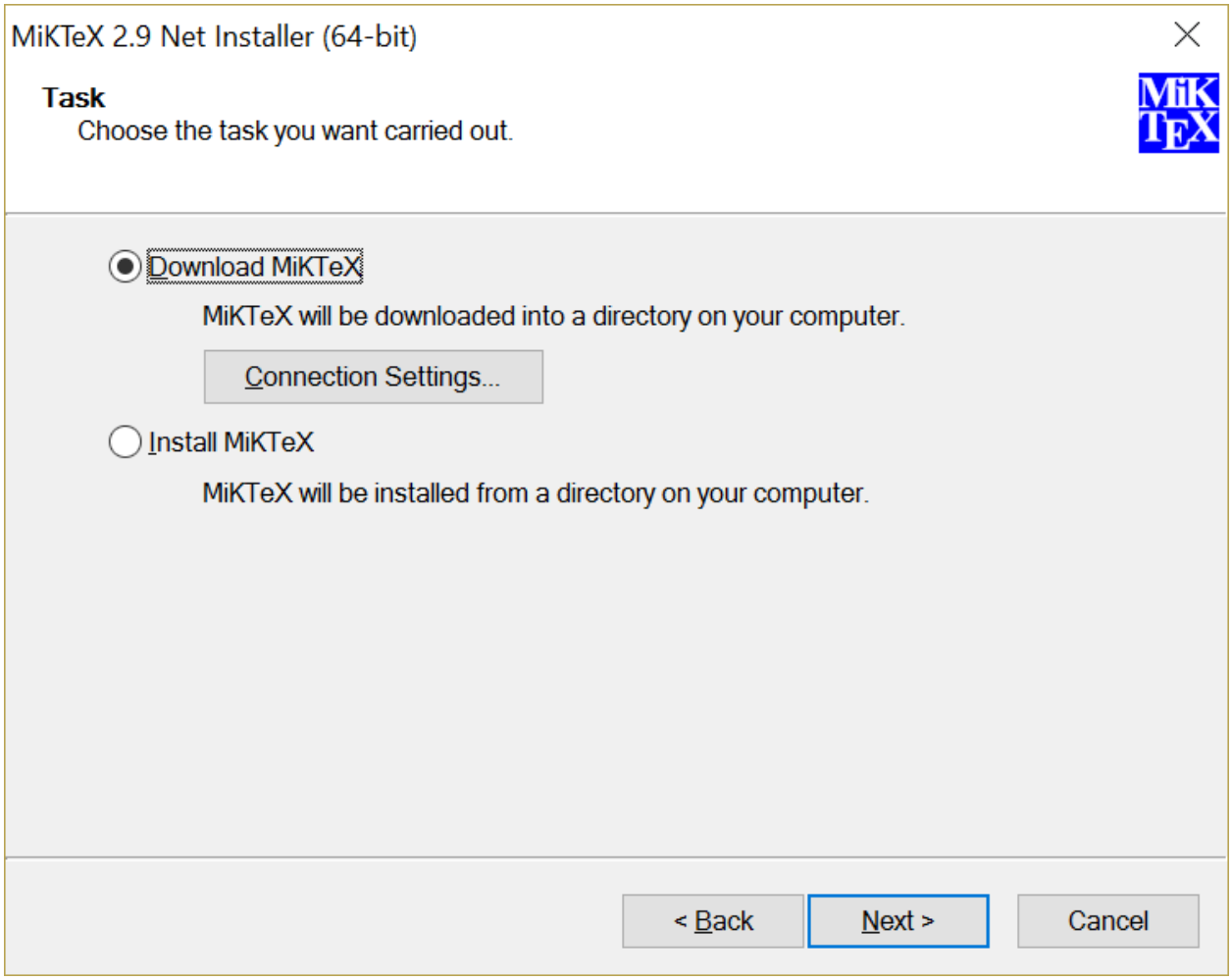


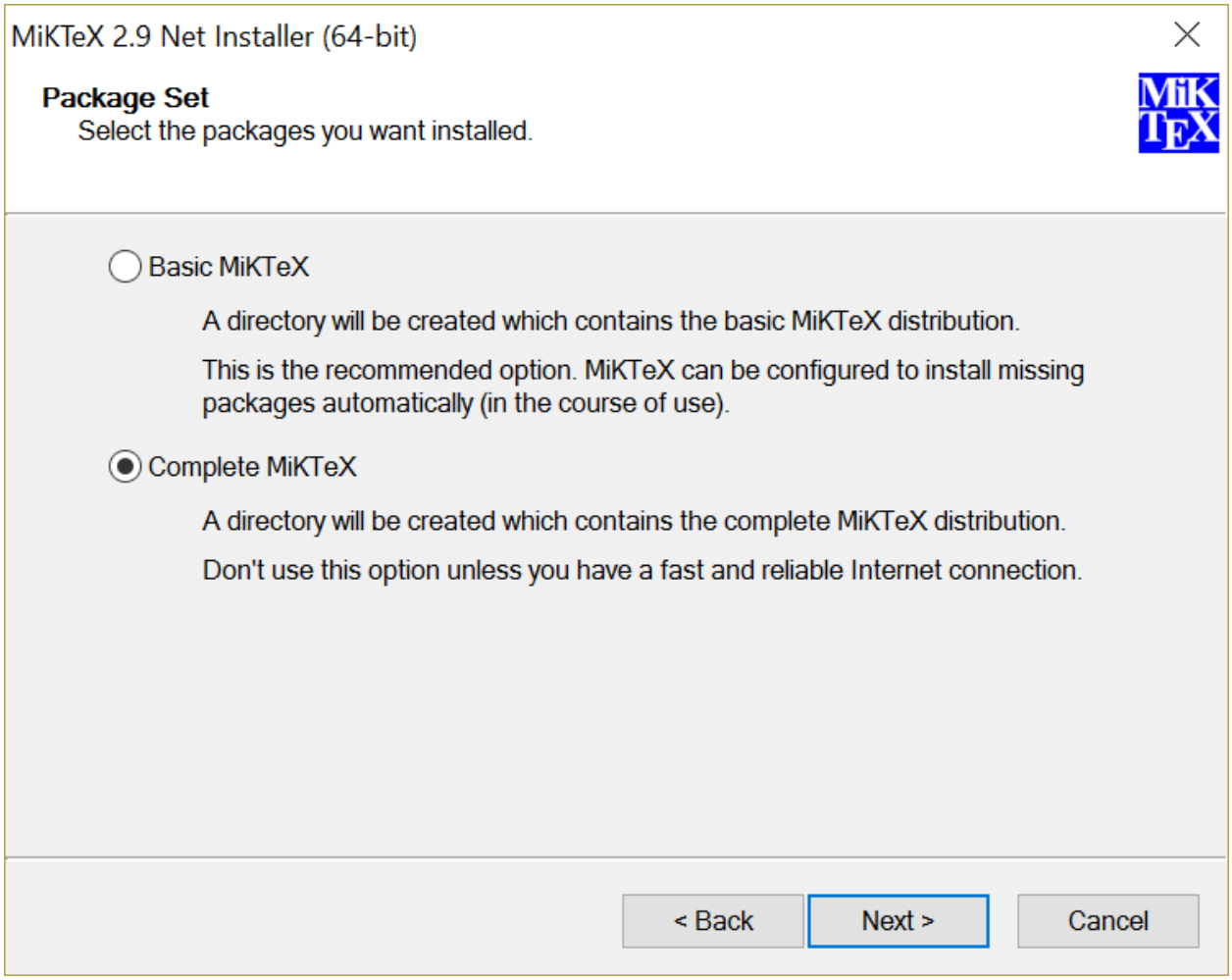
Do NOT choose the Basic installation but rather the MiKTeX Net Installer. Most likely, you will need the 64-bit version. But if your system is 32-bit, then choose that version. Then click Download.

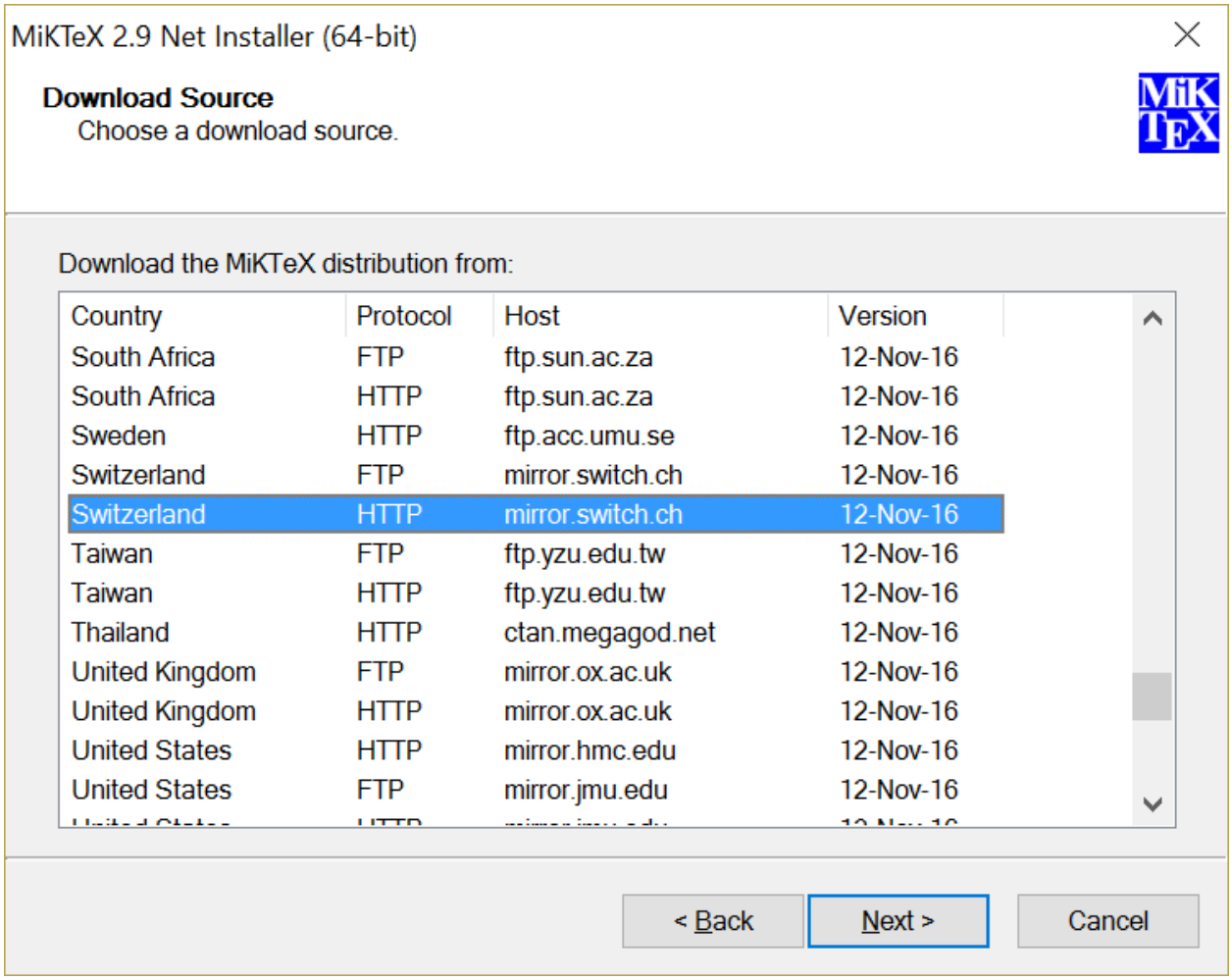


You need to check a few things as shown on the screenshots below

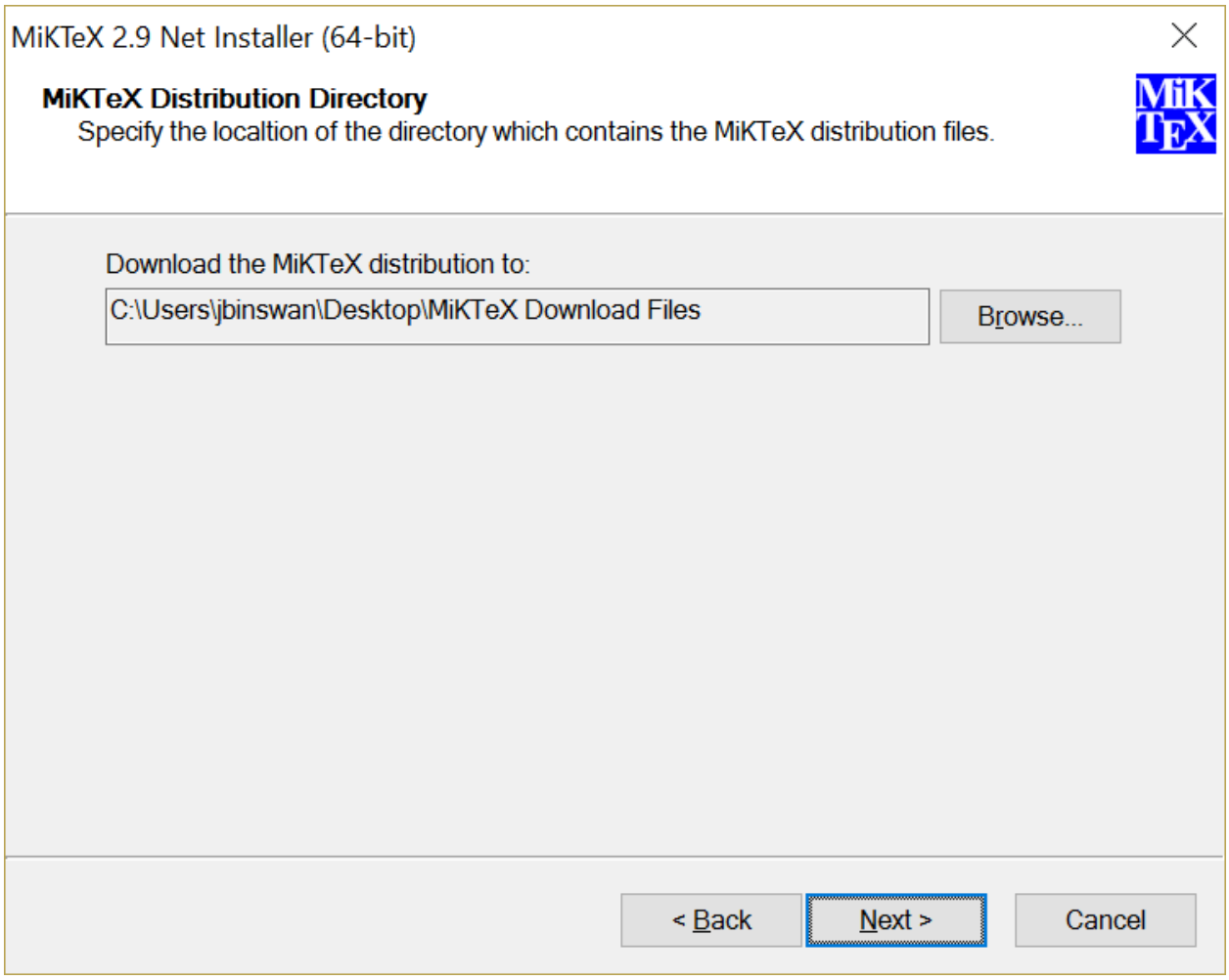


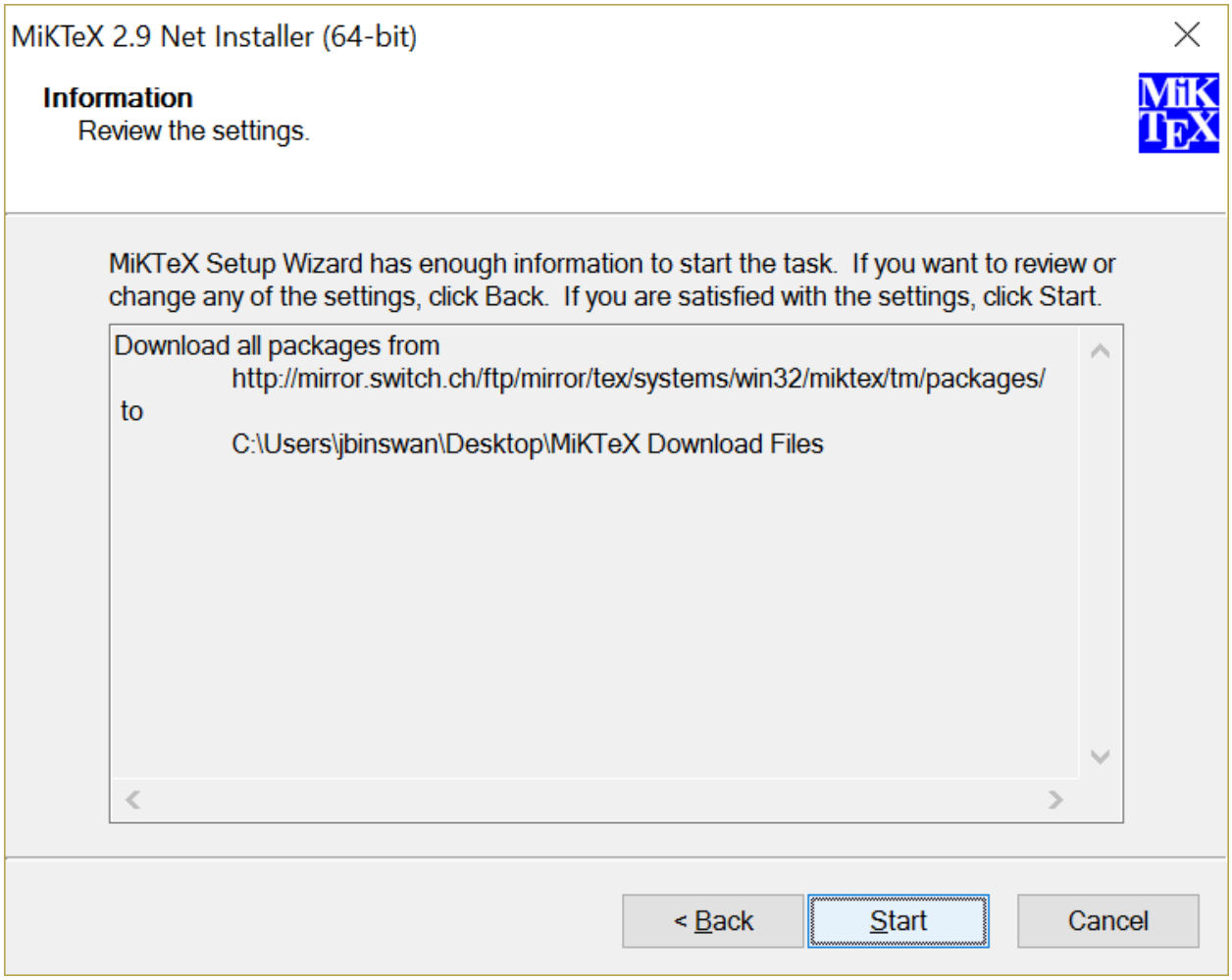

MiKTeX 2.9 Net Installer (64-bit)
Task
Choose the task you want carried out.
Download MiKTeX
MiKTeX will be downloaded into a directory on your computer.
Connection Settings...
Install MiKTeX
MiKTeX will be installed from a directory on your computer.
< Back
Next >
Cancel

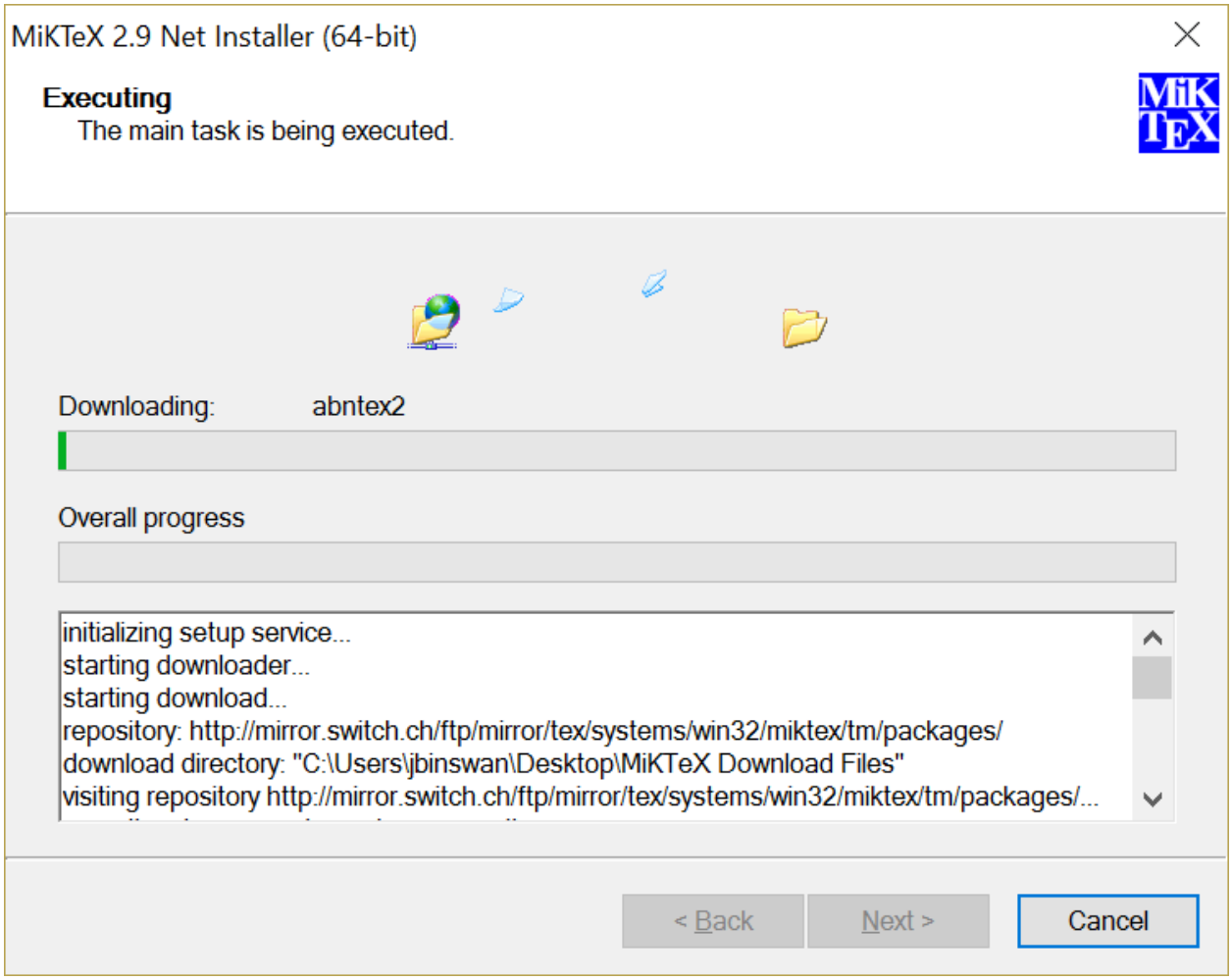

MiKTeX 2.9 Net Installer (64-bit)
Package Set
Select the packages you want installed.
Basic MiKTeX
A directory will be created which contains the basic MiKTeX distribution.
This is the recommended option. MiKTeX can be configured to install missing packages automatically (in the course of use).
Complete MiKTeX
A directory will be created which contains the complete MiKTeX distribution.
Don't use this option unless you have a fast and reliable Internet connection.
< Back
Next >
Cancel


MiKTeX 2.9 Net Installer (64-bit)
Download Source
Choose a download source.
Download the MiKTeX distribution from:
Country
Protocol
Host
Version
South Africa FTP ftp.sun.ac.za 12-Nov-16
South Africa HTTP ftp.sun.ac.za 12-Nov-16
Sweden HTTP ftp.acc.umu.se 12-Nov-16
Switzerland FTP mirror.switch.ch 12-Nov-16
Switzerland HTTP mirror.switch.ch 12-Nov-16
Taiwan FTP ftp.yzu.edu.tw 12-Nov-16
Taiwan HTTP ftp.yzu.edu.tw 12-Nov-16
Thailand HTTP ctan.megagod.net 12-Nov-16
United Kingdom FTP mirror.ox.ac.uk 12-Nov-16
United Kingdom HTTP mirror.ox.ac.uk 12-Nov-16
United States HTTP mirror.hmc.edu 12-Nov-16
United States FTP mirror.jmu.edu 12-Nov-16
< Back
Next >
Cancel

It makes sense to have the installation files on the Desktop. Note that this is only about the DOWNLOAD! Installation comes later.

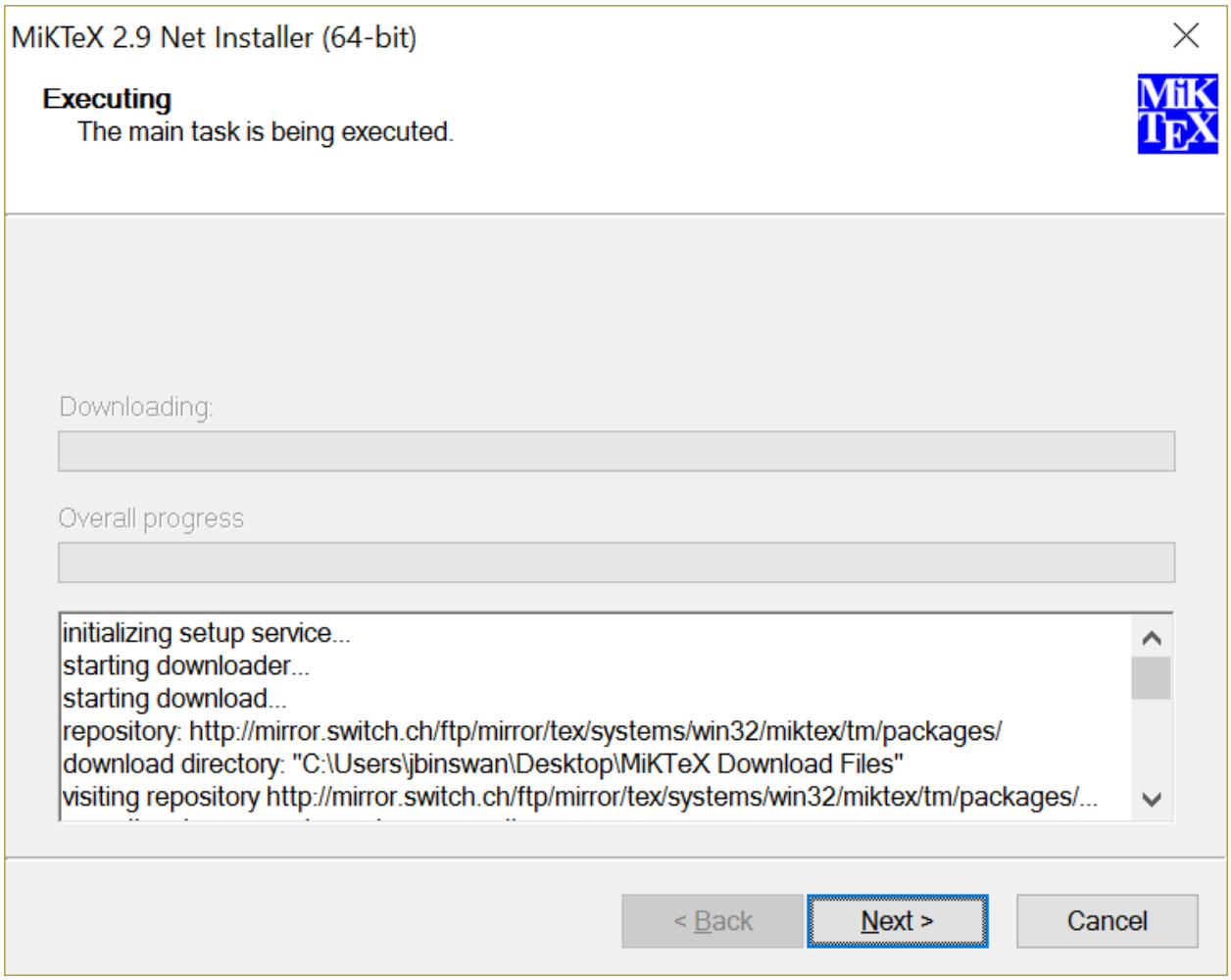



MiKTeX 2.9 Net Installer (64-bit)
Information
Review the settings.
MiKTeX Setup Wizard has enough information to start the task. If you want to review or change any of the settings, click Back. If you are satisfied with the settings, click Start.
Download all packages from
http://mirror.switch.ch/ftp/mirror/tex/systems/win32/miktex/tm/packages/
to
C:\Users\jbinswan\Desktop\MiKTeX Download Files
< Back
Start
Cancel

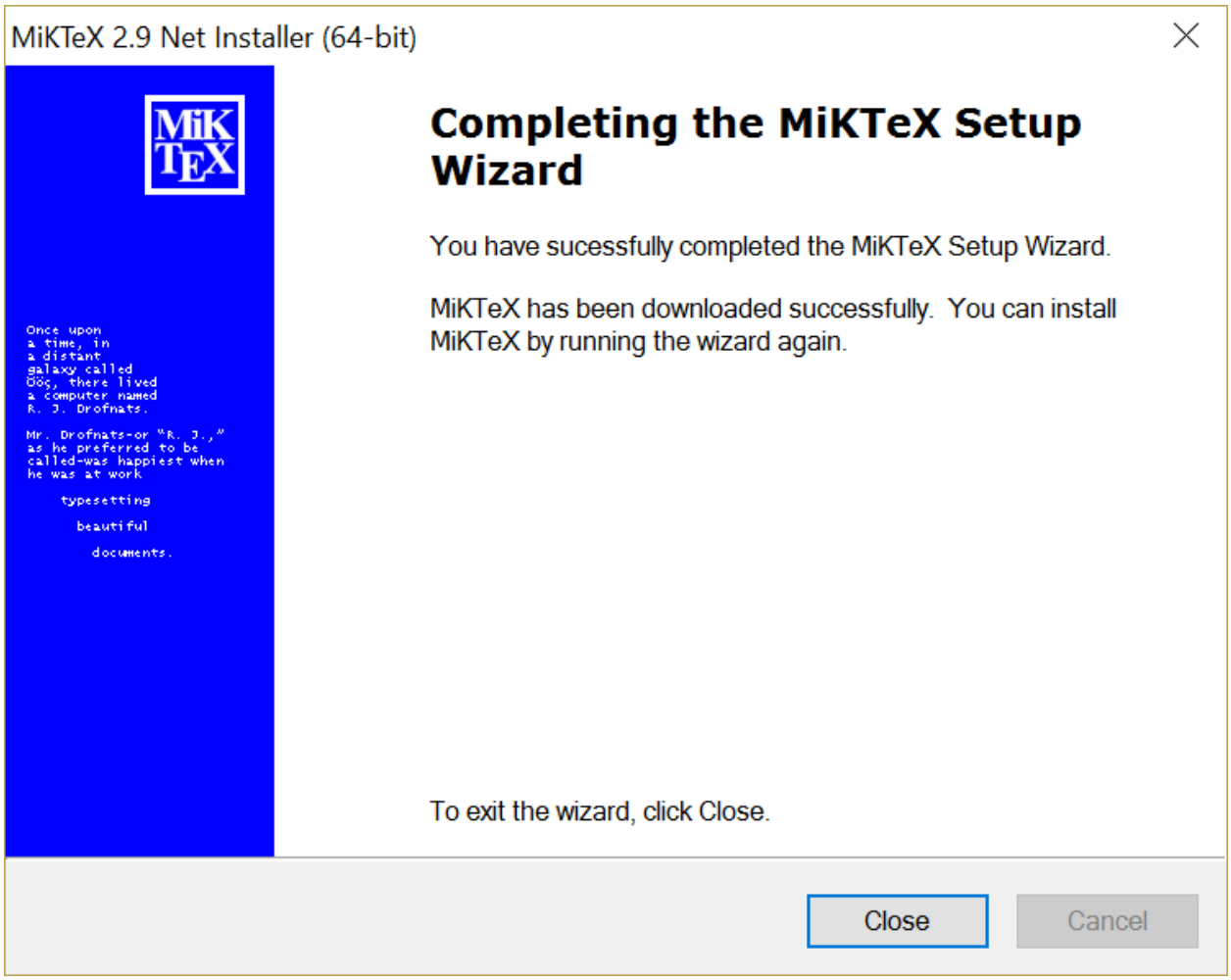


This takes VERY LONG!!

Click Next when the download is finished.

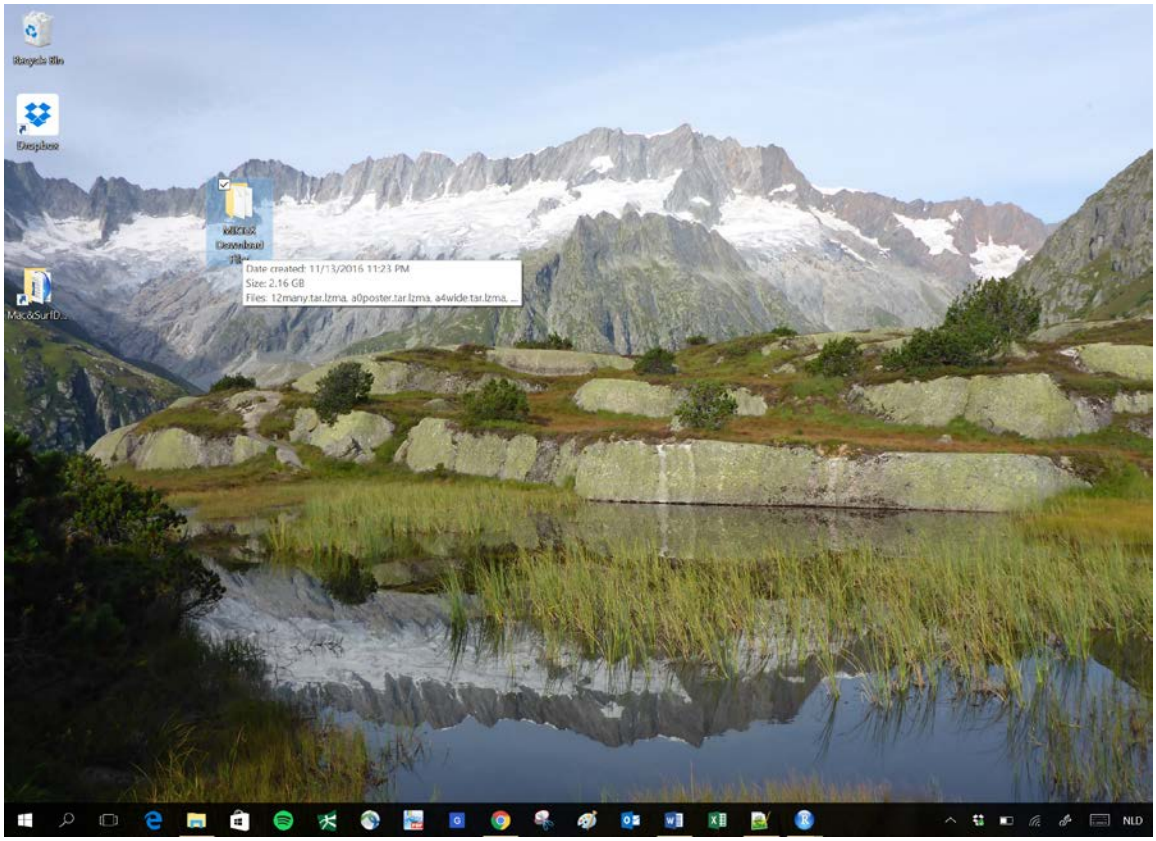


And the download is done…

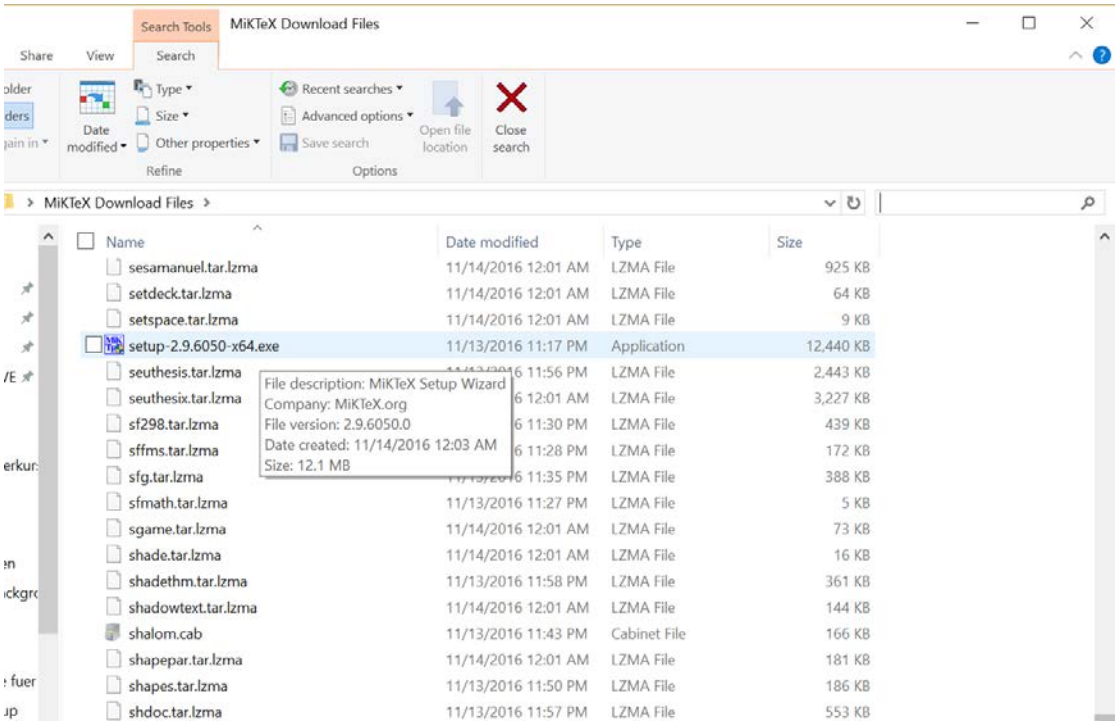


But not yet the installation…

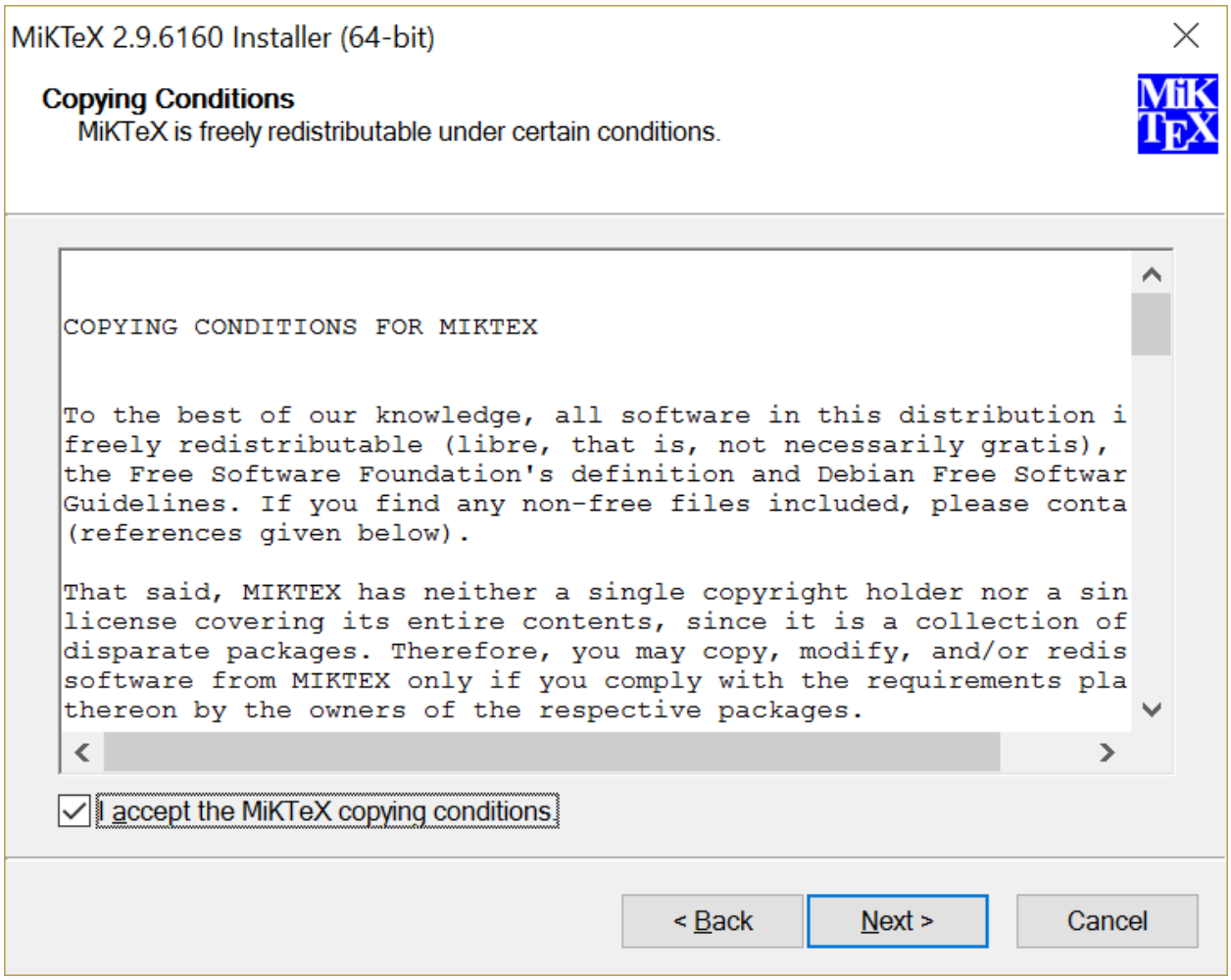
On your desktop (or wherever you put it) you should see a folder with the MiKTeX Download Files.

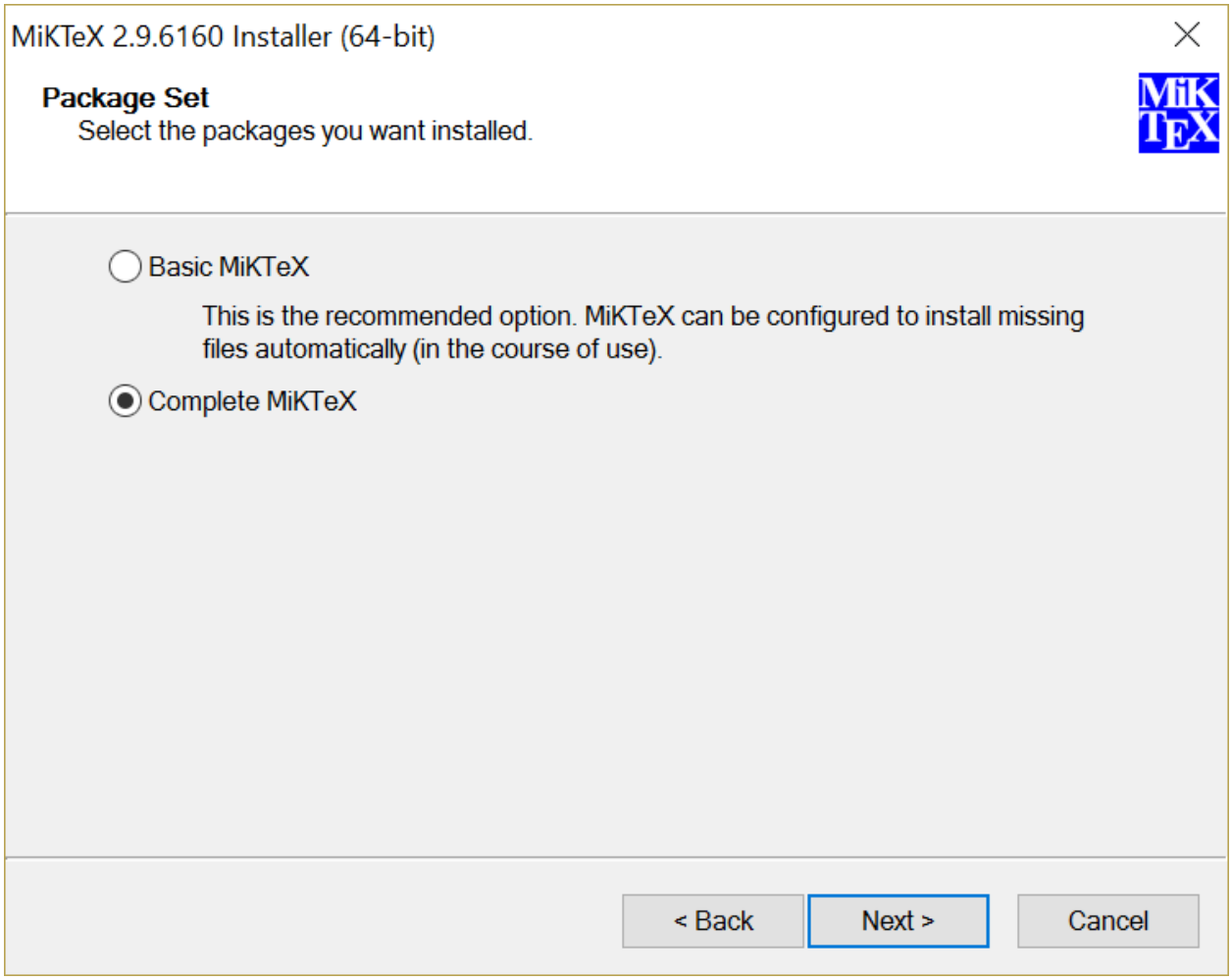


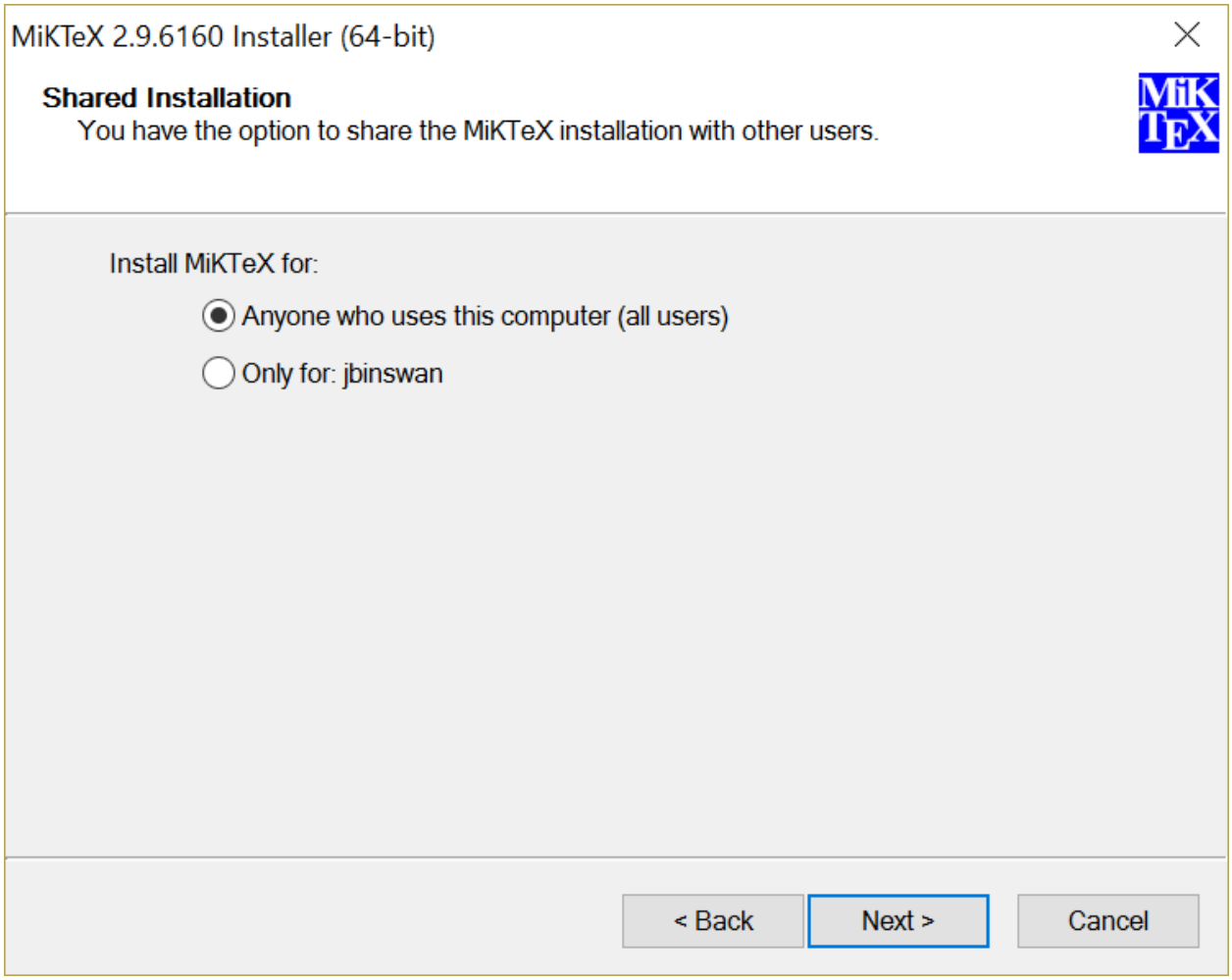
Open the folder. It contains tons of files; scroll down to the `setup-2.9.6050-x64.exe` file and double-click it.



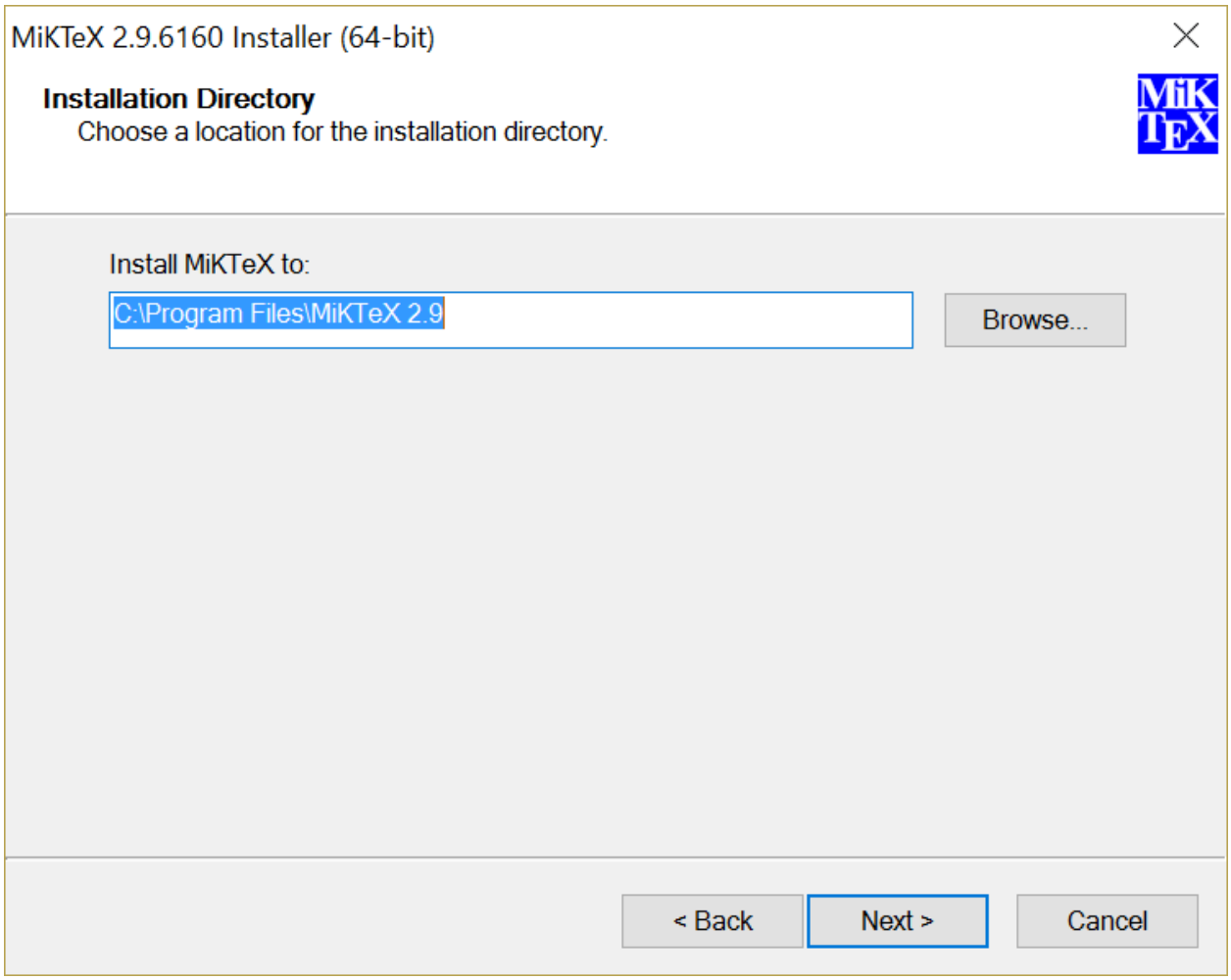
Again, you need to check some cases and make some choices as shown below.

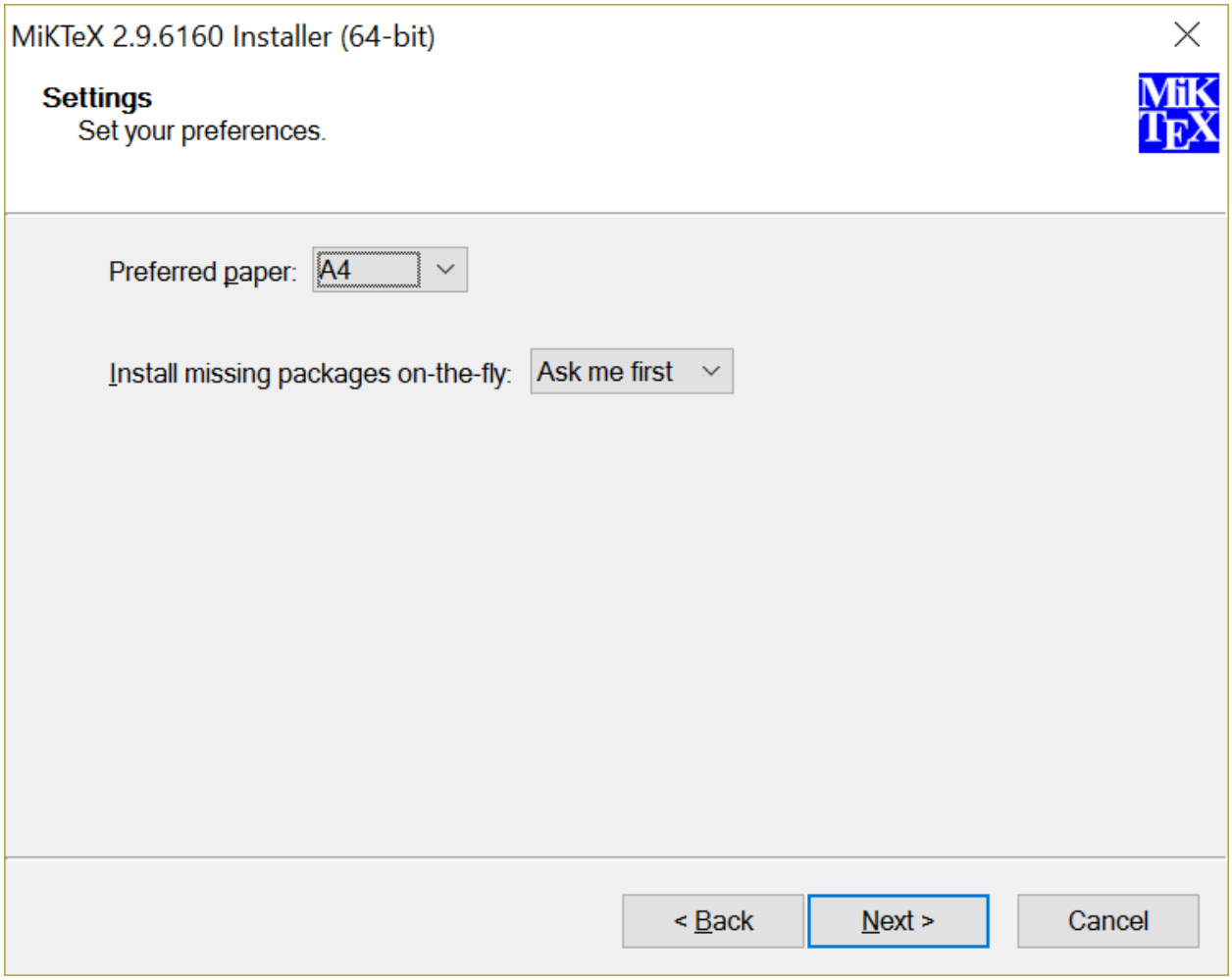


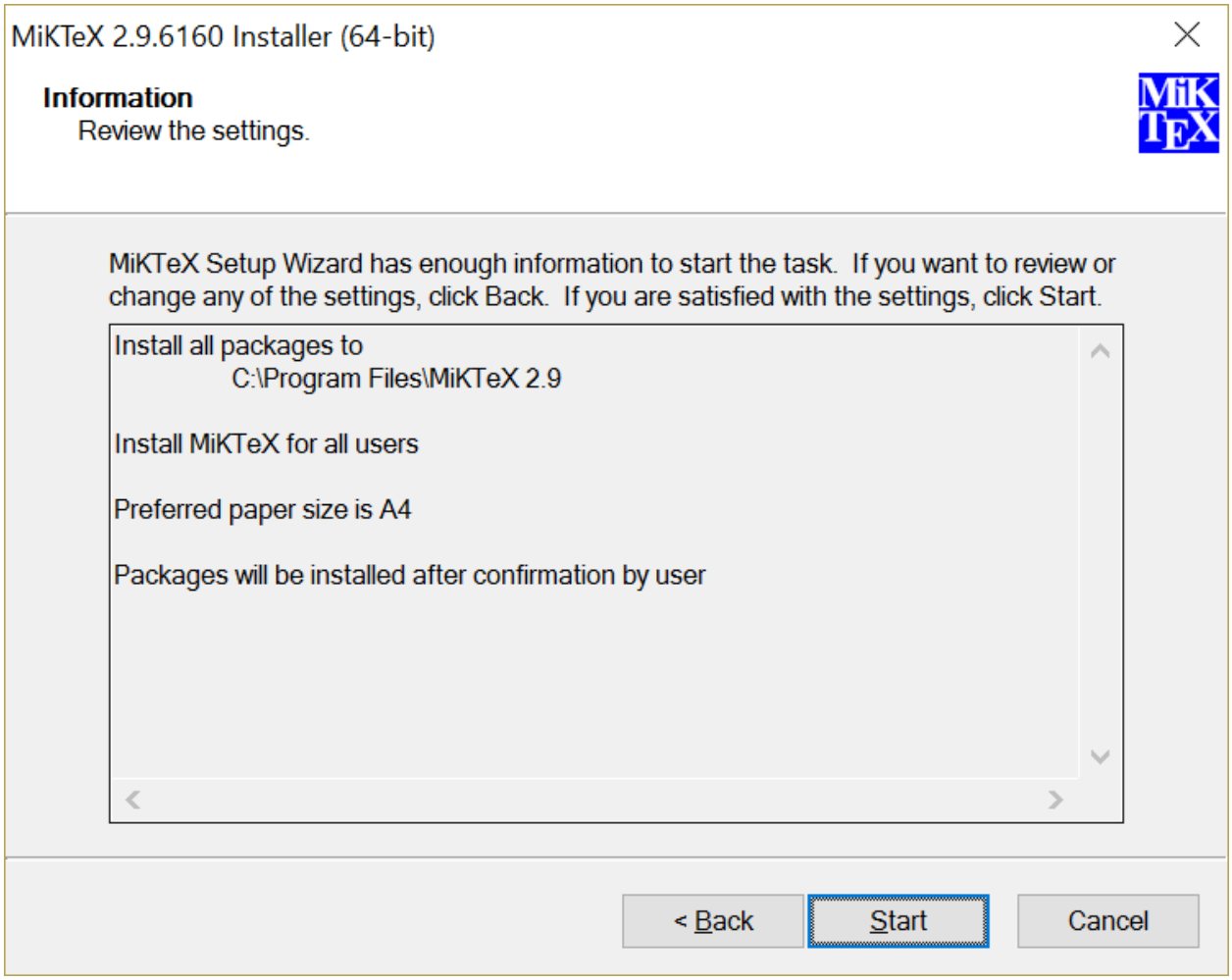

MiKTeX 2.9.6160 Installer (64-bit)
Package Set
Select the packages you want installed.
Basic MiKTeX
This is the recommended option. MiKTeX can be configured to install missing files automatically (in the course of use).
Complete MiKTeX
< Back
Next >
Cancel

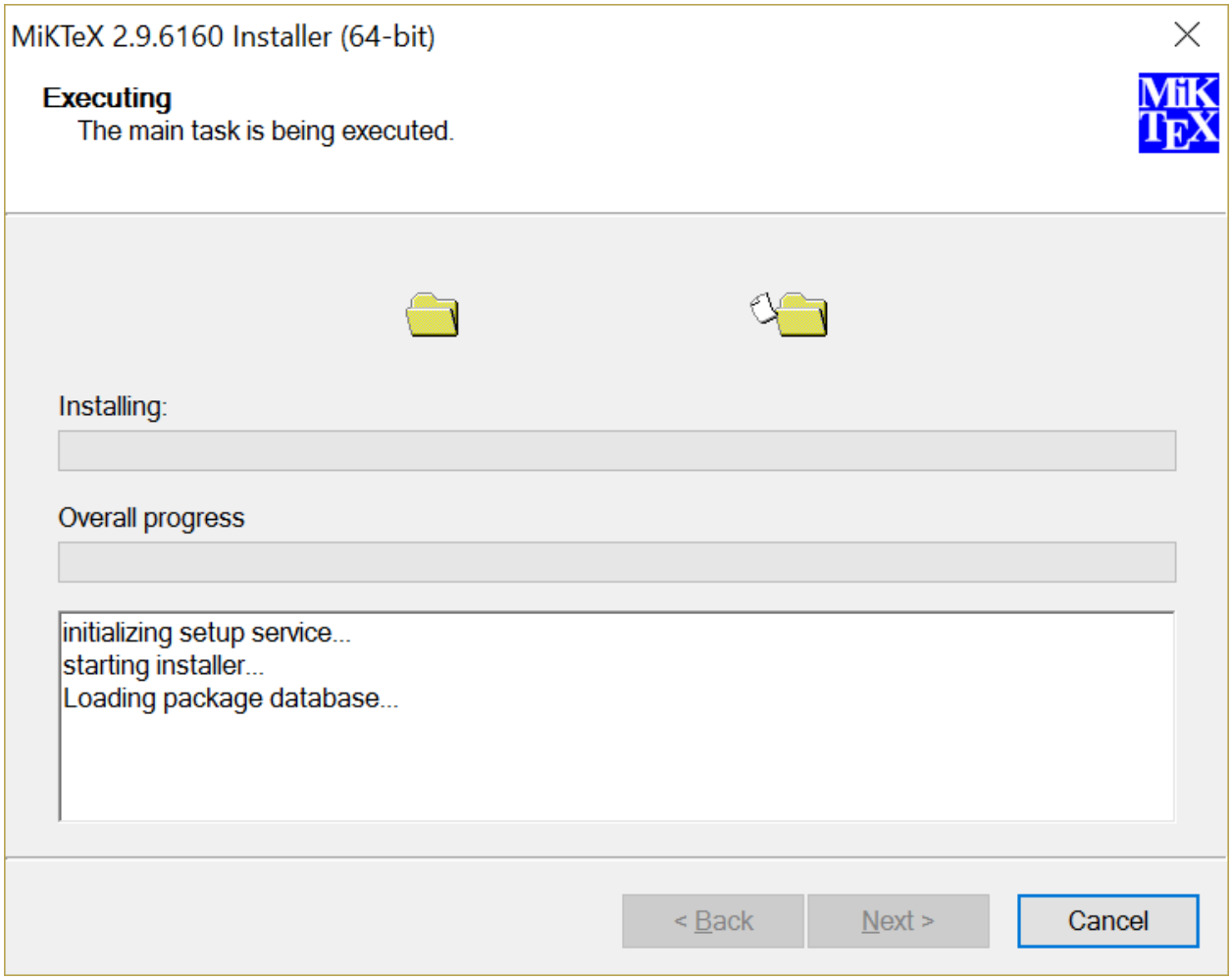

MiKTeX 2.9.6160 Installer (64-bit)
Shared Installation
You have the option to share the MiKTeX installation with other users.
Install MiKTeX for:
Anyone who uses this computer (all users)
Only for: jbinswan
< Back
Next >
Cancel

Most of the time, the default installation directory makes sense.

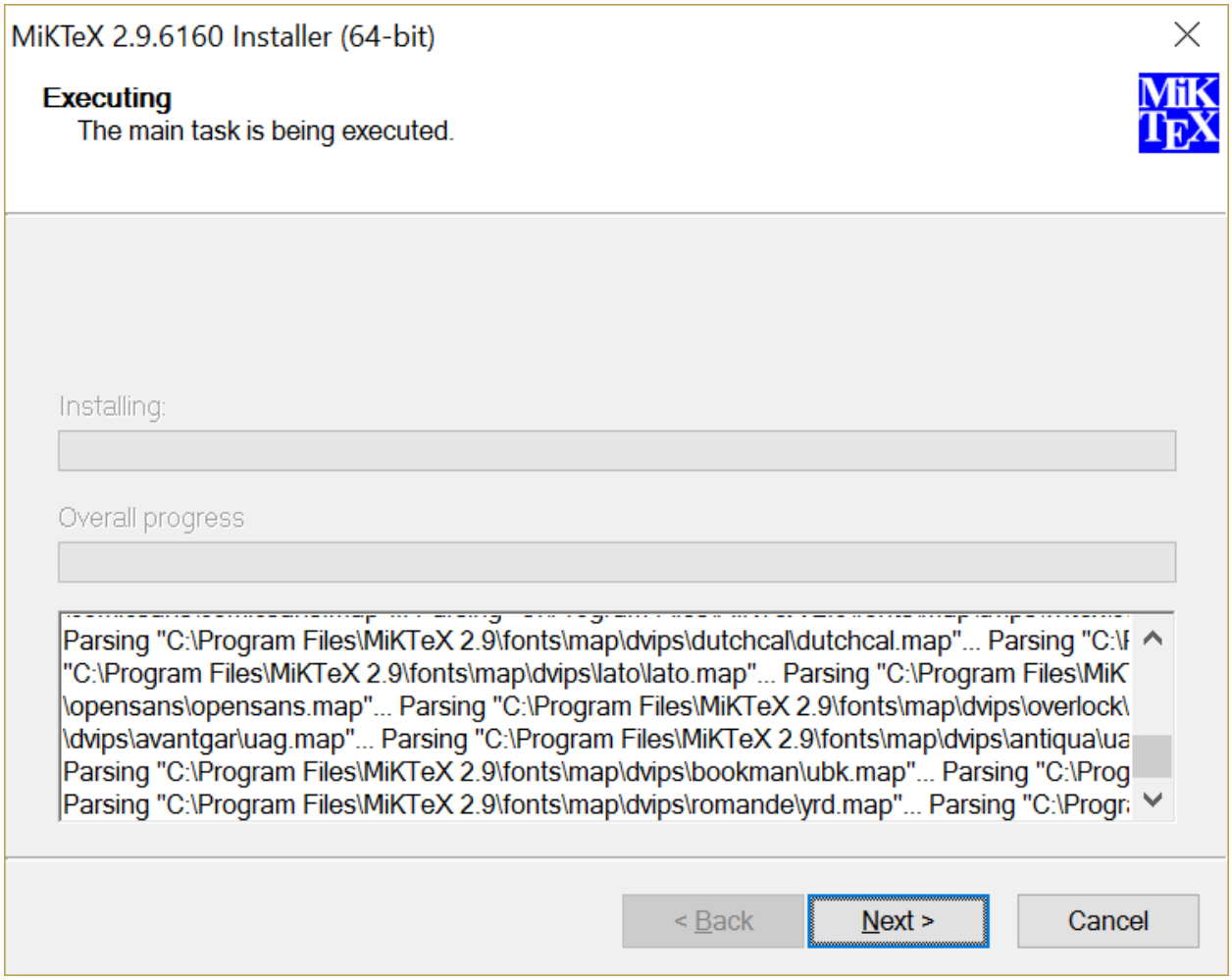


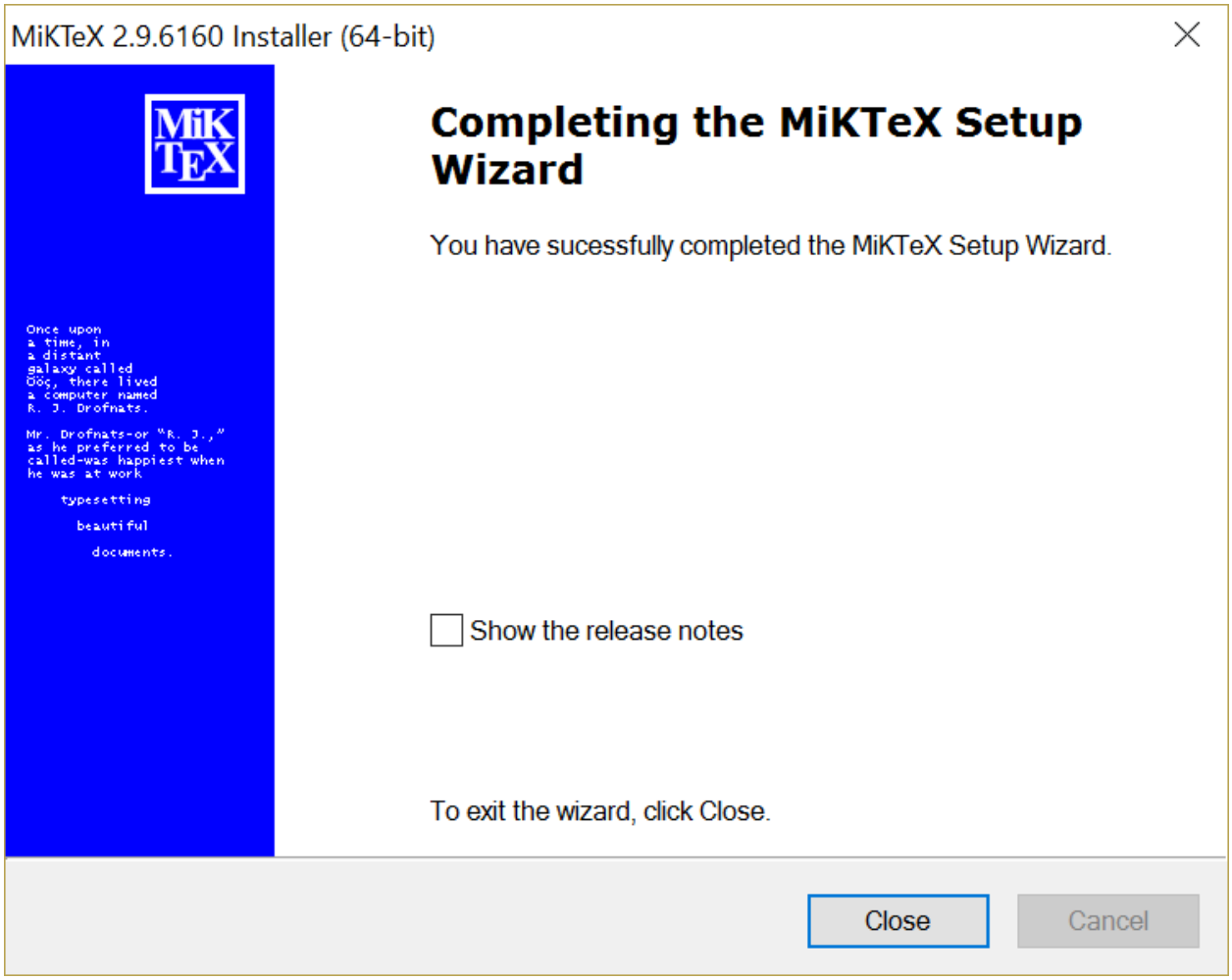

MiKTeX 2.9.6160 Installer (64-bit)
Settings
Set your preferences.
Preferred paper:
A4
Install missing packages on-the-fly:
Ask me first
< Back
Next >
Cancel


MiKTeX 2.9.6160 Installer (64-bit)
Information
Review the settings.
MiKTeX Setup Wizard has enough information to start the task. If you want to review or change any of the settings, click Back. If you are satisfied with the settings, click Start.
Install all packages to
C:\Program Files\MiKTeX 2.9
Install MiKTeX for all users
Preferred paper size is A4
Packages will be installed after confirmation by user
< Back
Start
Cancel

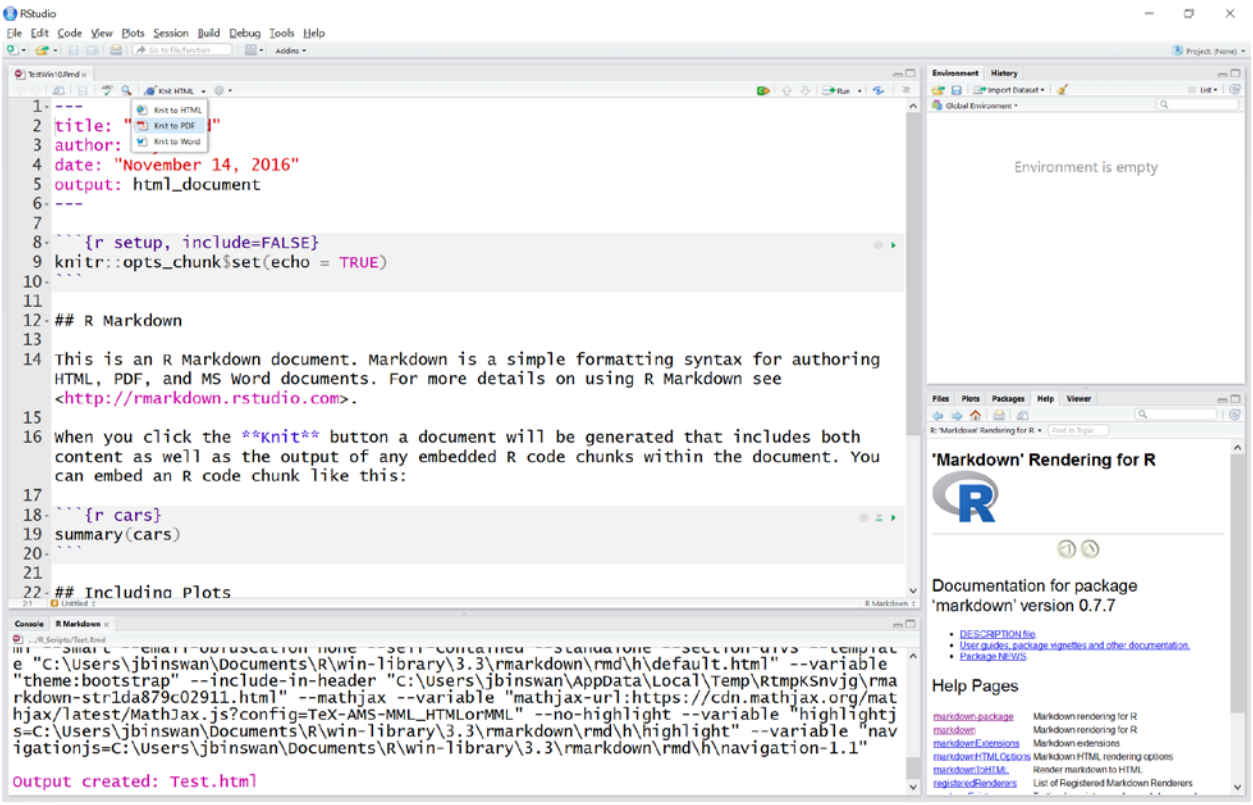


Again, this takes quite long!


MiKTeX 2.9.6160 Installer (64-bit)
Executing
The main task is being executed.
Installing:
Overall progress
Parsing "C:\Program Files\MiKTeX 2.9\fonts\map\dvips\dutchcal\dutchcal.map"... Parsing "C:\
"C:\Program Files\MiKTeX 2.9\fonts\map\dvips\lato\lato.map"... Parsing "C:\Program Files\MiK
\opensans\opensans.map"... Parsing "C:\Program Files\MiKTeX 2.9\fonts\map\dvips\overlock\
\dvips\avantgar\uag.map"... Parsing "C:\Program Files\MiKTeX 2.9\fonts\map\dvips\antiqua\ua
Parsing "C:\Program Files\MiKTeX 2.9\fonts\map\dvips\bookman\ubk.map"... Parsing "C:\Prog
Parsing "C:\Program Files\MiKTeX 2.9\fonts\map\dvips\romande\yrd.map"... Parsing "C:\Progr
< Back
Next >
Cancel


MiKTeX 2.9.6160 Installer (64-bit)
Once upon
a time, in
a distant
galaxy called
Ööç, there lived
a computer named
R. J. Drofnats.
Mr. Drofnats-or "R. J.,"
as he preferred to be
called-was happiest when
he was at work
typesetting
beautiful
documents.
Completing the MiKTeX Setup Wizard
You have sucessfully completed the MiKTeX Setup Wizard.
Show the release notes
To exit the wizard, click Close.
Close
Cancel

Now close and reopen RStudio. Then choose “Knit to PDF”. It should work now. (If not, restart your computer.)



If you are curious about working with Latex, you need an editor (as you need RStudio for working with R). See the Mac section above in this document about how to install Texmaker. The installation is very similar to the Mac case, so there is no need to guide you through the process. Note that the installation of Texmaker is not mandatory for this course.