

Setting up a 64 bits C/Fortran/Python compiler and some useful libraries and tools on Microsoft Windows step by step

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February 20, 2014

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SORRY! I have only a spanish license of Windows 7¹. Therefore, some figures have spanish texts.

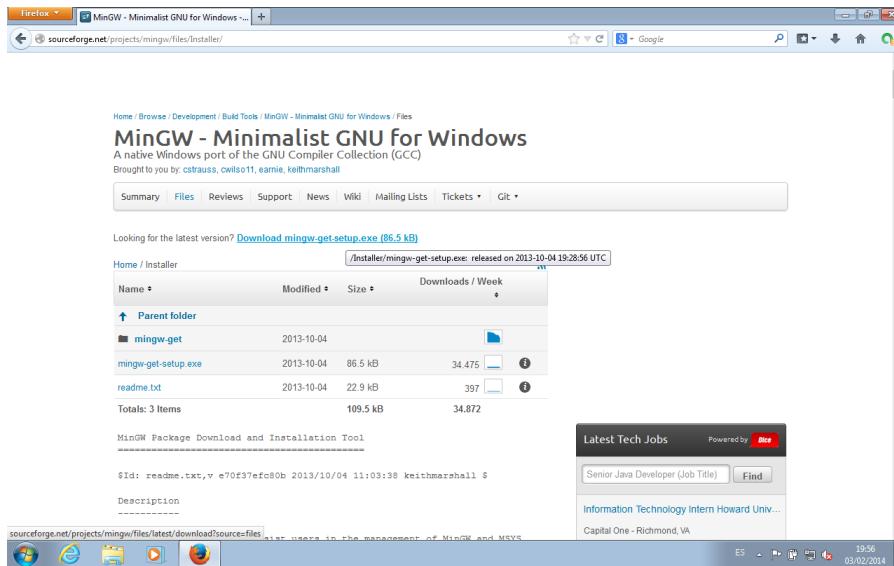
Most of patches used in this project are extracted from:
<https://github.com/Alexpu>

¹Windows 7 is a registered trademark of Microsoft Corporation

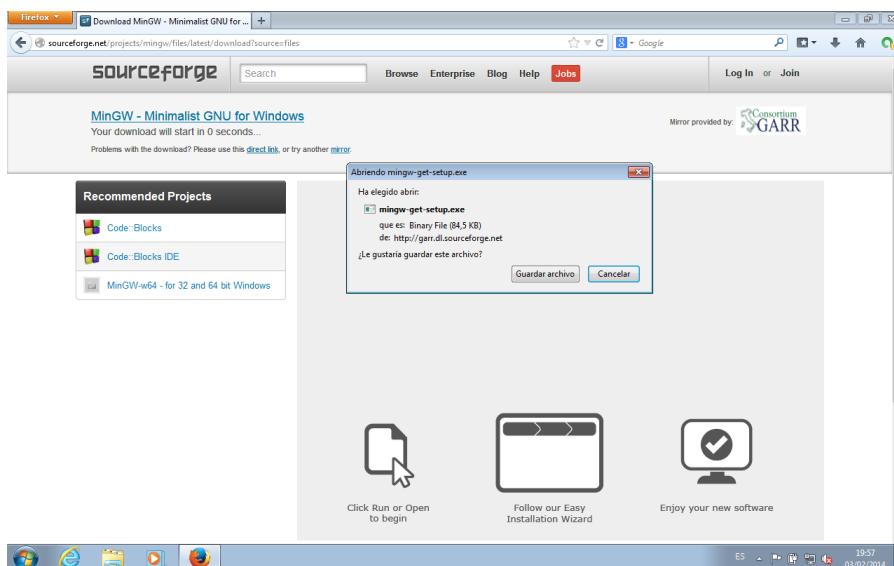
1 Installing MSYS

MSYS is a minimal Unix terminal emulator running over the Microsoft Windows. In this section we install and we do a direct access on the desktop.

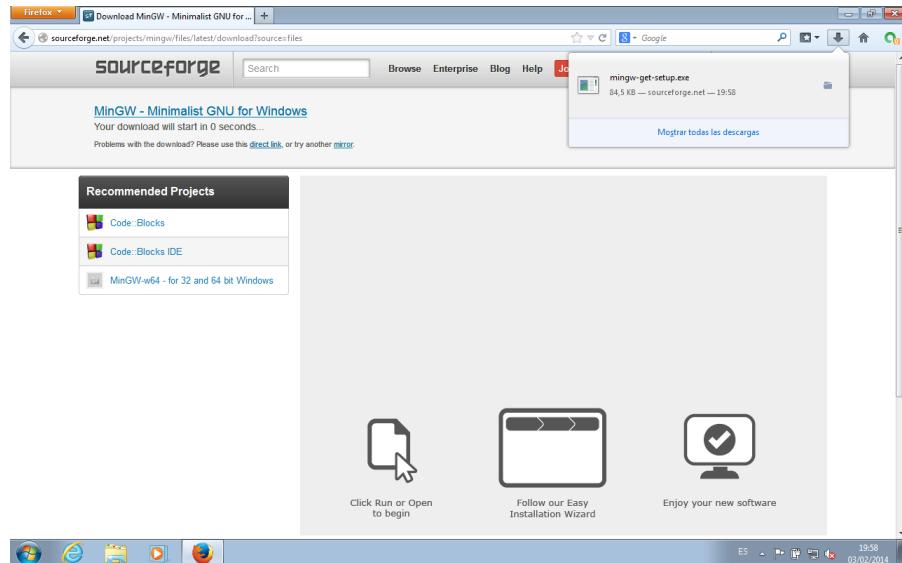
1. Download MSYS/MinGW installer (file `mingw-get-setup.exe`) on
<http://sourceforge.net/projects/mingw/files/Instaler/>



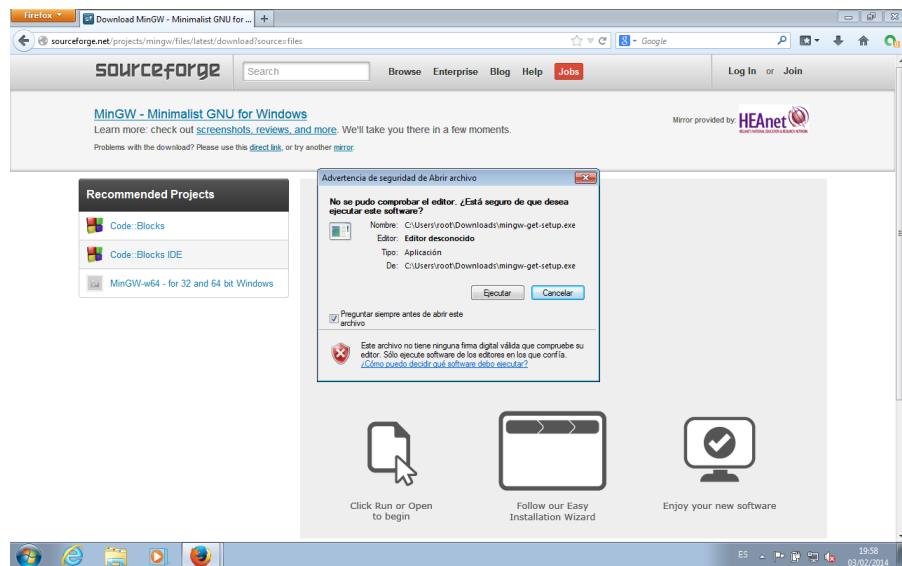
2. Click on **Save file** button



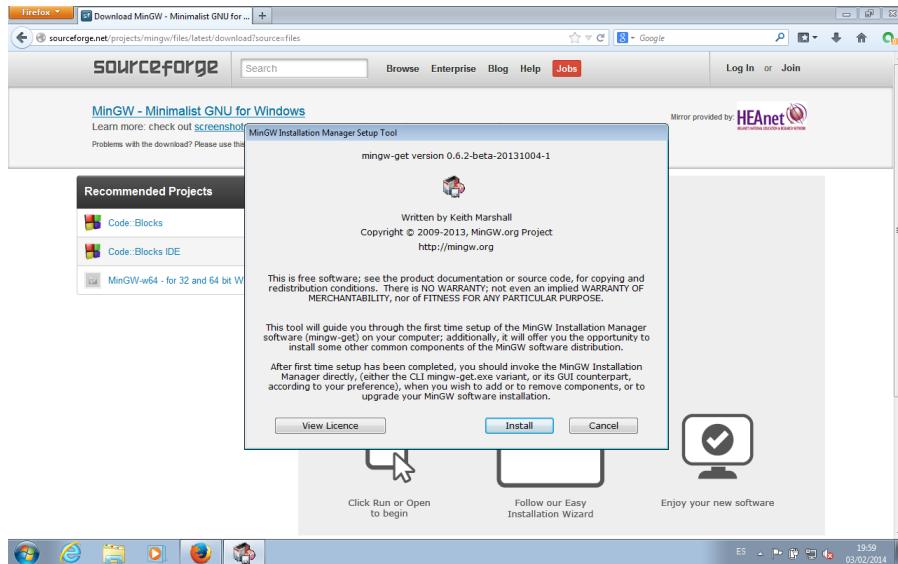
3. Click on the downloaded mingw-get-setup.exe installer



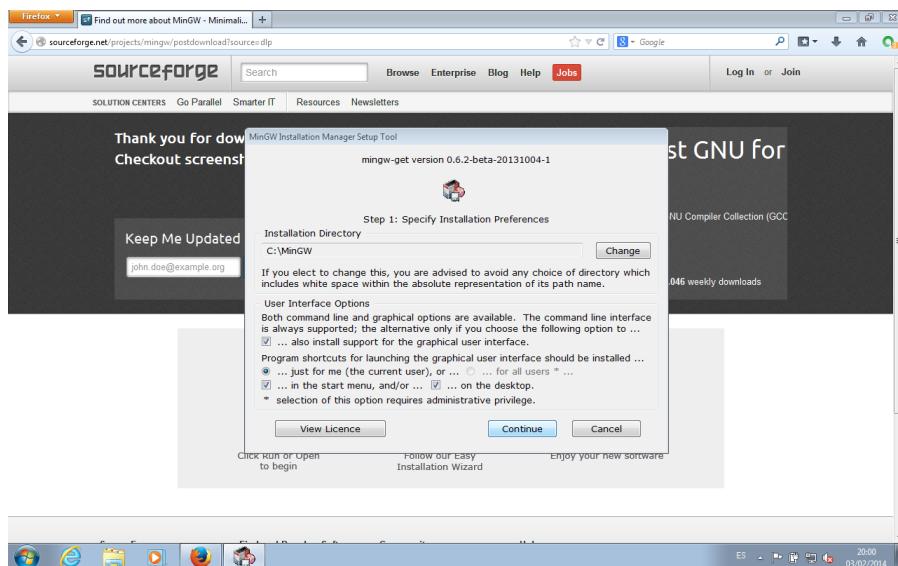
4. Click on the Execute button



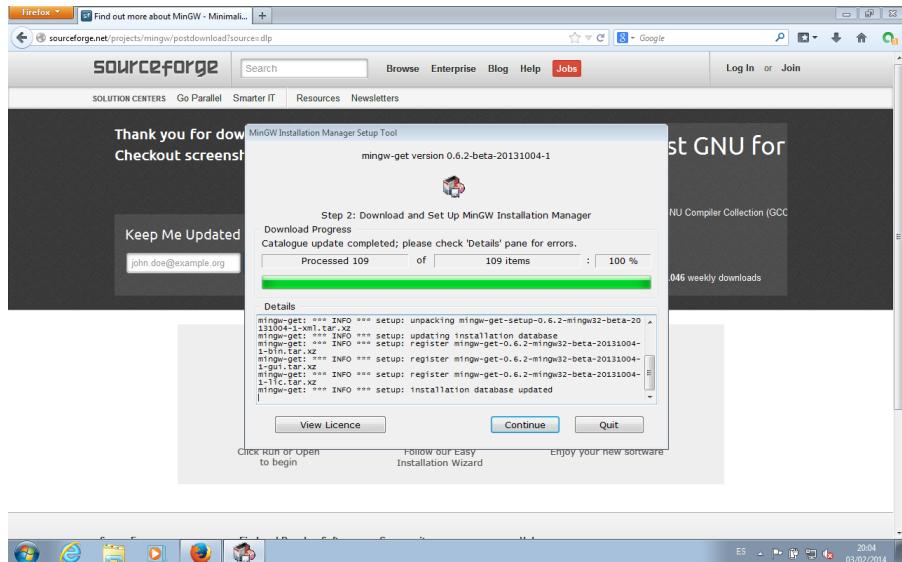
5. Click on the **Install** button



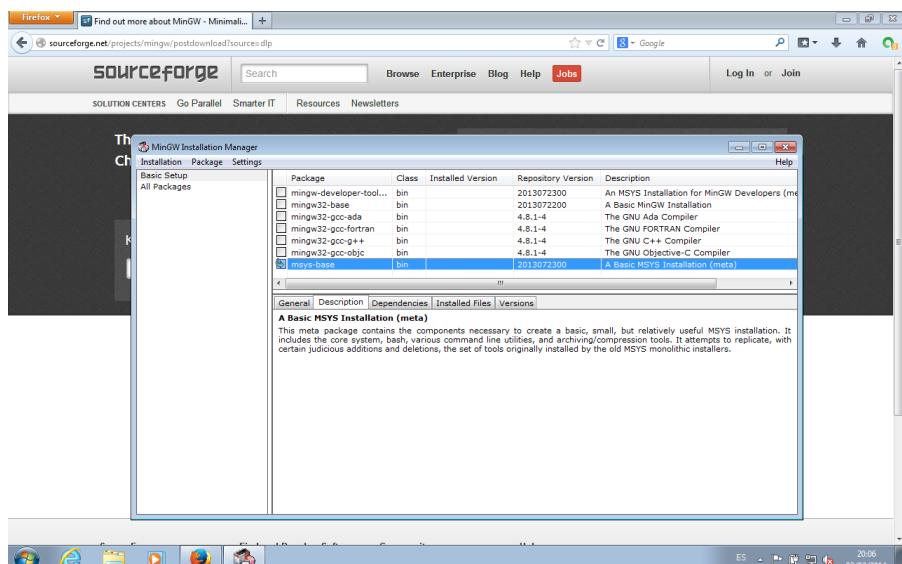
6. Click on the **Continue** button (WARNING! if you change the instalation directory you must change the /etc/fstab file on the MSYS system to work properly)



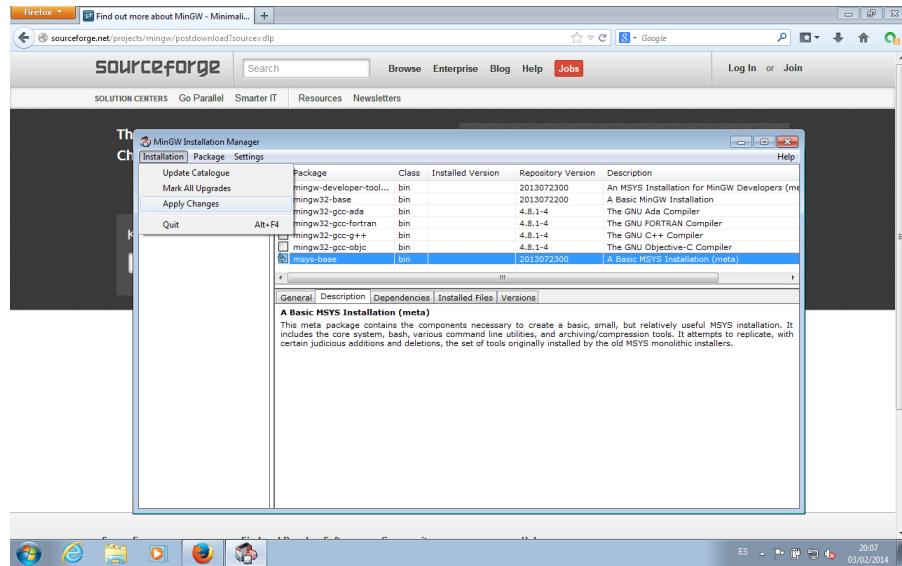
7. Click on the **Continue** button



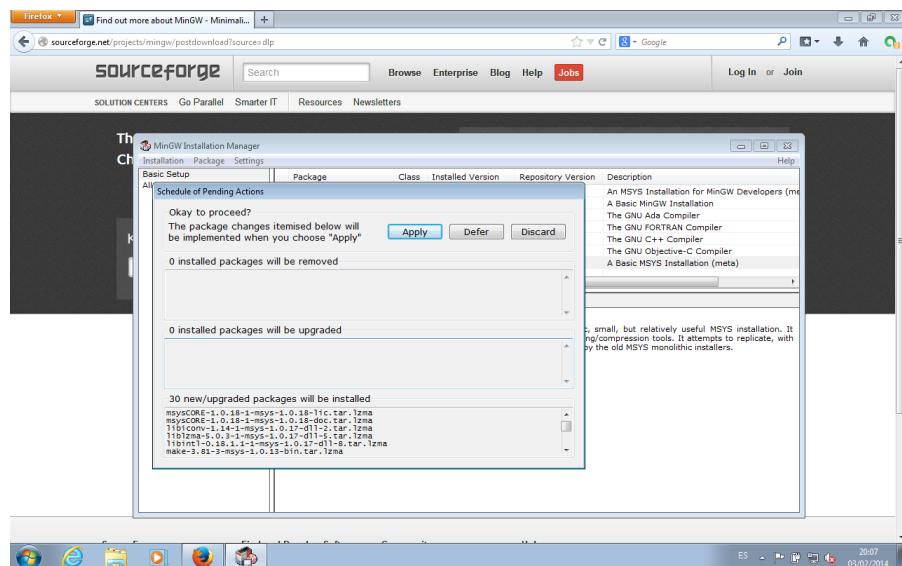
8. Click only on the **msys-base** option (other options install 32 bits compilers that can interfere the 64 bits compilations)



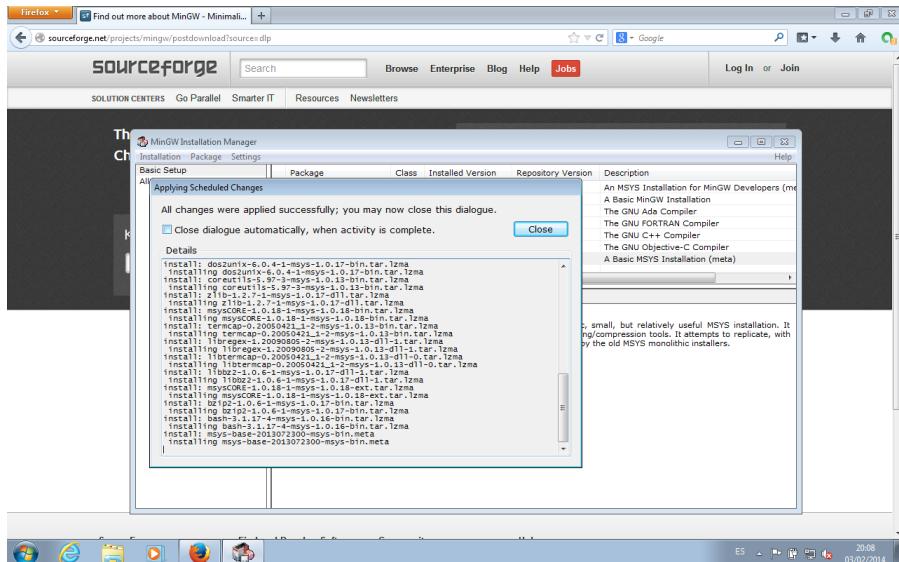
9. Click on the **Apply Changes** menu option



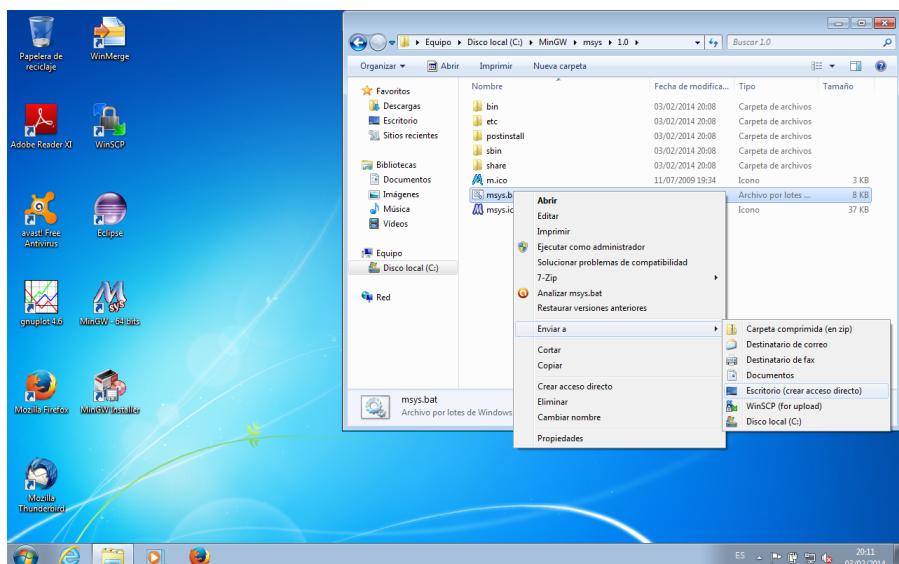
10. Click on the **Apply** button



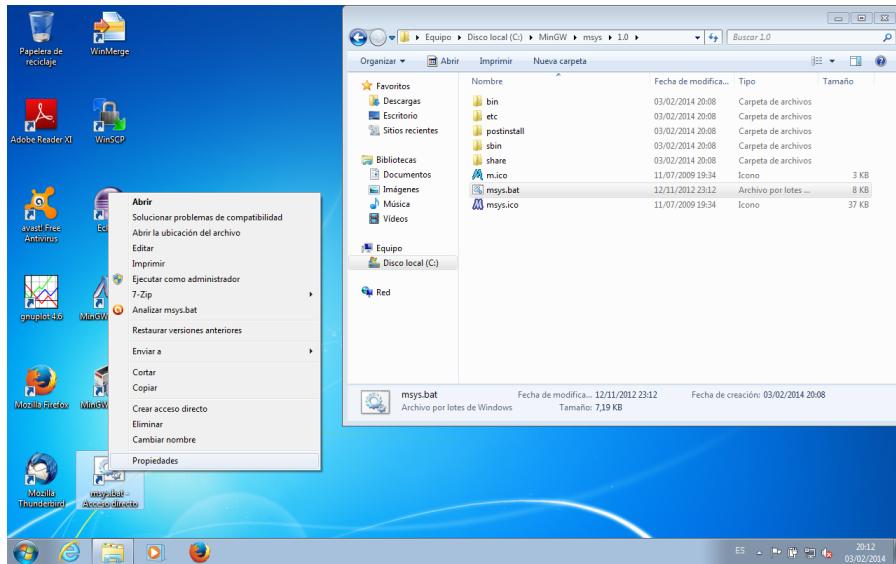
11. Click on the **Close** button



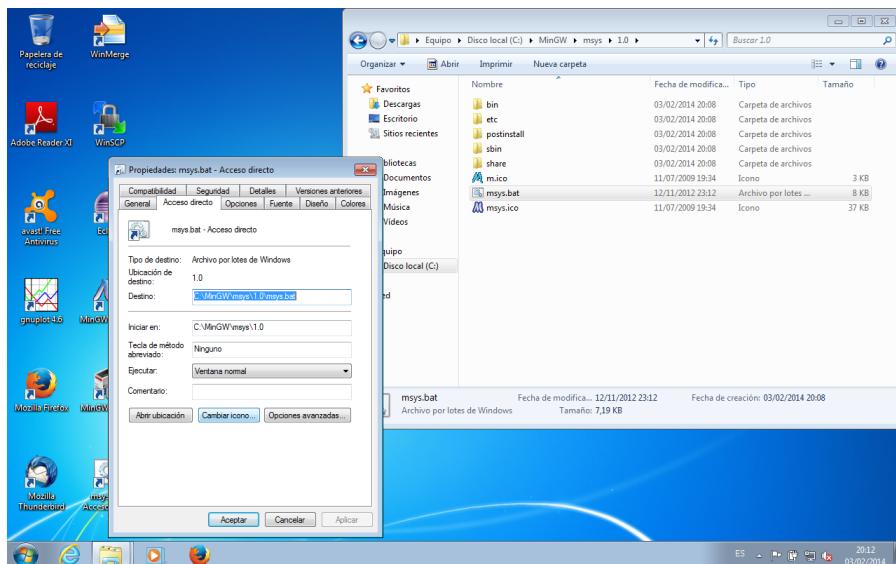
12. Create a direct access of the **C:\MinGW\msys\1.0\msys.bat** file sending it to the desktop



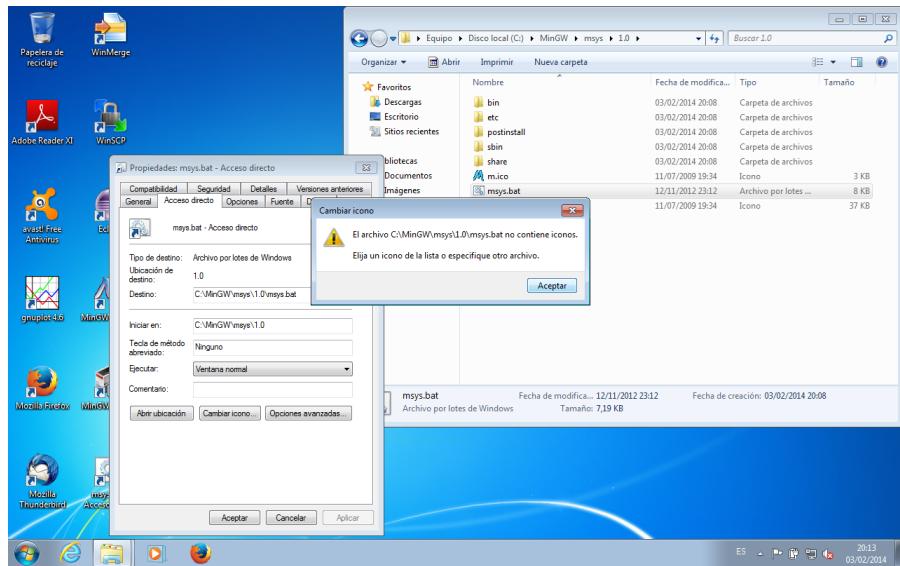
13. Select the new direct access and clicking on the right button and click on the **Properties** menu option



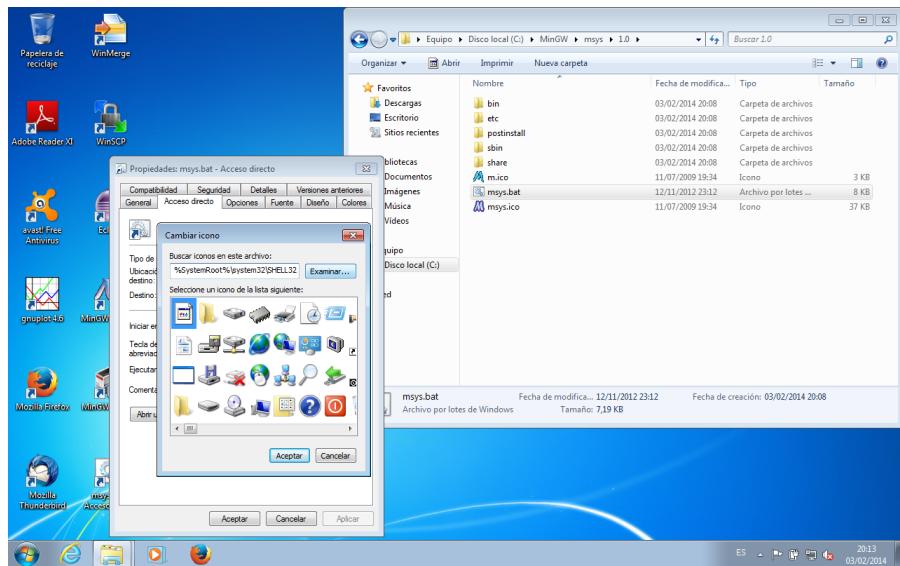
14. Click on the **Change icon** button



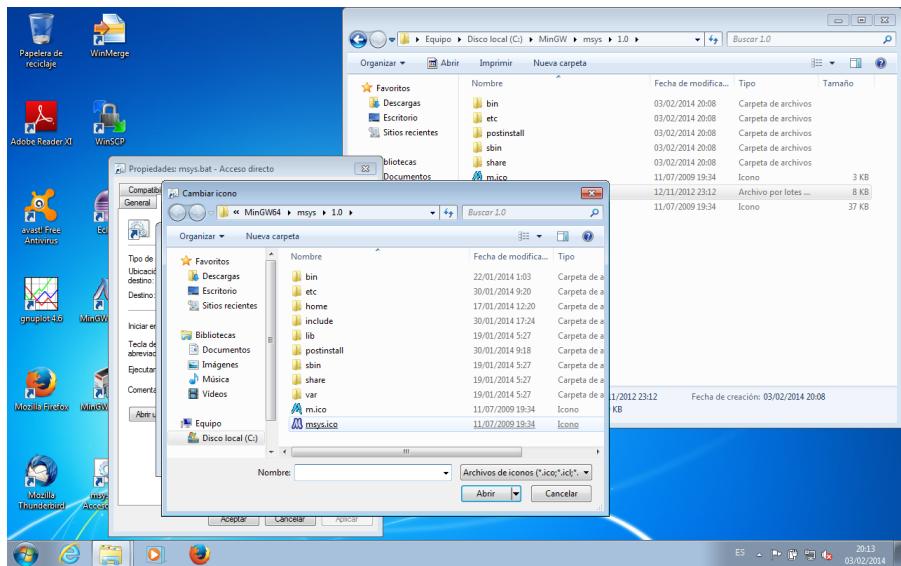
15. Click on the **Accept** button



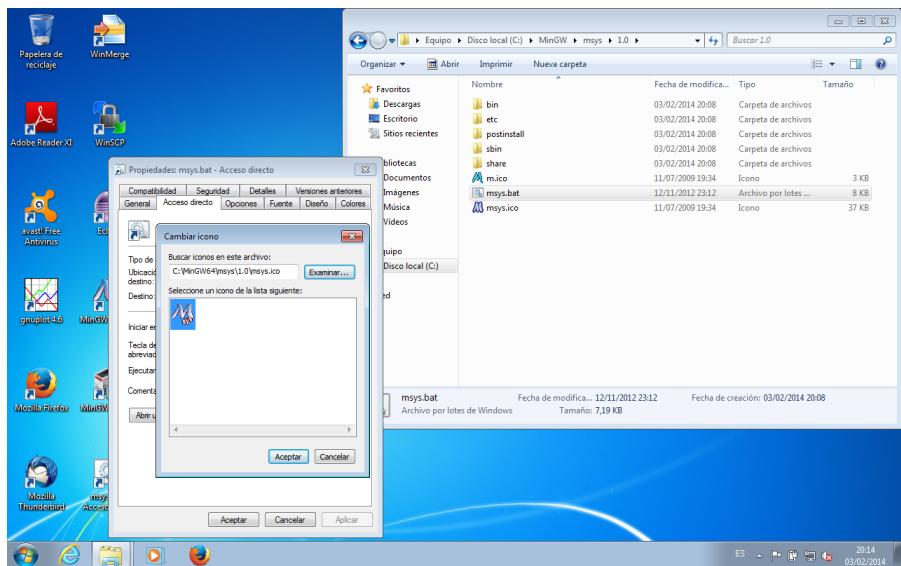
16. Click on the **Check** button



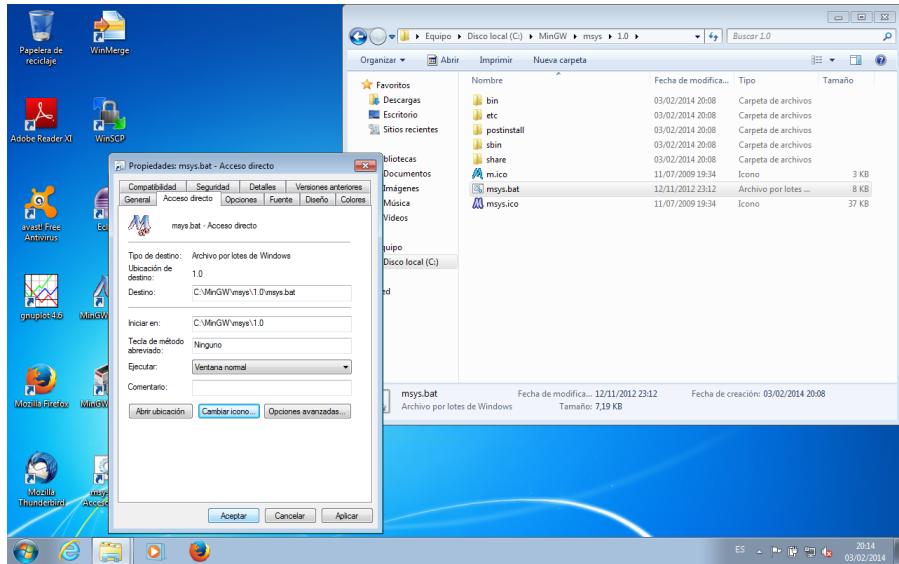
17. Select the C:\MinGW\msys\1.0\msys.ico (or C:\MinGW\msys\1.0\m.ico) file and click on the **Accept** button



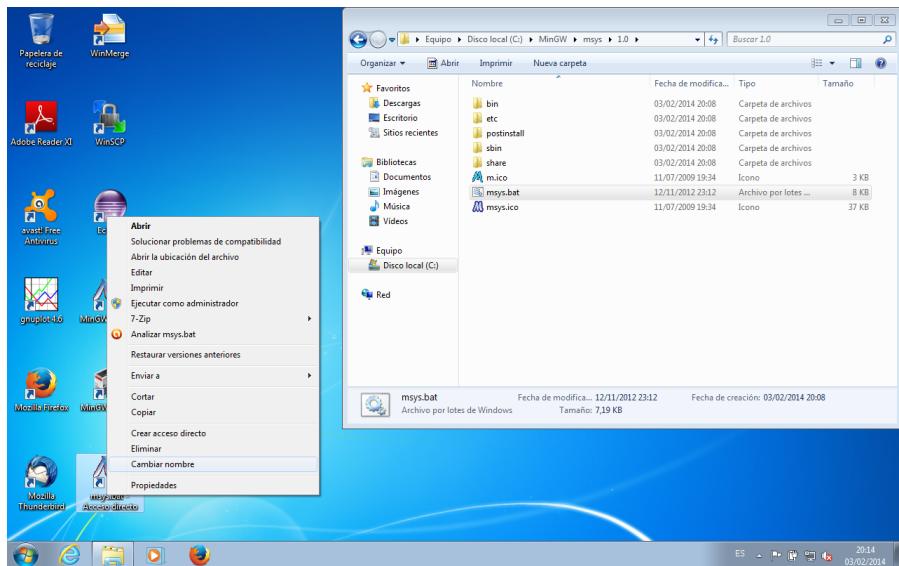
18. Select the icon and click on the **Accept** button



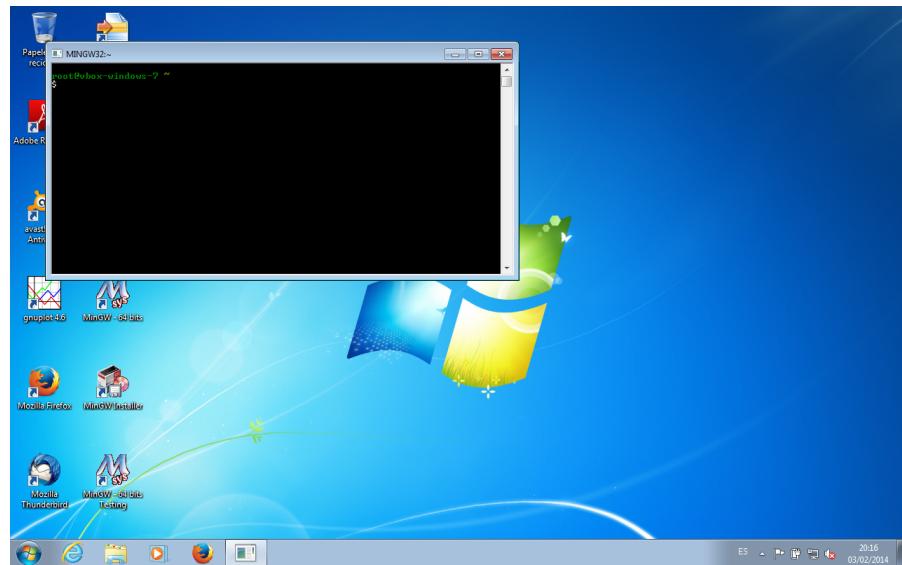
19. Click on the **Accept** button



20. Select the direct access clicking on the right button and click on the **Renomear** (Rename) menu option. Then change the label (i.e. MinGW 64 bits)



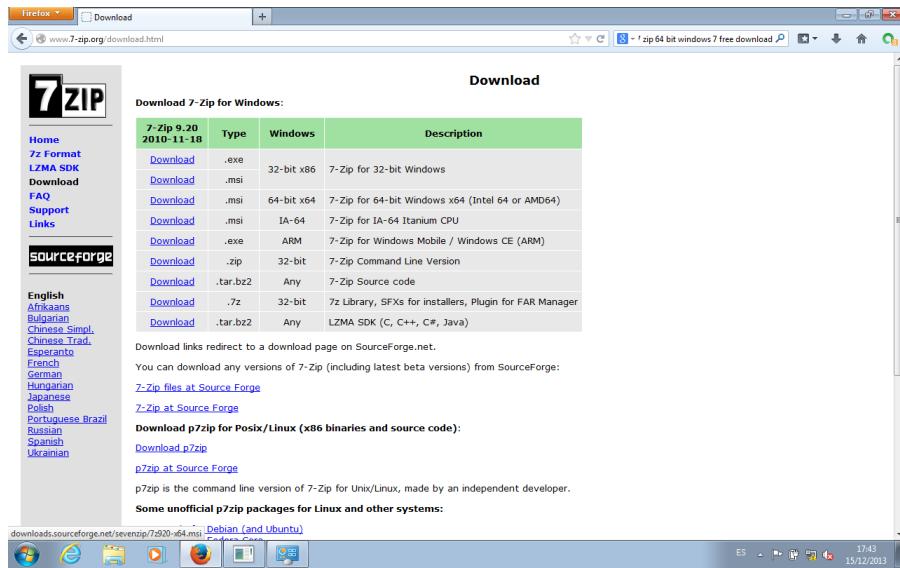
21. Click on the direct access button and you have a MSYS (minimal Unix) terminal



2 Installing 7-Zip

7-Zip is a files compressor required to install the MinGW 64 bits compiler. In this section the program is installed and configured to be accessible in the MSYS terminal.

1. Download the 7-Zip 64 bits installer ([.msi 64-bit x64](http://www.7-zip.org/download.html)) on
<http://www.7-zip.org/download.html>



7-Zip 9.20 2010-11-18	Type	Windows	Description
Download .exe		32-bit x86	7-Zip for 32-bit Windows
Download .msi		64-bit x64	7-Zip for 64-bit Windows x64 (Intel 64 or AMD64)
Download .msi		IA-64	7-Zip for IA-64 Itanium CPU
Download .exe		ARM	7-Zip for Windows Mobile / Windows CE (ARM)
Download .zip		32-bit	7-Zip Command Line Version
Download .tar.bz2		Any	7-Zip Source code
Download .7z		32-bit	7z Library, SFXs for installers, Plugin for FAR Manager
Download .tar.bz2		Any	LZMA SDK (C, C++, C#, Java)

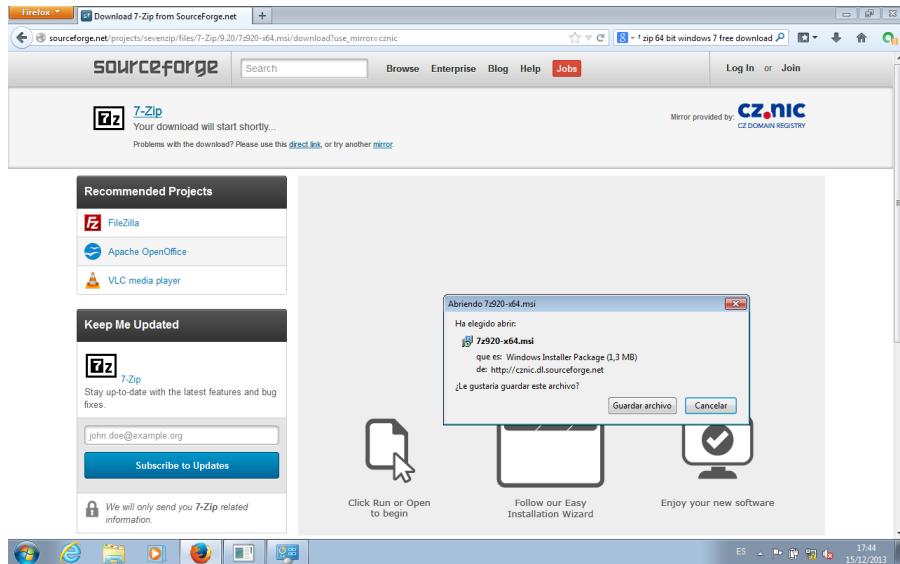
Download links redirect to a download page on SourceForge.net.
You can download any versions of 7-Zip (including latest beta versions) from SourceForge:
[7-Zip files at Source Forge](#)
[7-Zip at Source Forge](#)

Download p7zip for Posix/Linux (x86 binaries and source code):
[Download p7zip](#)
[p7zip at Source Forge](#)

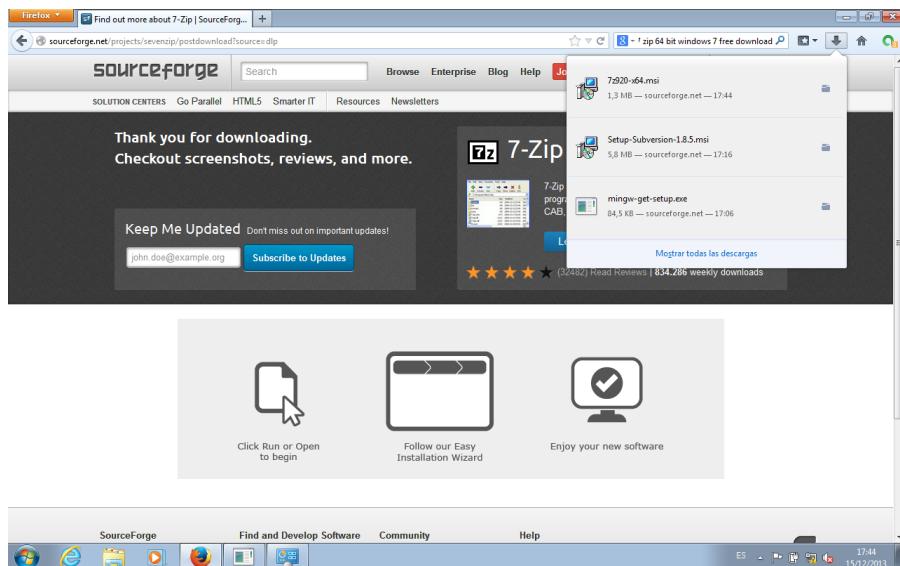
p7zip is the command line version of 7-Zip for Unix/Linux, made by an independent developer.

Some unofficial p7zip packages for Linux and other systems:
[downloads.sourceforge.net/sevenzip/7z20-x64.msi](#) [Debian \(and Ubuntu\)](#)

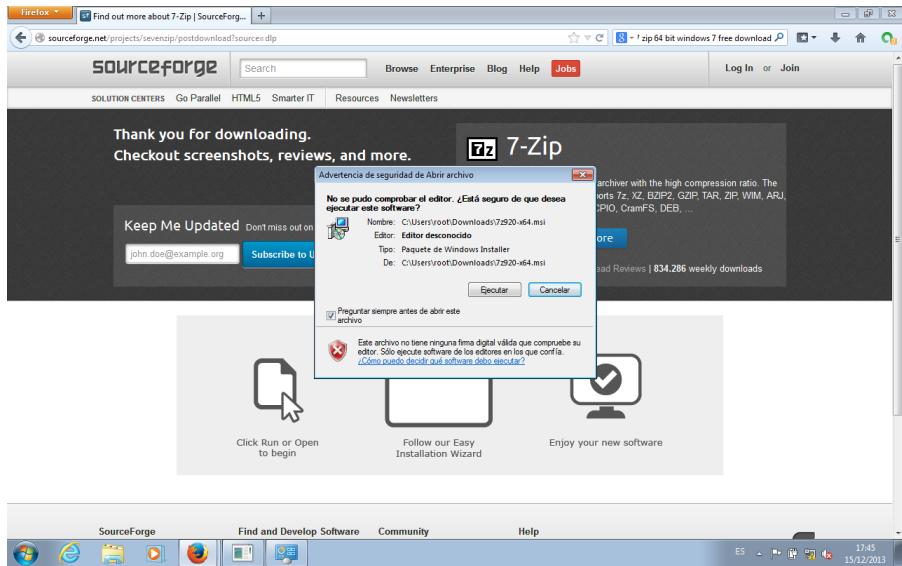
2. Click on **Save file** button



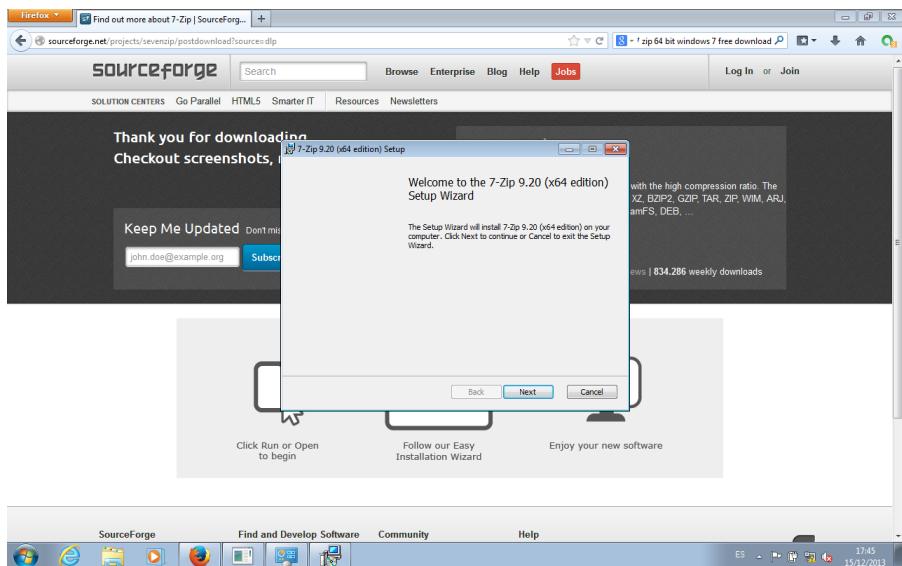
3. Click on the downloaded installer (**7z920-x64.msi** is the last version at the date to make this tutorial)



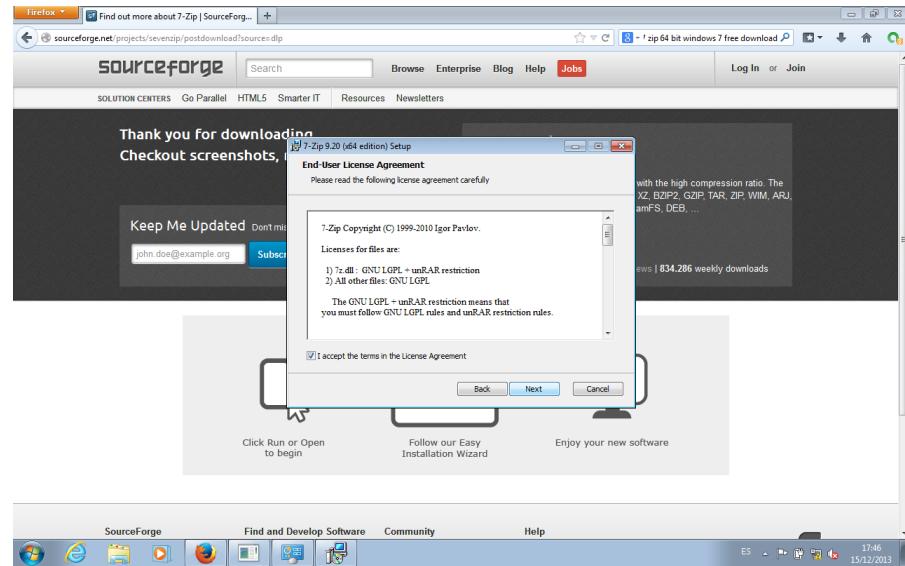
4. Click on the **Execute** button



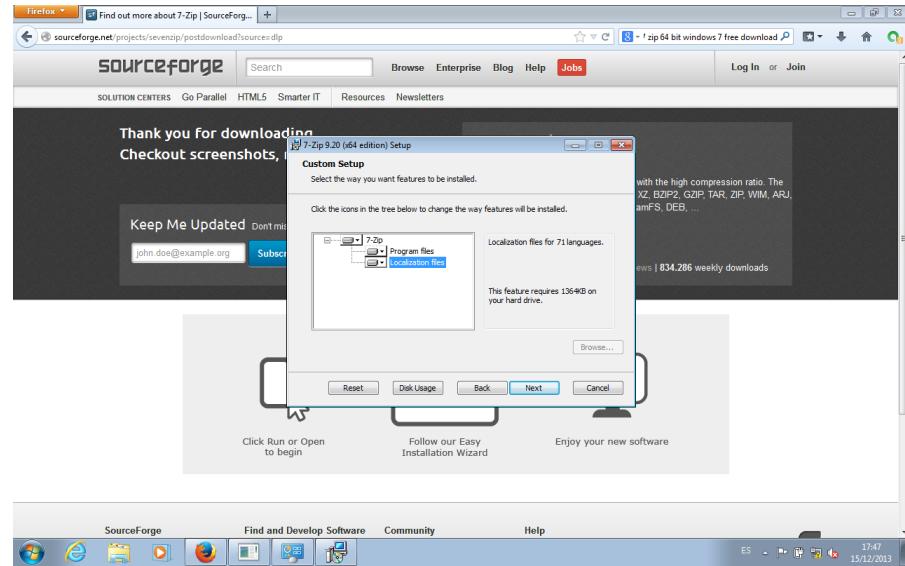
5. Click on the **Next** button



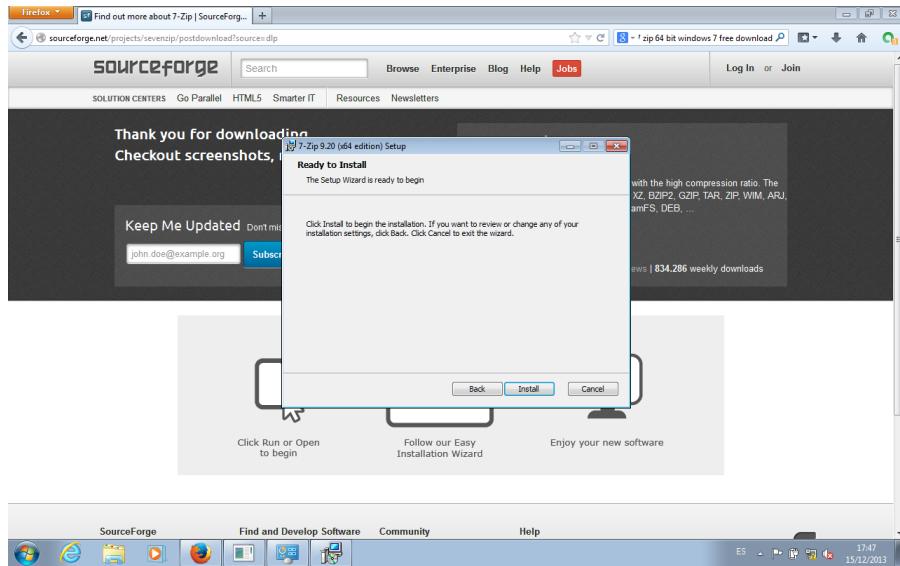
6. Accept the license and click on the **Next** button



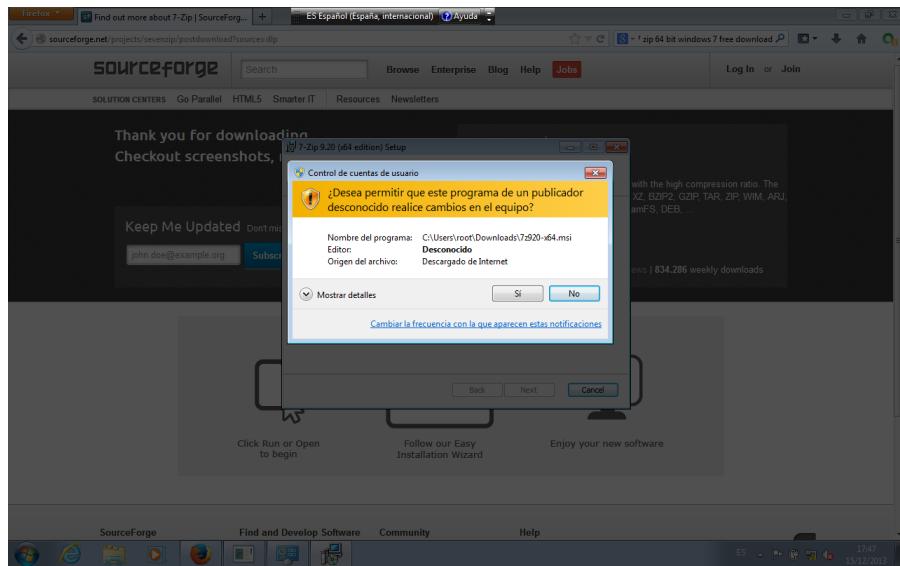
7. Customize the localization files and click on the **Next** button



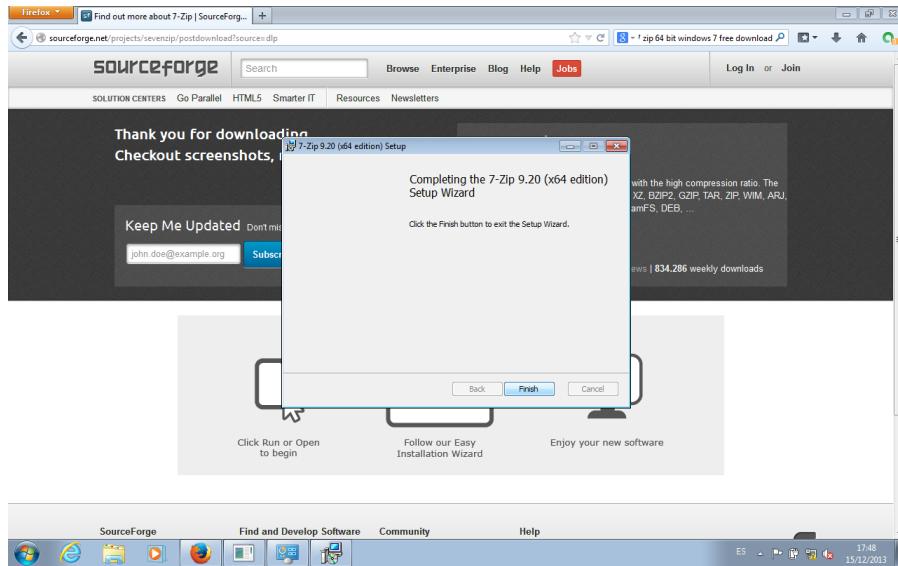
8. Click on the **Install** button



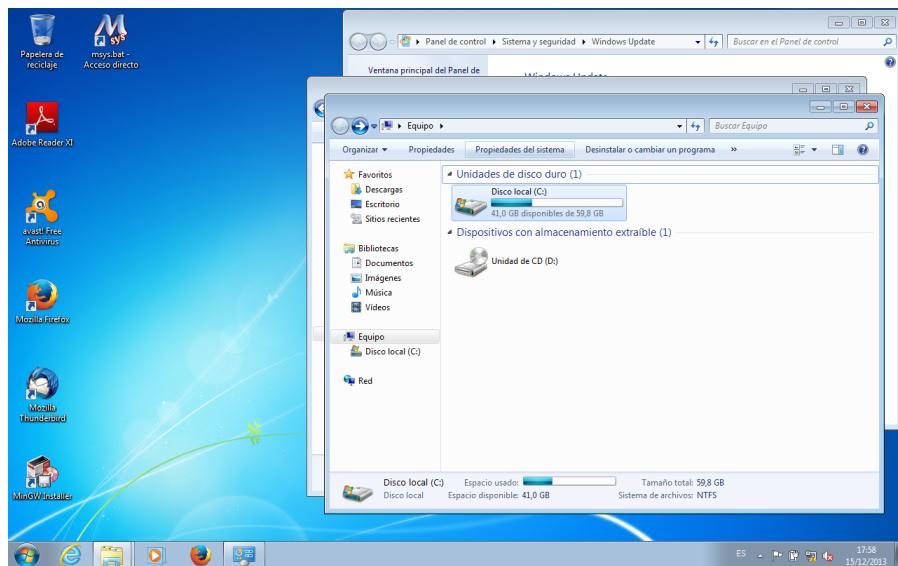
9. Click on the **Yes** button



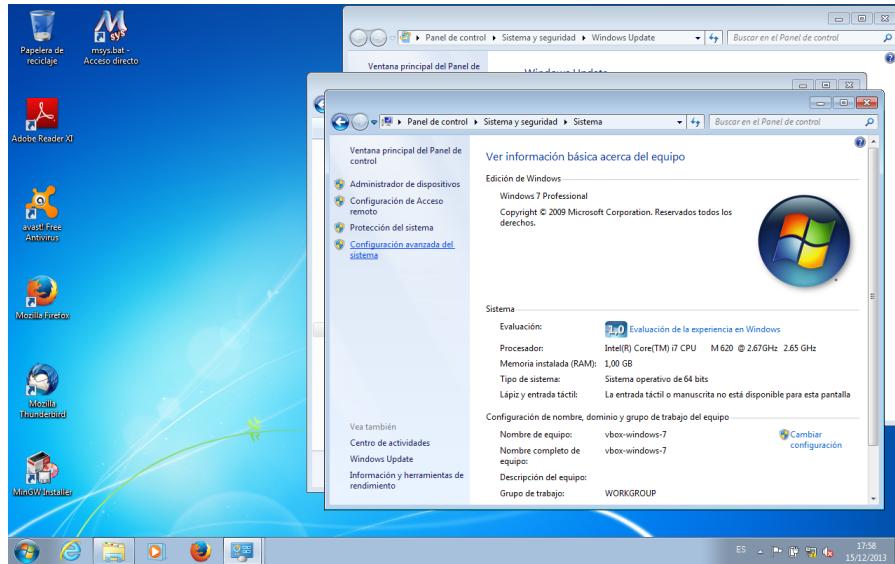
10. Click on the **Finish** button



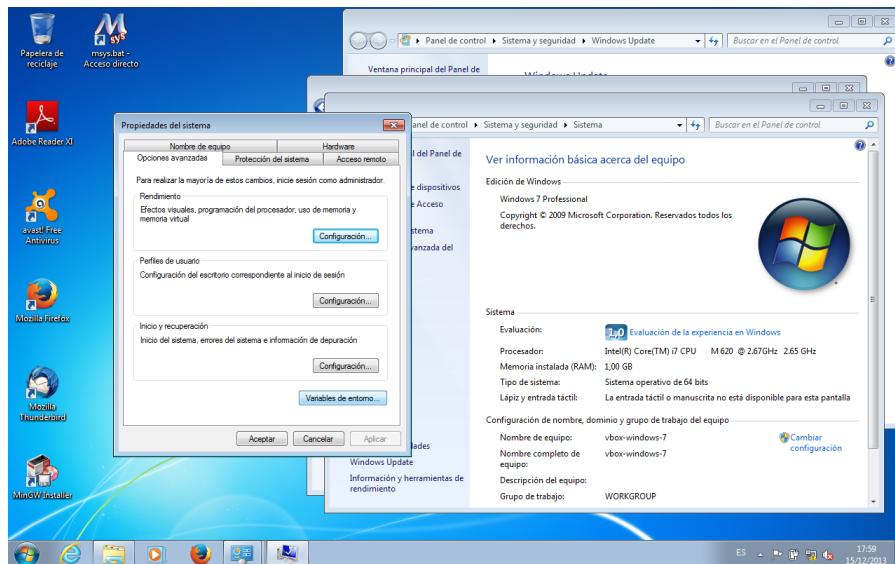
11. Go to **Computer** on the main menu and click on the **System properties** menu bar option



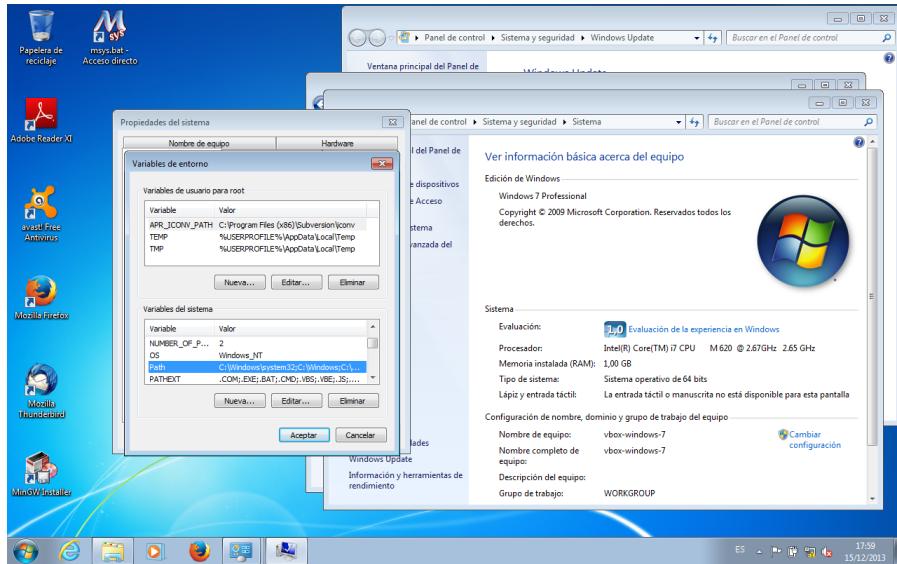
12. Click on the **Advanced system configuration** option



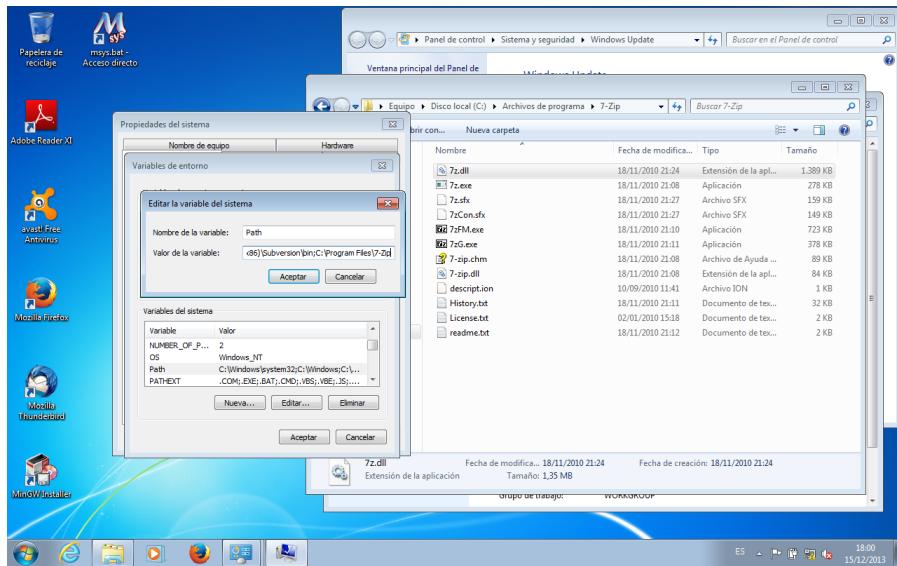
13. Click on the **Environment variables** button



14. Select Path on the System variables and click on the Edit... button



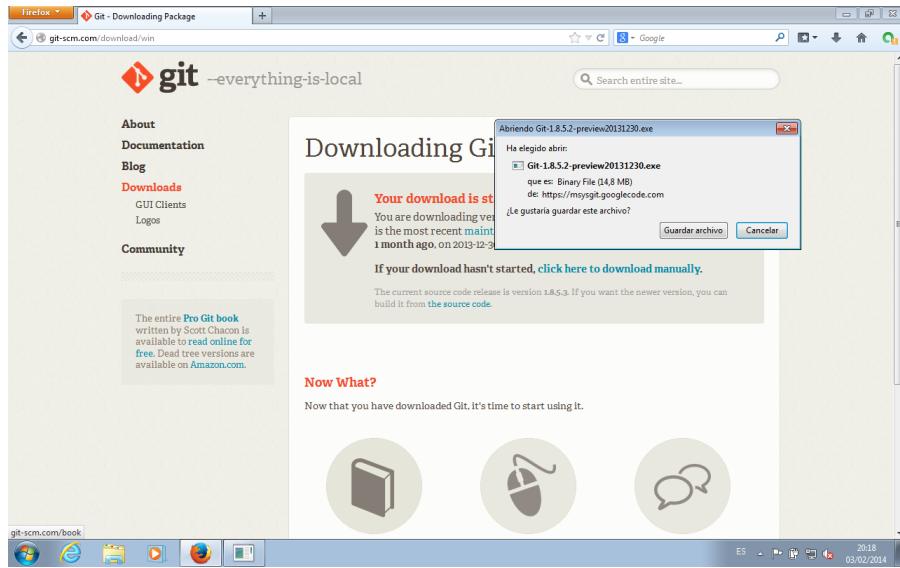
15. Append with a semicolon the path where the 7-Zip program has been installed (in this case C:\Program Files\7-Zip) and click on the Accept buttons



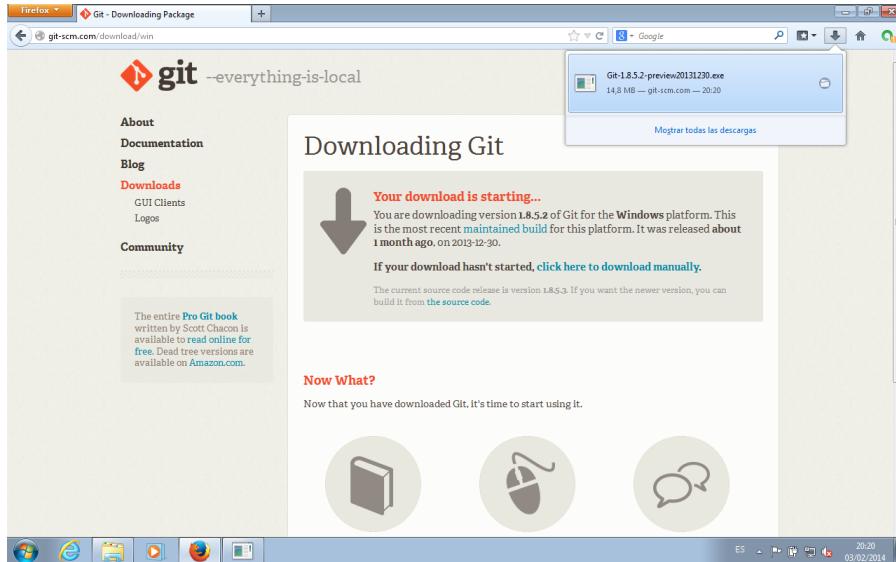
3 Installing Git

Git is a distributed revision control and source code management. In this section we install and configure it to be accessible in the MSYS terminal.

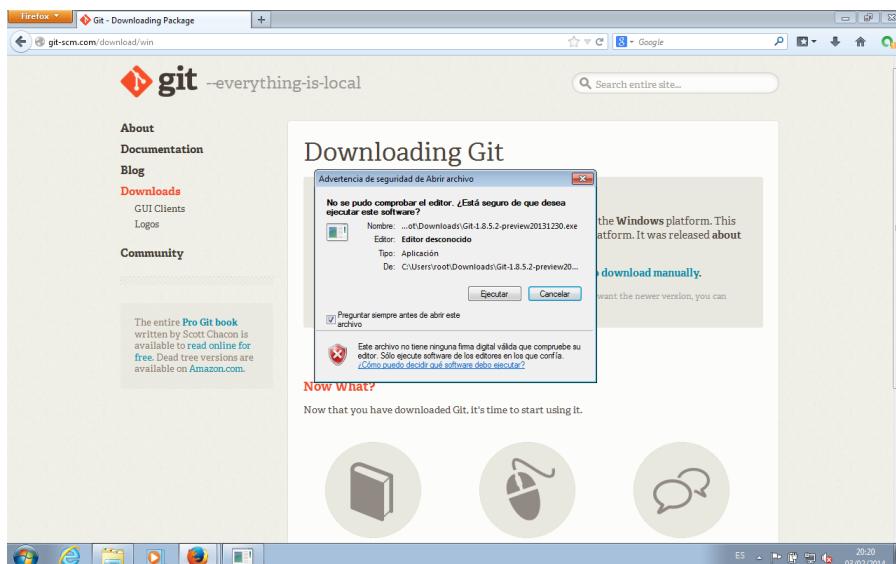
1. Download the Git installer on <http://git-scm.com/download/win> and click on **Save file** button



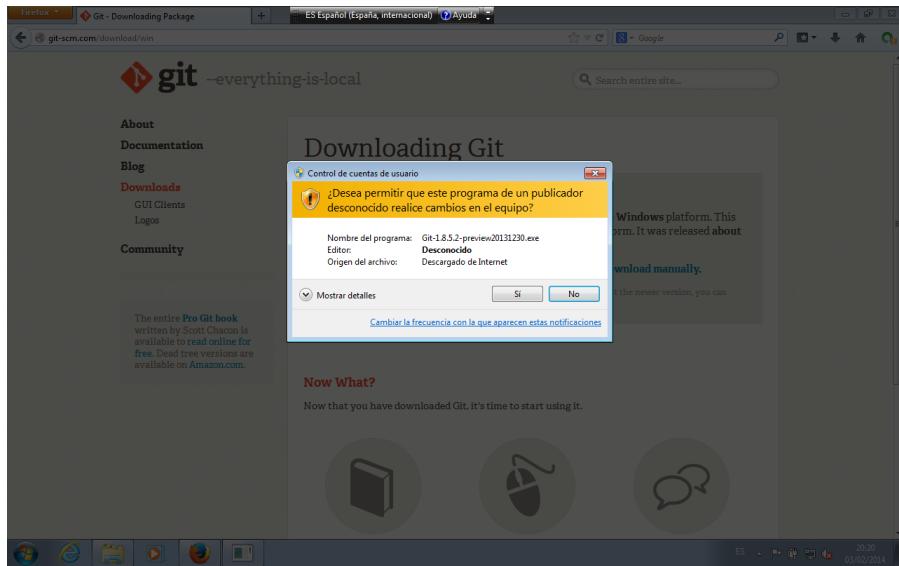
- Click on the downloaded installer (**Git-1.8.5.2-preview20131230.exe** is the last version at the date to make this tutorial)



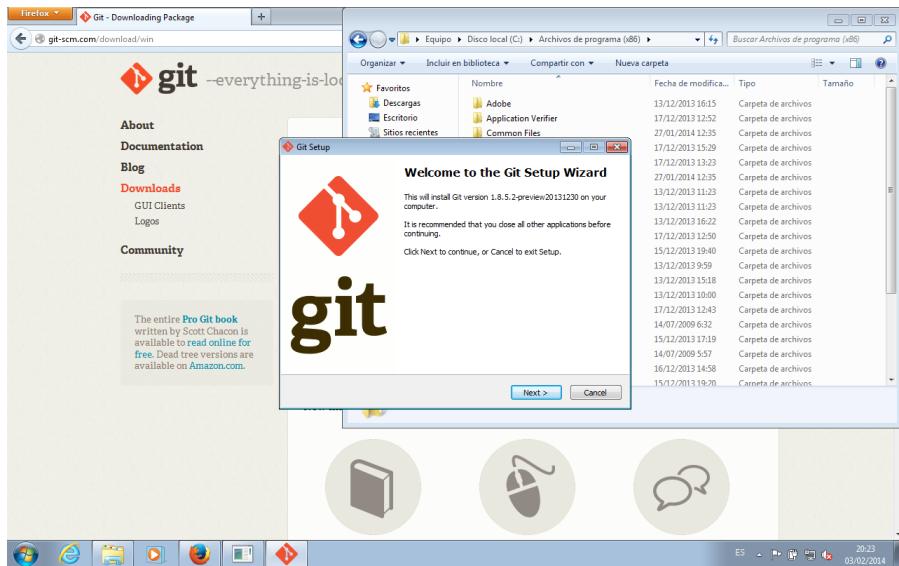
- Click on the **Execute** button



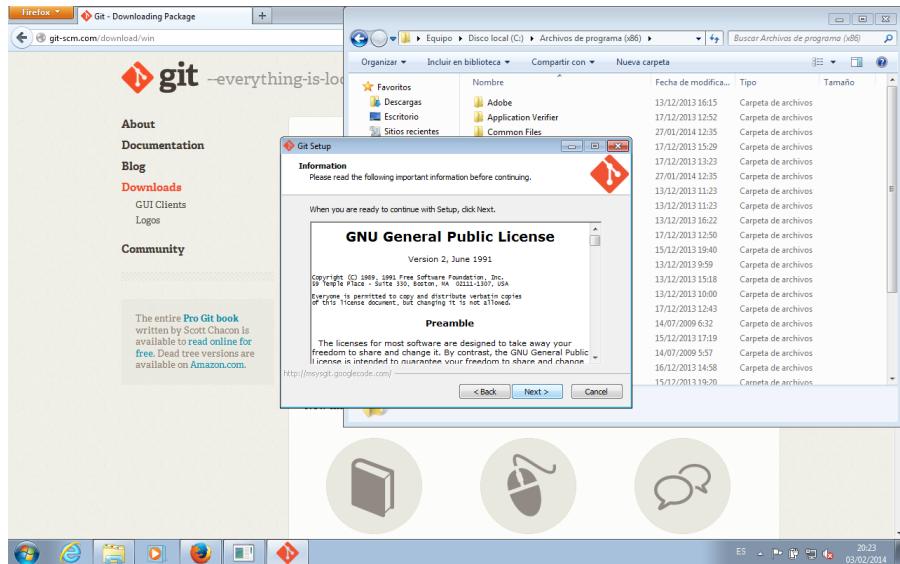
4. Click on the Yes button



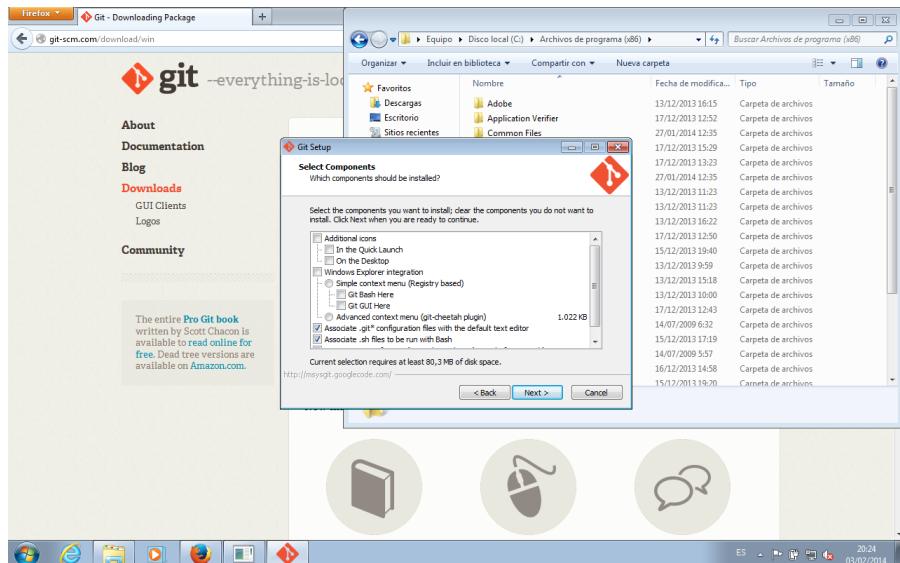
5. Click on the Next button



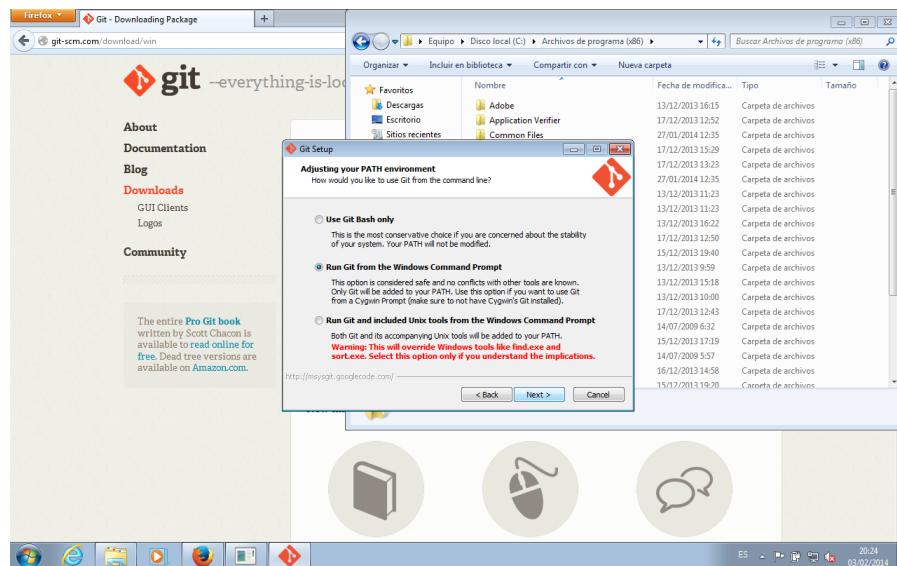
6. Click on the **Next** button



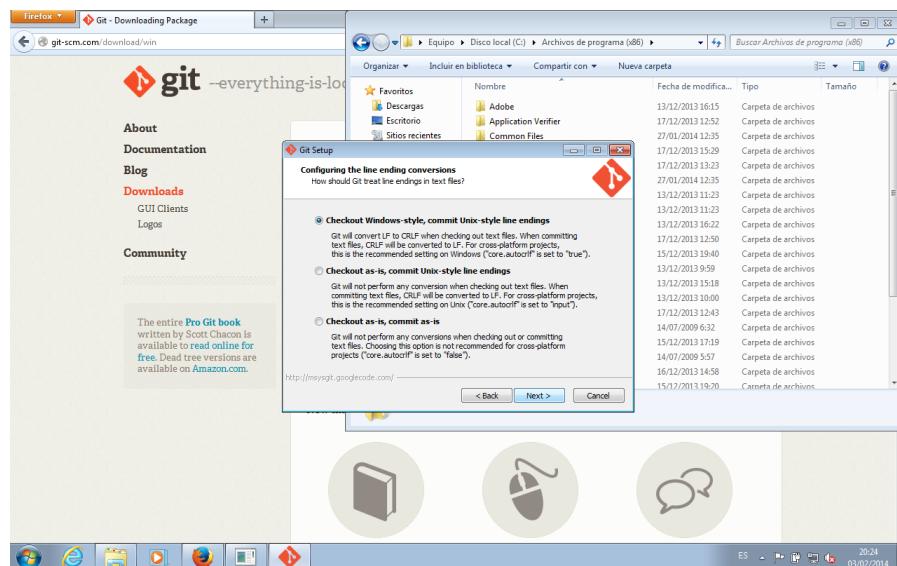
7. Select the components to install (we use the default) and click on the **Next** button



8. Select the Run Git from the Windows Command Prompt option and click on the Next button



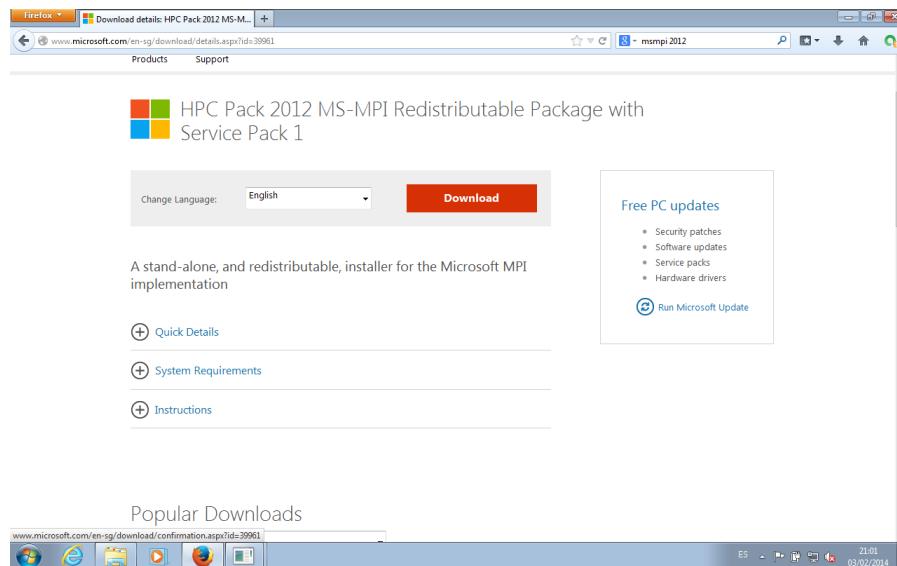
9. Select the Checkout Windows-style, commit Unix-style line endings option and click on the Next button



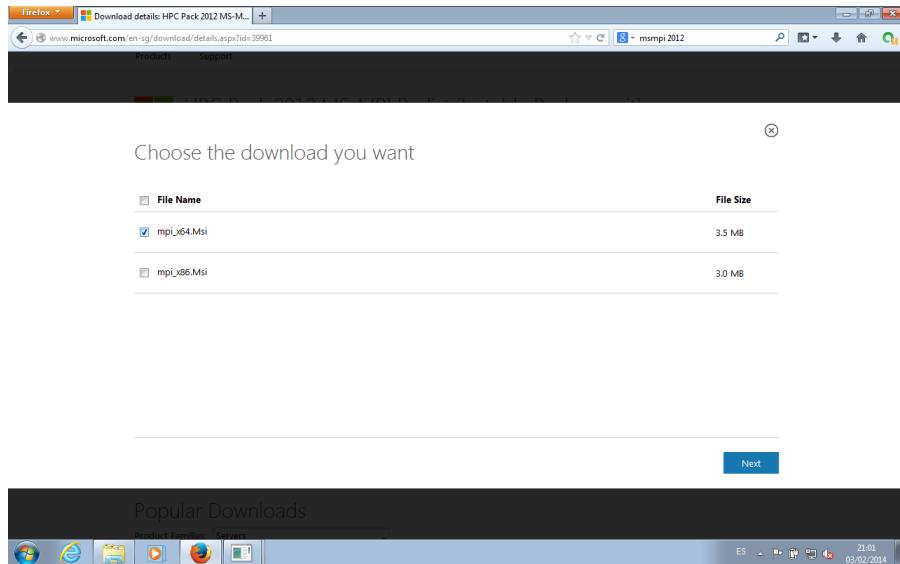
4 Installing Microsoft MPI (optional)

Microsoft MPI is an implementation of the Message Passing Interface standard for developing and running parallel applications. This step is not strictly necessary. To install it:

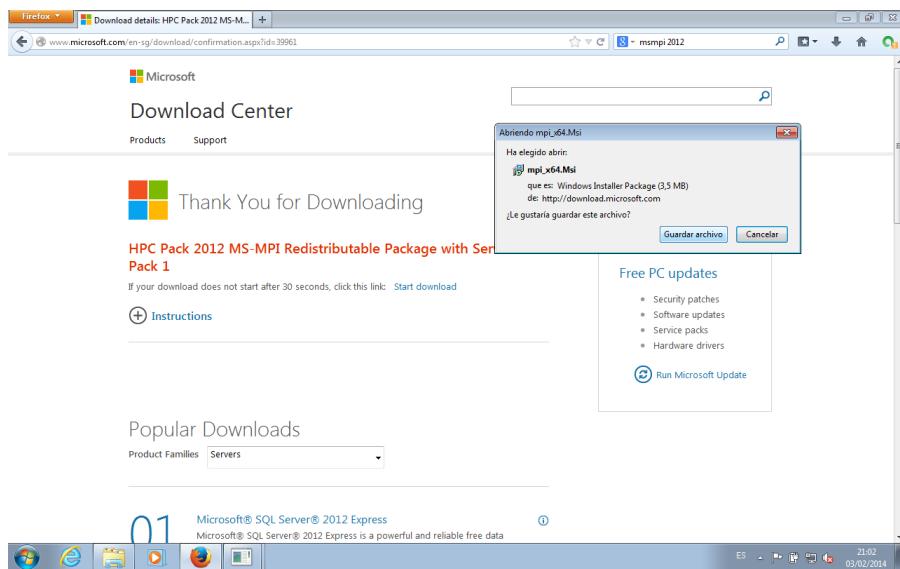
1. Download it clicking in the **Download** button from
<http://www.microsoft.com/en-sg/download/details.aspx?id=39961>



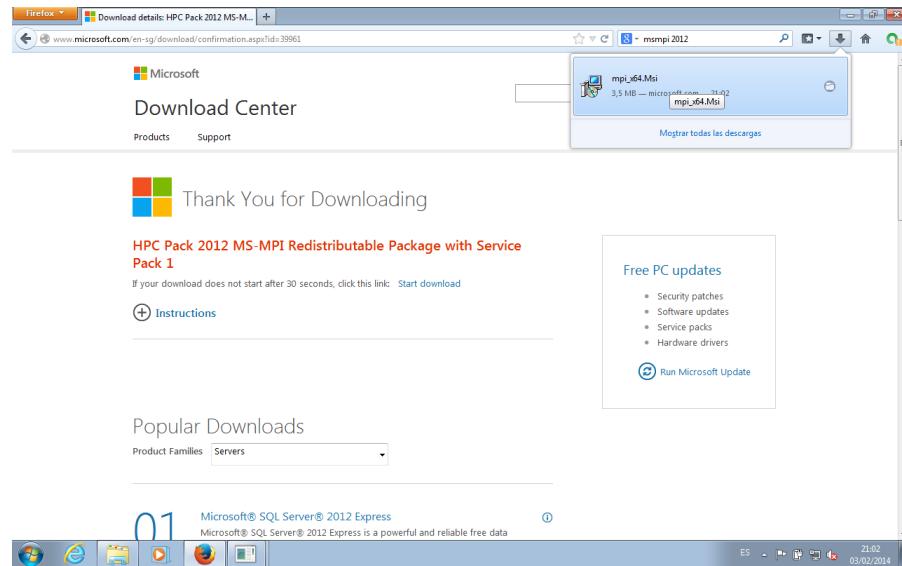
2. Select the correct option (`msmpi_x86.msi` for 32 bits and `msmpi_x64.msi` for 64 bits) and click on the **Next** button



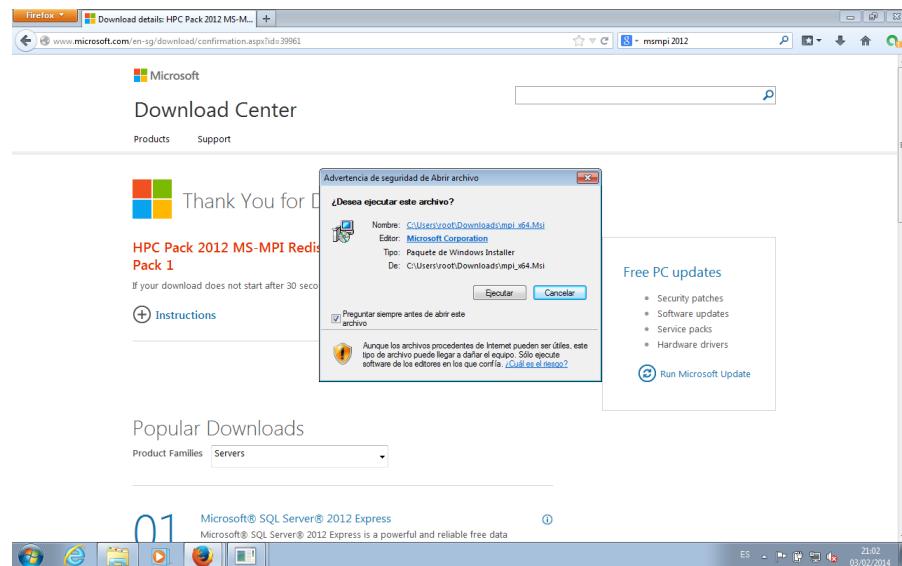
3. Click on the **Save file** button



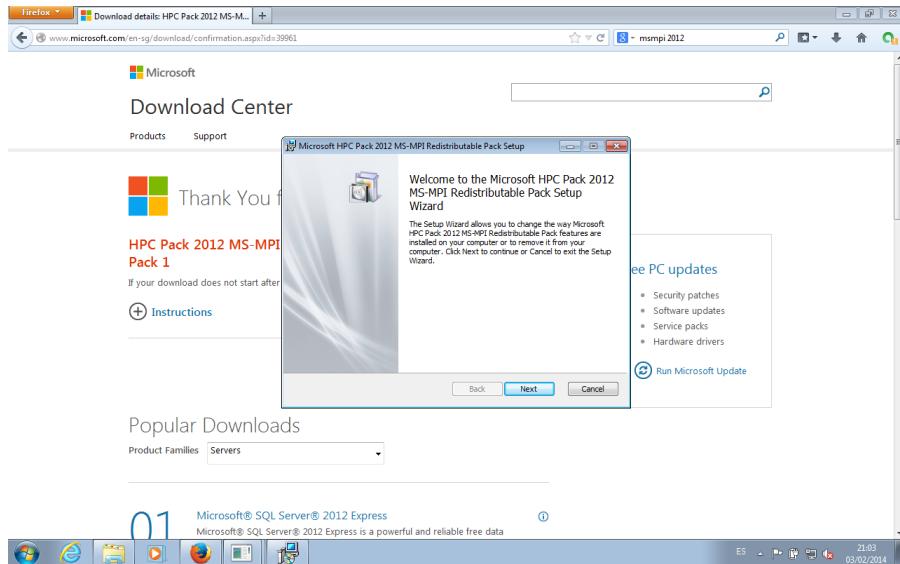
4. Click on the downloaded installer (msmpi-x64.msi)



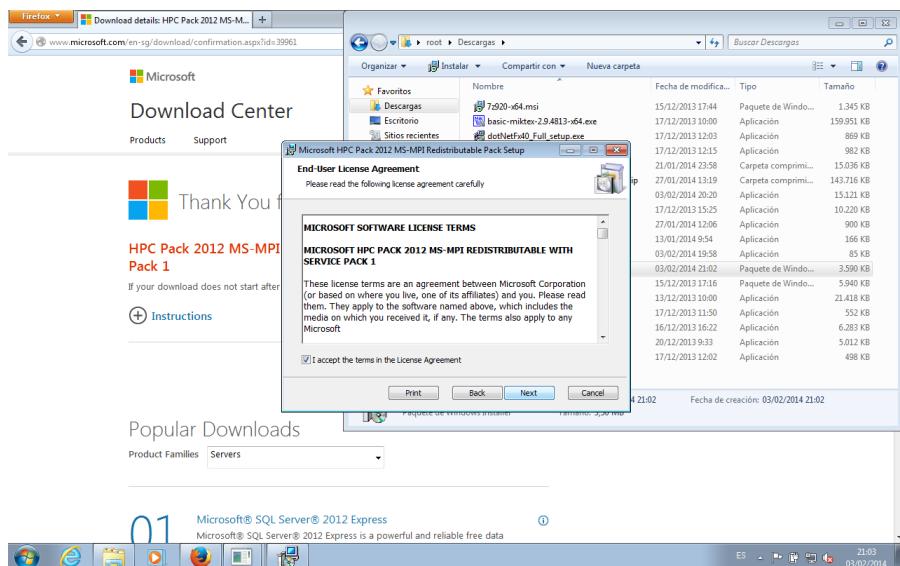
5. Click on the Execute button



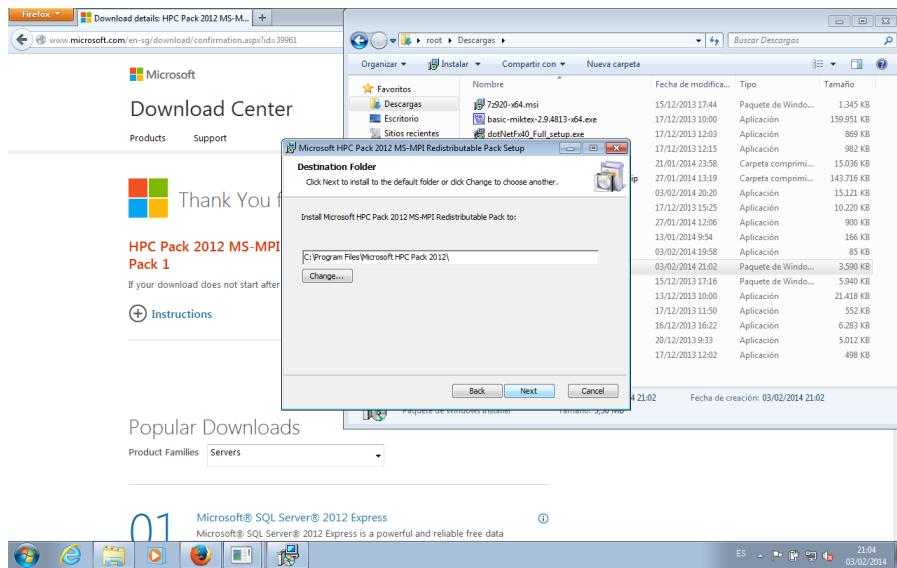
6. Click on the **Next** button



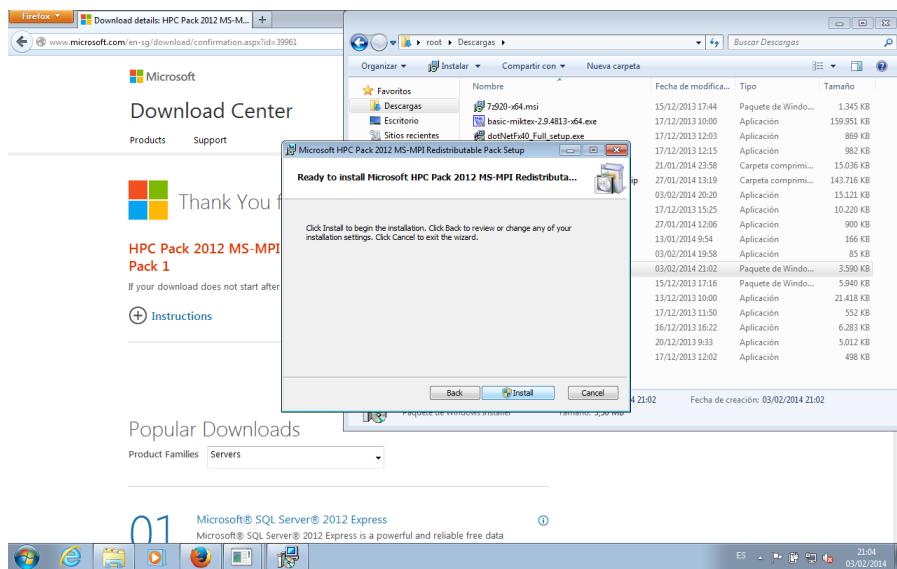
7. Accept the license and click on the **Next** button



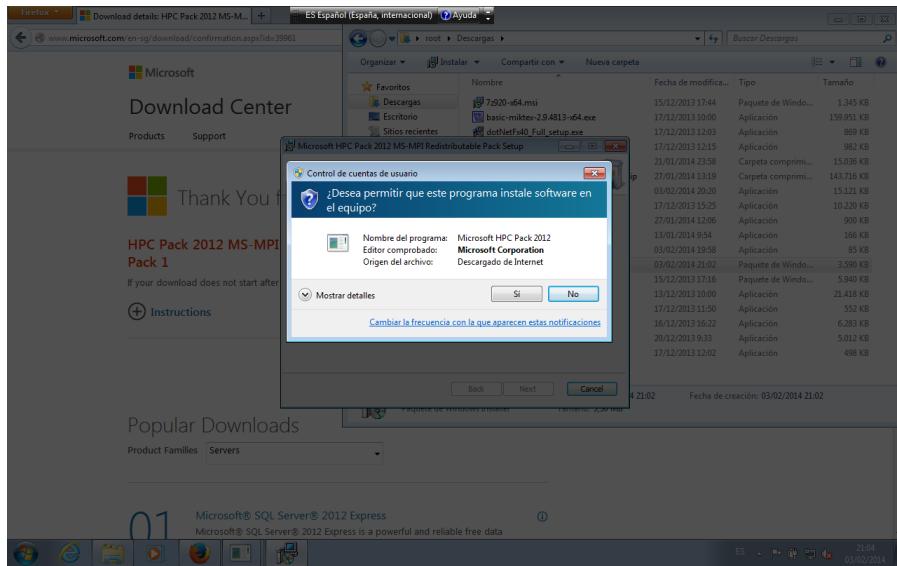
8. Click on the **Next** button (WARNING! if you change the instalation directory you will must change the makefile to work properly)



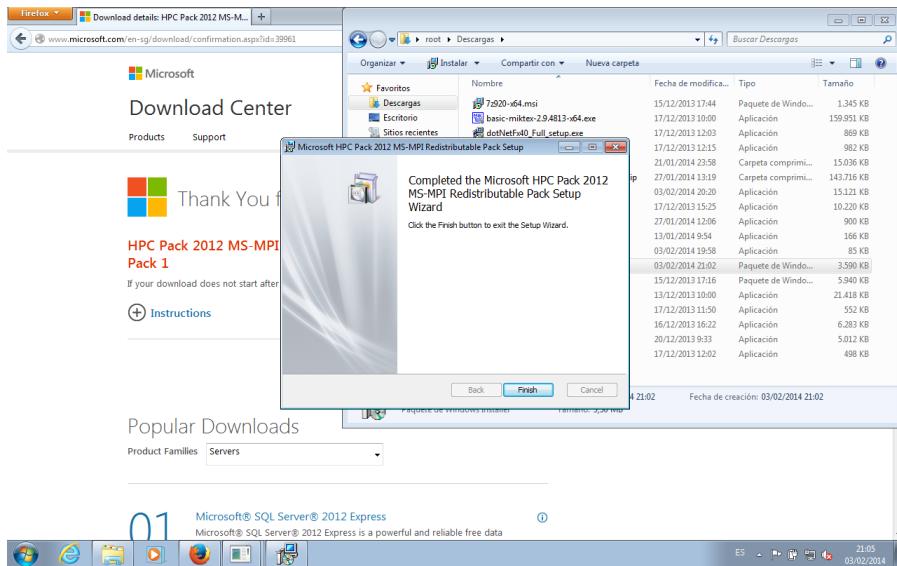
9. Click on the **Install** button



10. Click on the Yes button



11. Click on the Finish button



5 Installing MinGW 64 bits compiler and some useful libraries and tools

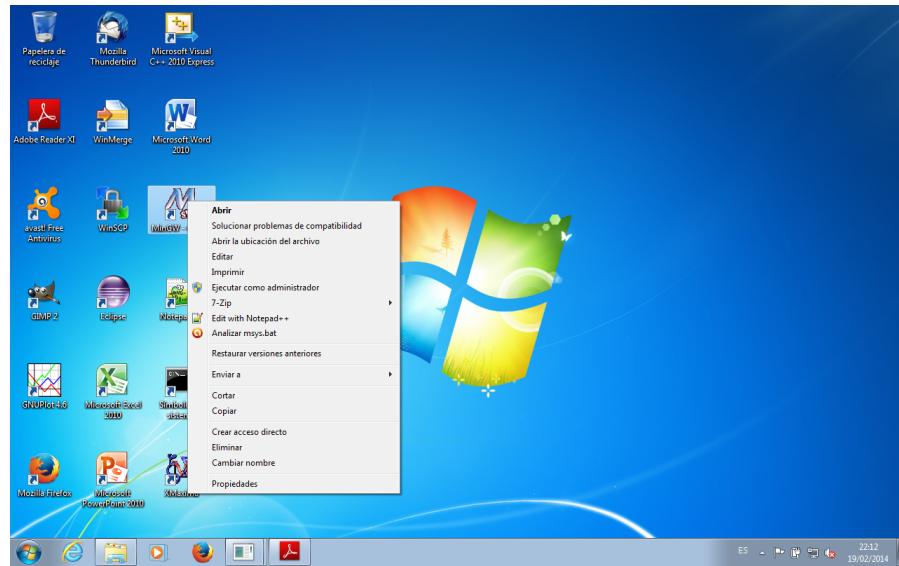
Here we install the following MSYS useful tools:

Tool	Stable	Testing	Experimental
bash	3.1.17	3.1.17	3.1.17
bison	2.4.2	2.4.2	2.4.2
flex	2.5.35	2.5.35	2.5.35
gawk	3.1.7	3.1.7	3.1.7
grep	2.5.4	2.5.4	2.5.4
groff	1.20.1	1.20.1	1.20.1
gzip	1.3.12	1.3.12	1.3.12
m4	1.4.16	1.4.16	1.4.16
make	3.81	3.81	3.81
man	1.6f	1.6f	1.6f
openssh	5.4p1	5.4p1	5.4p1
patch	2.6.1	2.6.1	2.6.1
perl	5.8.8	5.8.8	5.8.8
sed	4.2.1	4.2.1	4.2.1
tar	1.23	1.23	1.23
texinfo	4.13a	4.13a	4.13a
unzip	6.0	6.0	6.0
vim	6.0	6.0	7.3
wget	1.12	1.12	1.12
xz	5.0.3	5.0.3	5.0.3
zip	3.0	3.0	3.0

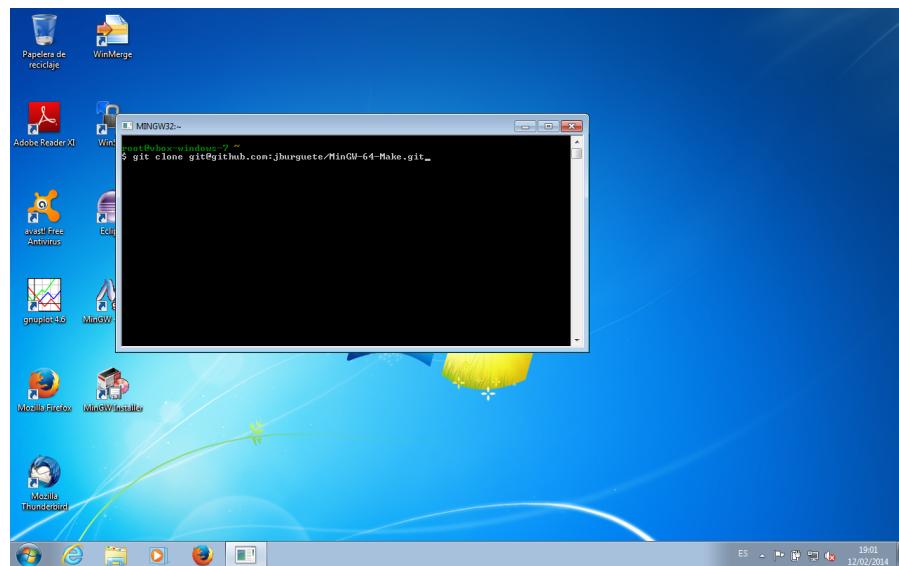
with the MinGW 64 bits compilers and the following useful libraries:

Tool
atk
autoconf
automake
cairo
expat
fontconfig
freeglut
freetype
gcc (C, C++, Objective C, and FORTRAN)
gdk-pixbuf
gettext
glib
gsl
gtk+2
gtk+3
libffi
libiconv
libpng
libtool
libxml
pango
pixman
pkg-config
python
readline
sqlite
termcap
zlib

1. Open the MSYS terminal as administrator clicking with the right button on the created direct access and selecting the **Execute as administrator** option.

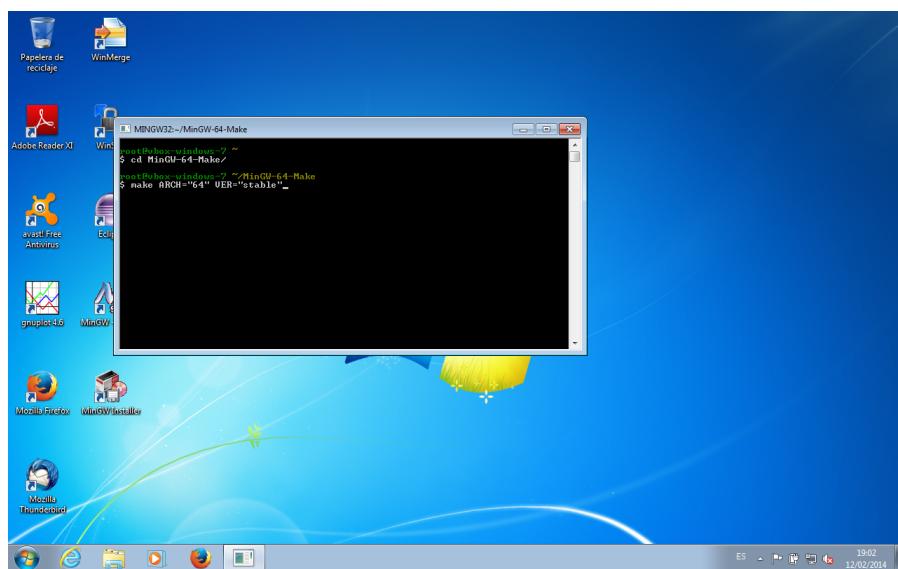


2. Download the MinGW-64-Make set of makefiles and patches by typing
`git clone git@github.com:jburguete/MinGW-64-Make.git`

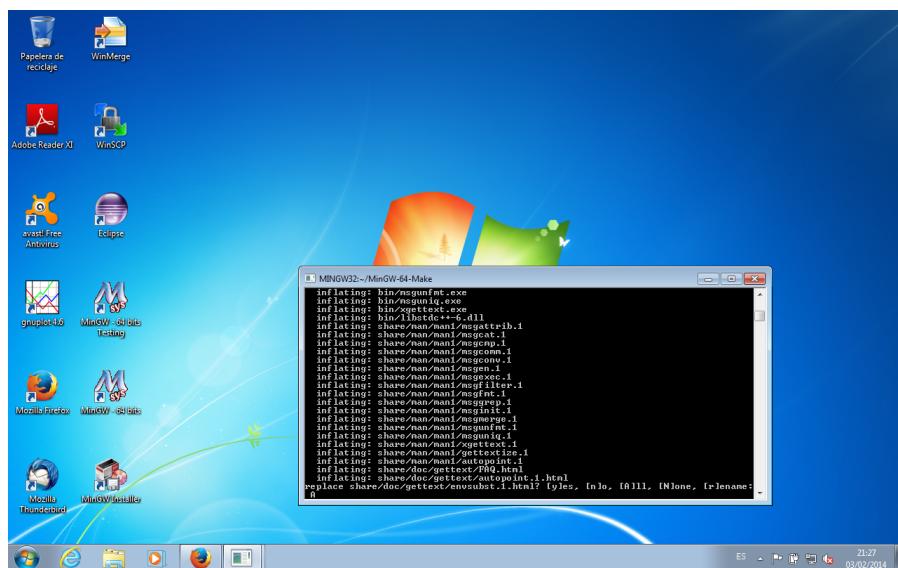


3. Enter on the new directory and execute the `make` command passing the architecture (`ARCH="32"` or `ARCH="64"` for 32 bits or 64 bits respectively) and the version (`VER="stable"`, `VER="testing"` or `VER="experimental"` for stable, testing or experimental versions respectively) by typing for instance:

```
cd MinGW-64-Make  
make ARCH="64" VER="stable"
```



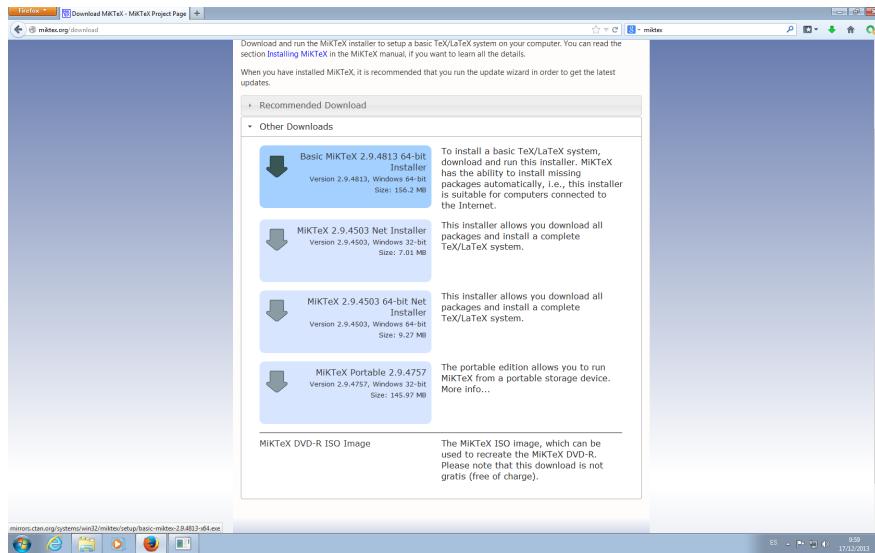
4. Press A key on the question



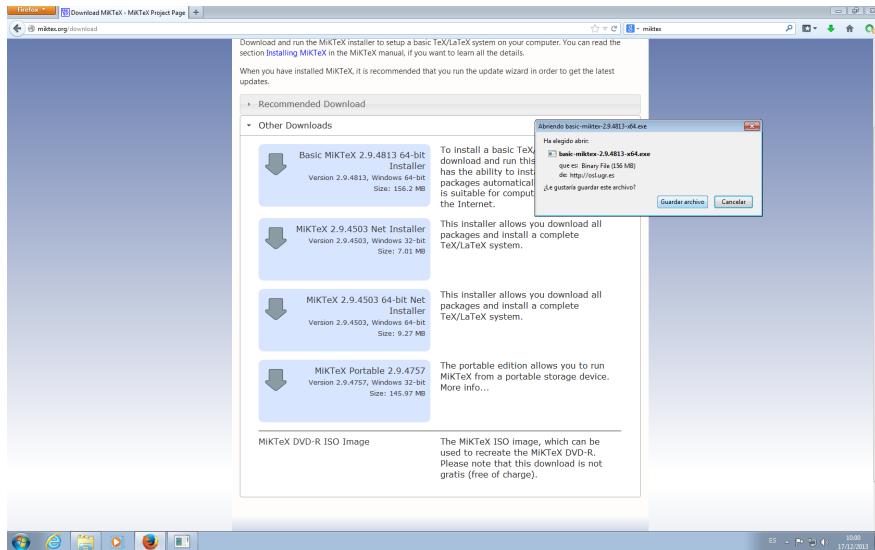
6 Installing MiKTeX LaTeX (optional)

MiKTeX is a distribution of the LaTeX text processor for Windows. We install here the basic 64 bits distribution.

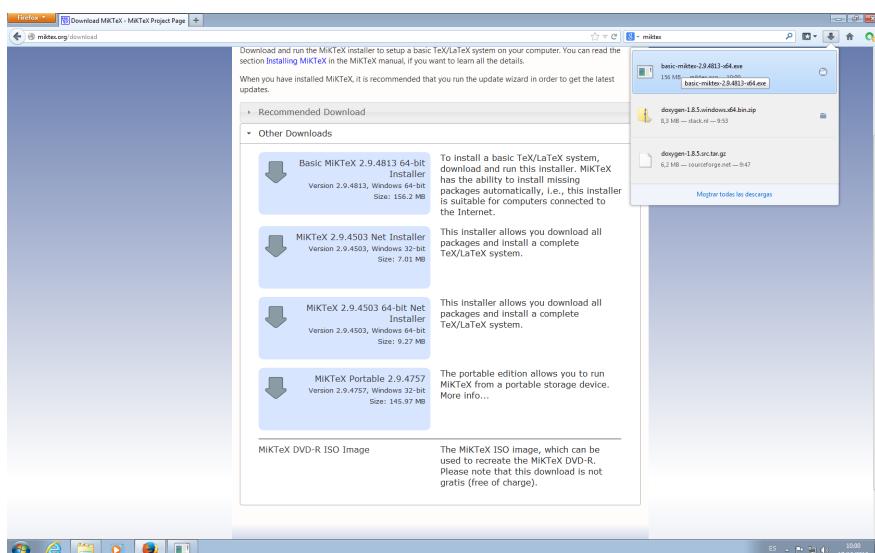
1. Download the distribution from <http://miktex.org/download> clicking on the **Other Downloads** panel and the **Basic MiKTeX 2.9.4813 64-bit Installer** (the number is the version at the date to make this tutorial)



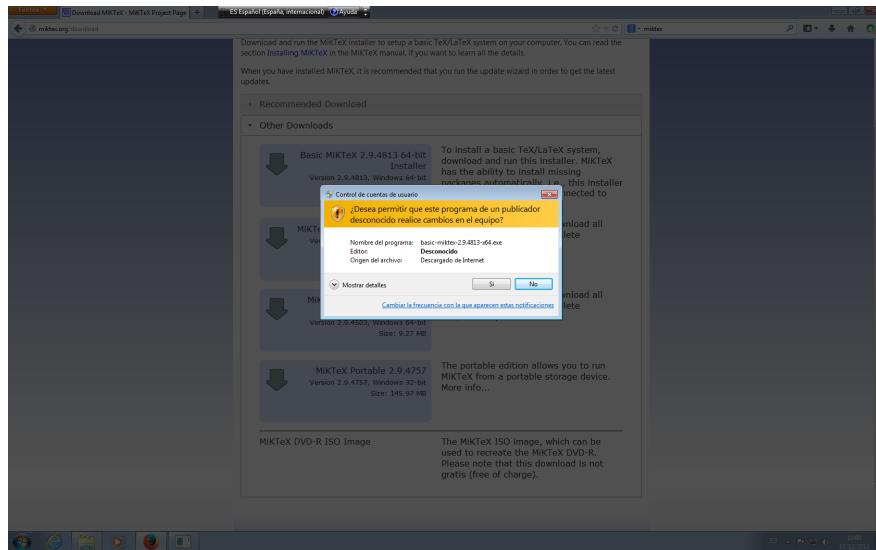
2. Click on the **Save file** button



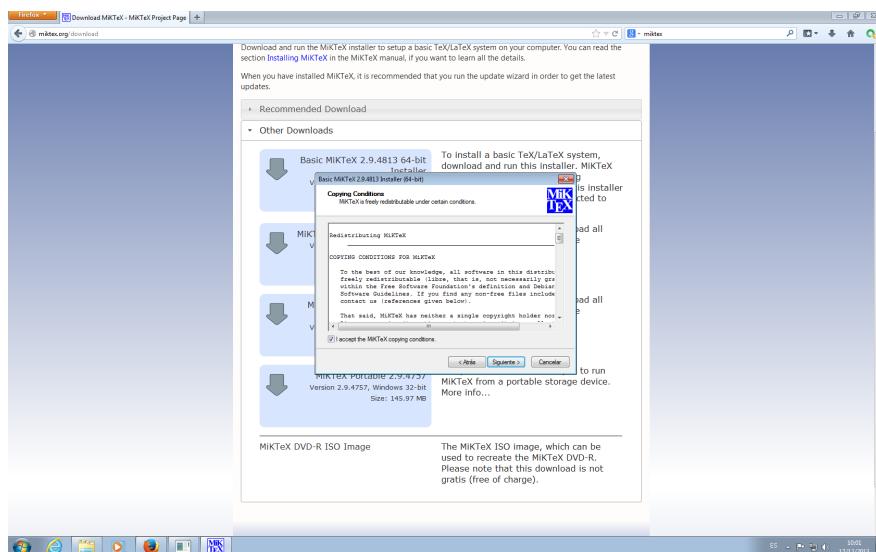
3. Click on the downloaded installer (**basic-miktex-2.9.4813-x64.exe** is the last version at the date to make this tutorial)



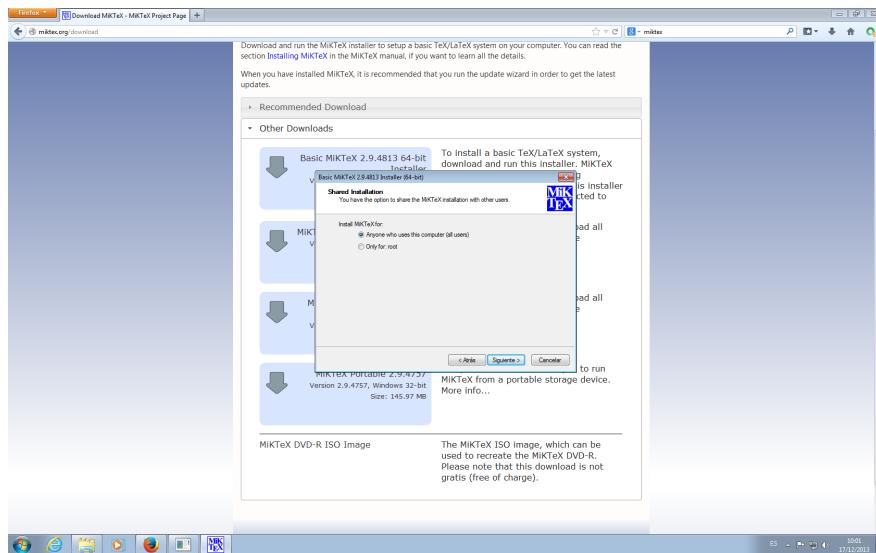
4. Click on the Yes button



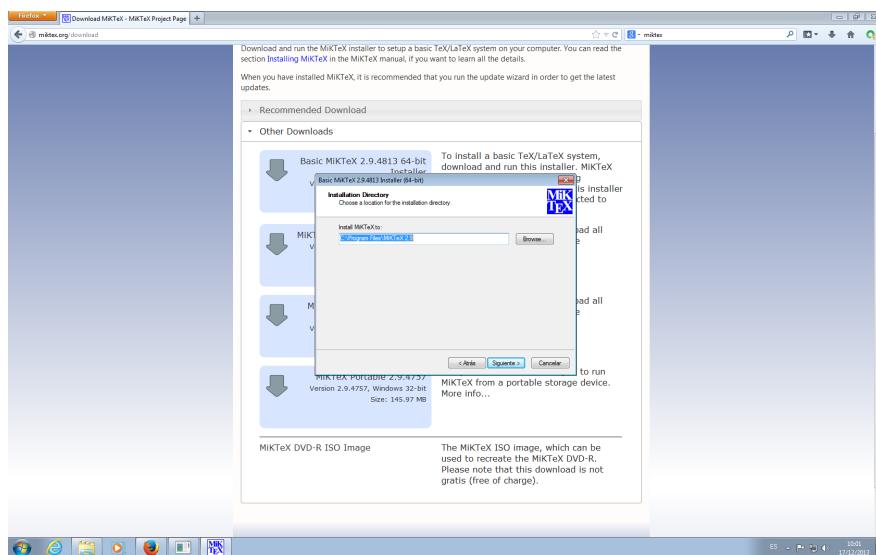
5. Accept the license and click on the Next button



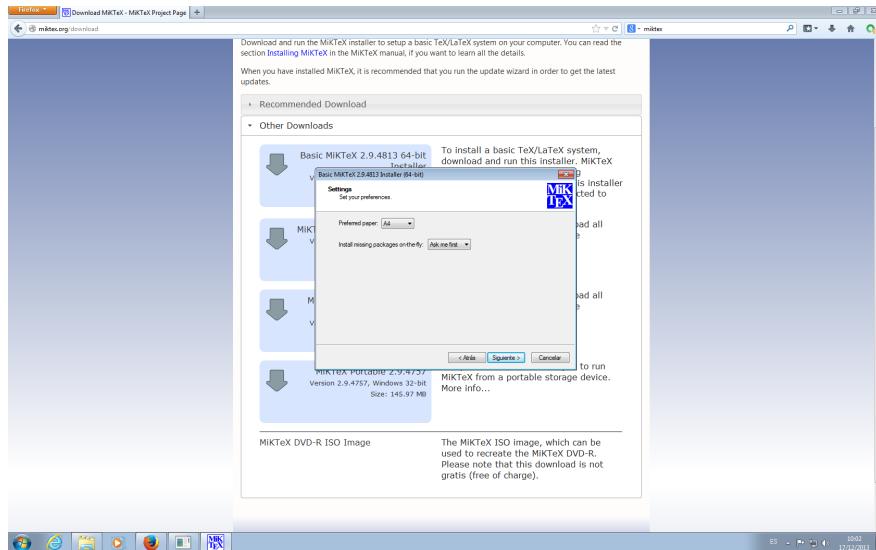
6. Select the **Anyone who uses the computer (all users)** option and click on the **Next** button



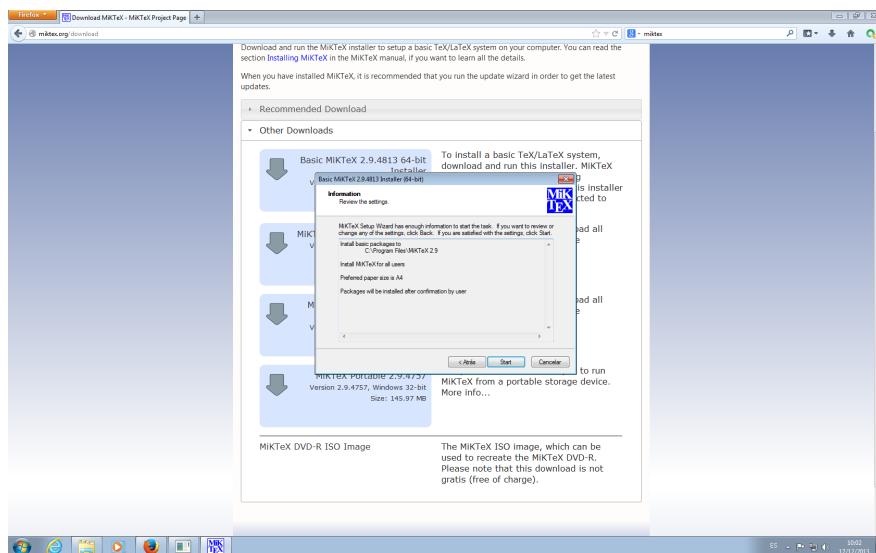
7. Select the installation directory and click on the **Next** button



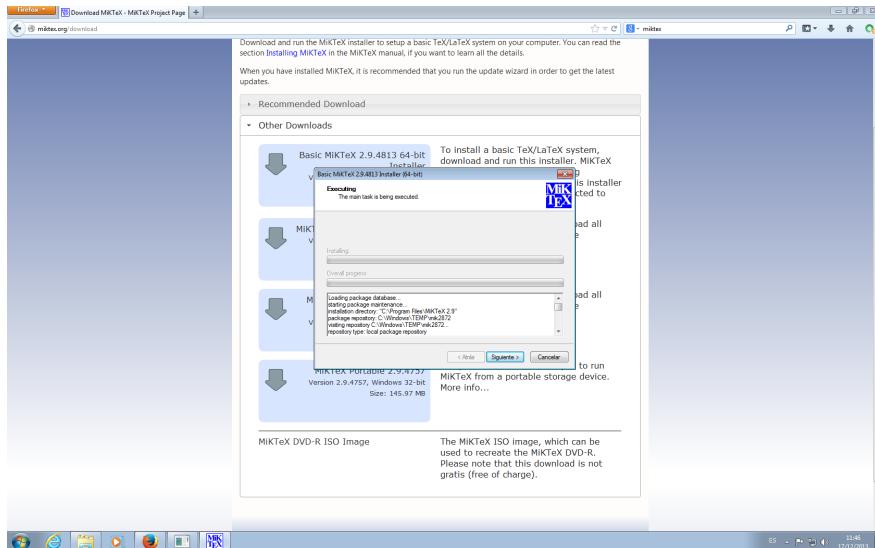
8. Select the preferred options and click on the **Next** button



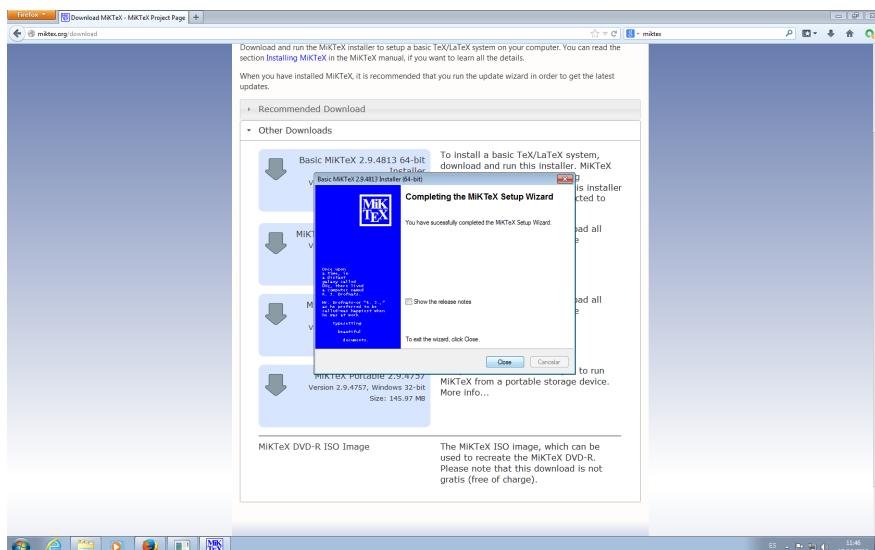
9. Click on the **Start** button



10. Click on the **Next** button



11. Click on the **Close** button



7 Installing Doxygen (optional)

Doxygen is a

1. Download the program from <http://www.stack.nl/~dimitri/doxygen/download.html> clicking on the **doxygen-1.8.6-setup.exe http** option (the number is the version at the date to make this tutorial)



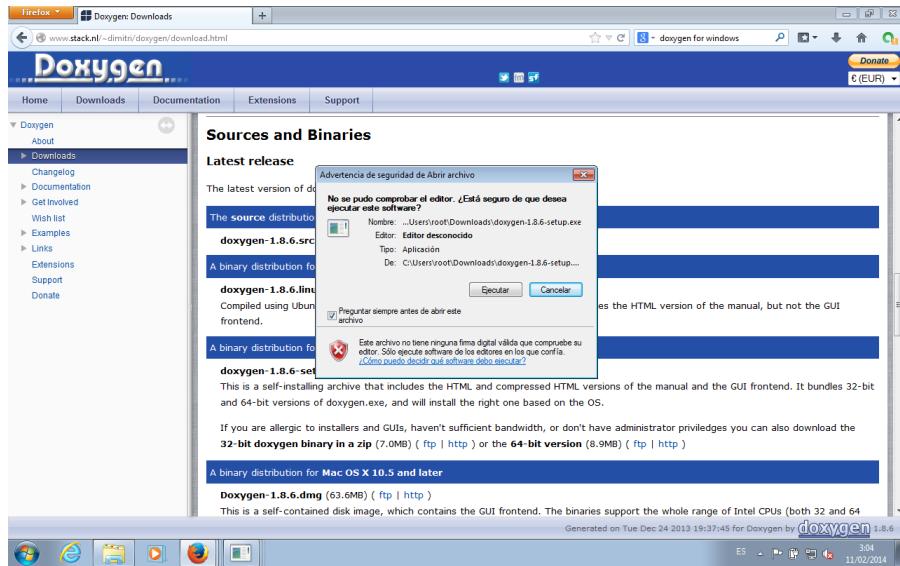
2. Click on the **Save file** button



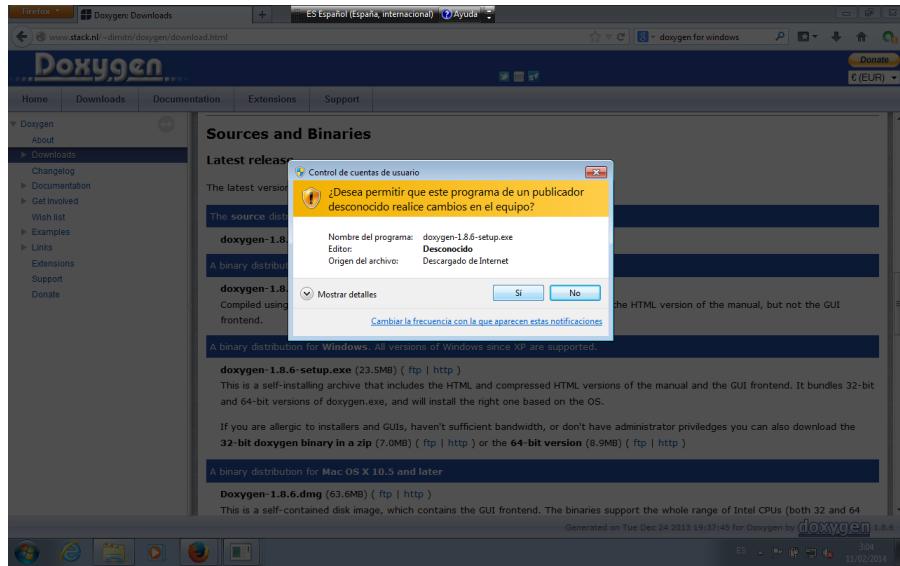
3. Click on the downloaded installer (**doxygen-1.8.6-setup.exe** is the last version at the date to make this tutorial)



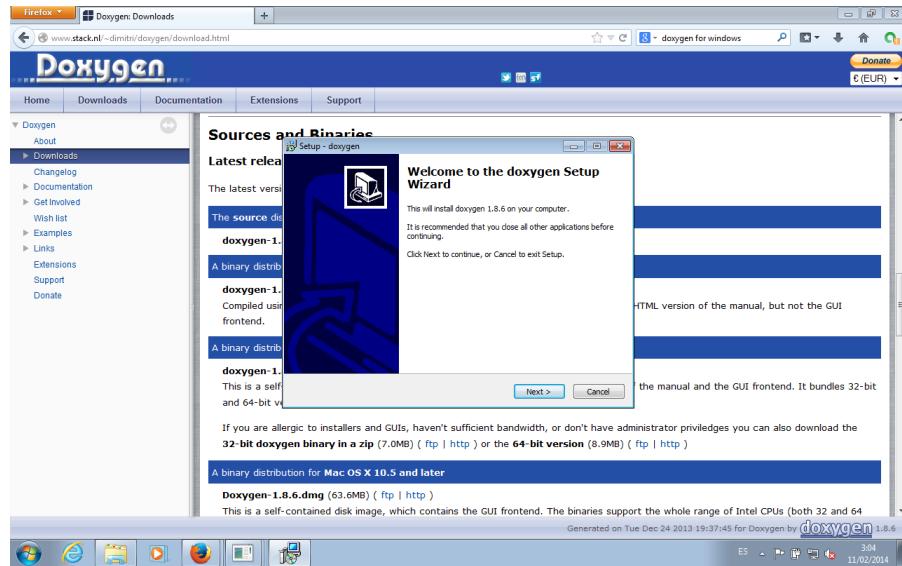
4. Click on the **Execute** button



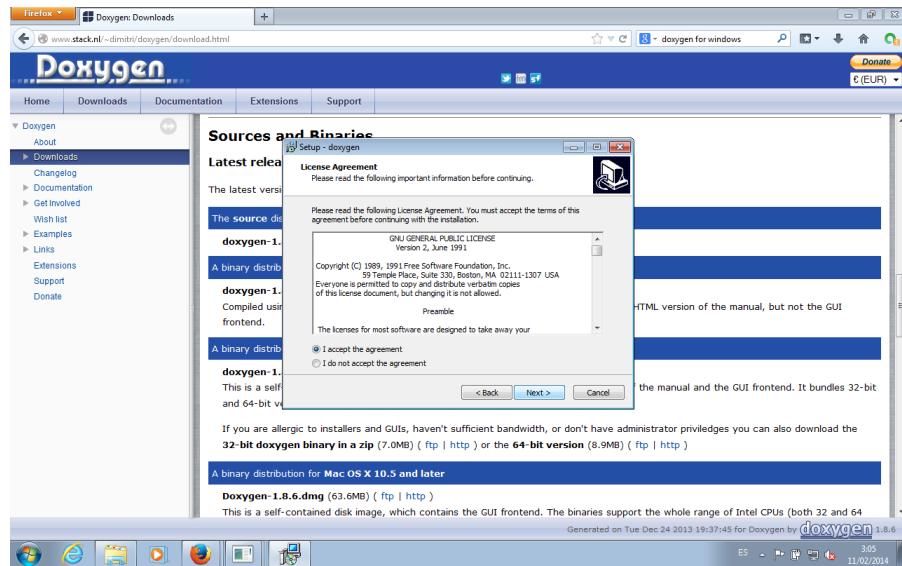
5. Click on the **Yes** button



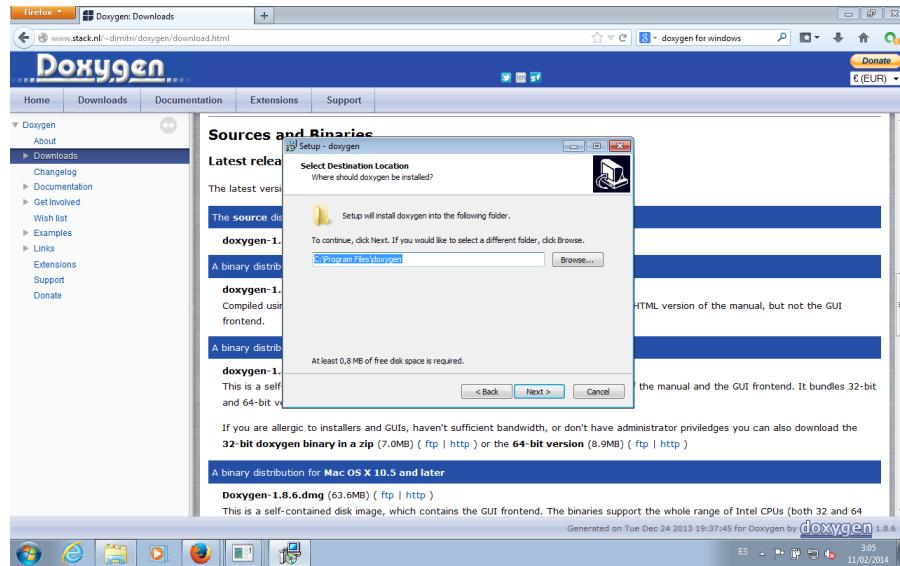
6. Click on the **Next** button



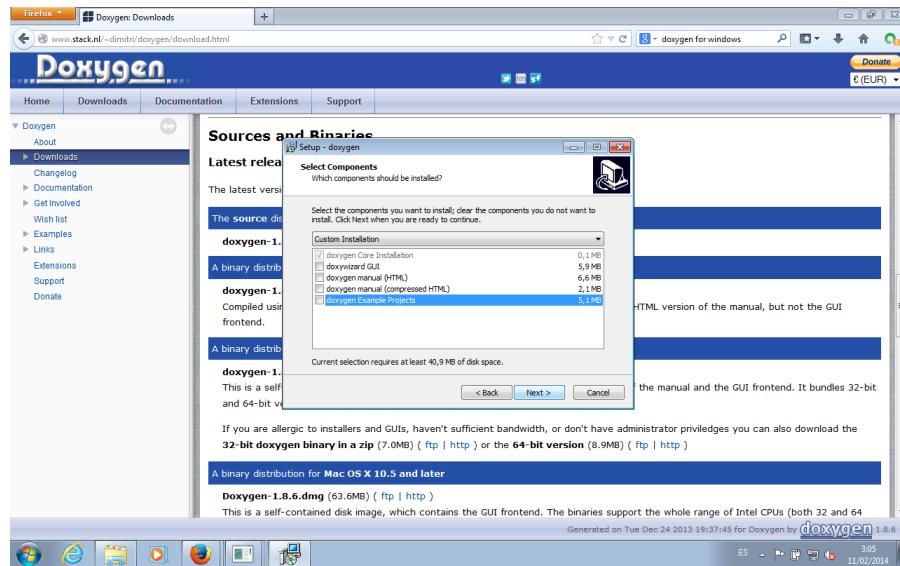
7. Accept the license and click on the **Next** button



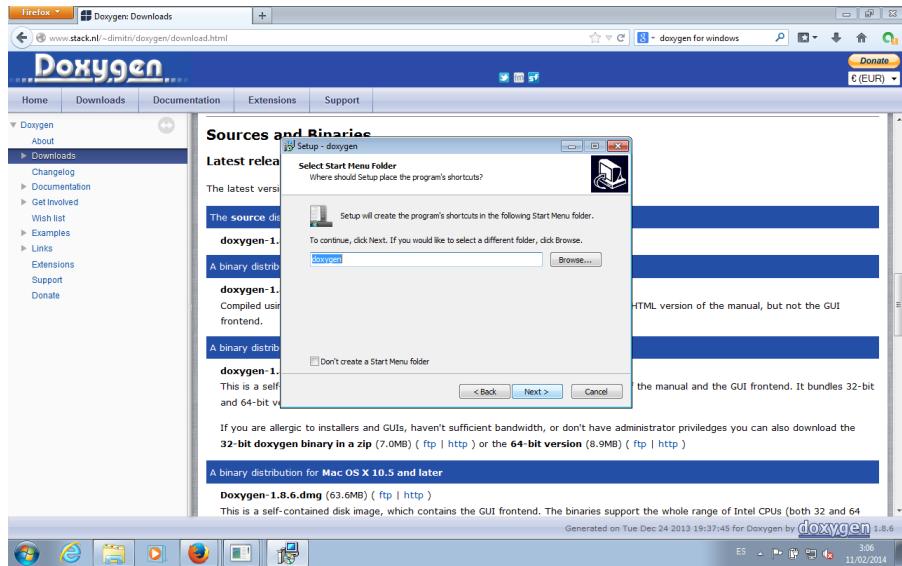
8. Select the installation directory and click on the **Next** button



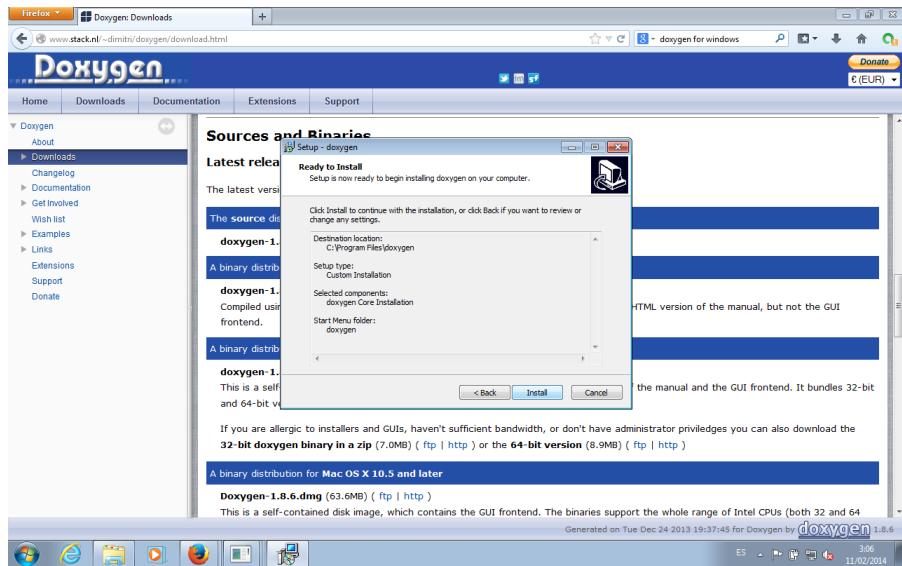
9. Select the componentes and click on the **Next** button



10. Select the start menu folder and click on the **Next** button



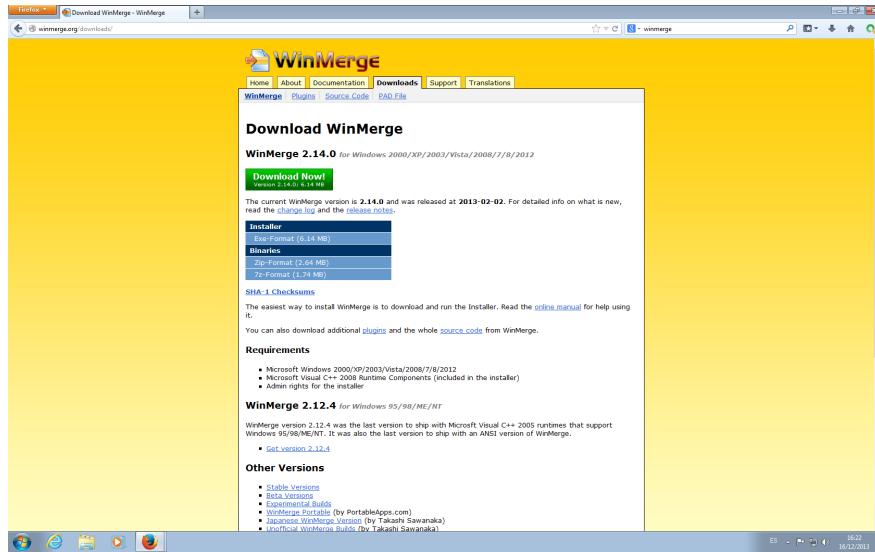
11. Click on the **Install** button



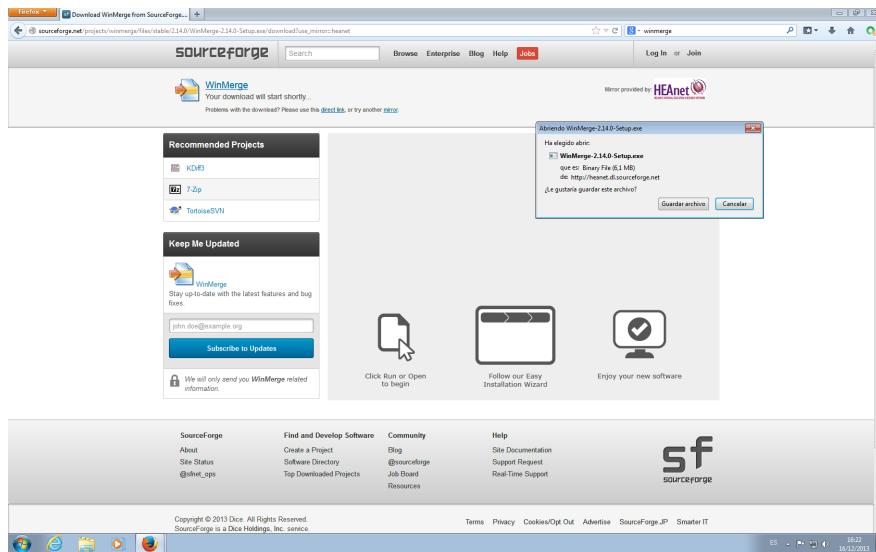
8 Installing WinMerge (optional)

WinMerge is a tool to show and merge differences between files.

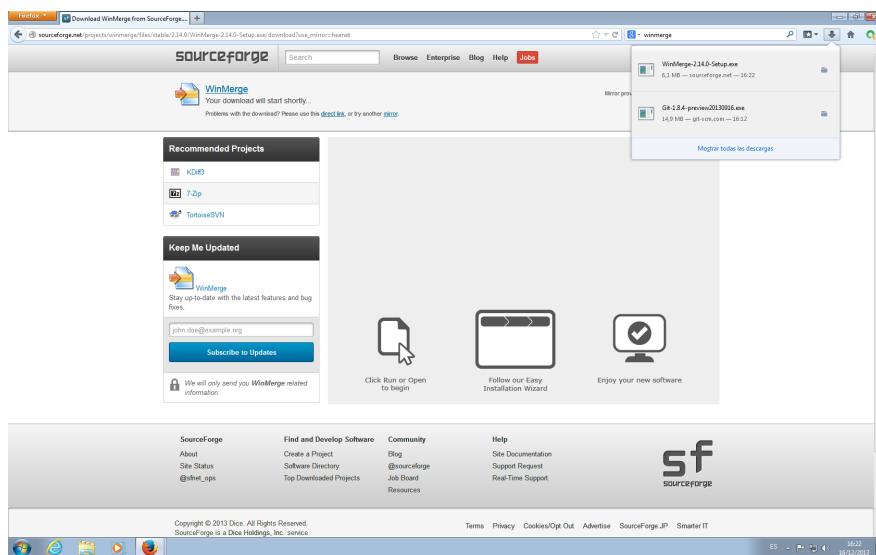
1. Download the program from <http://winmerge.org/downloads> clicking on the **Download Now!** button



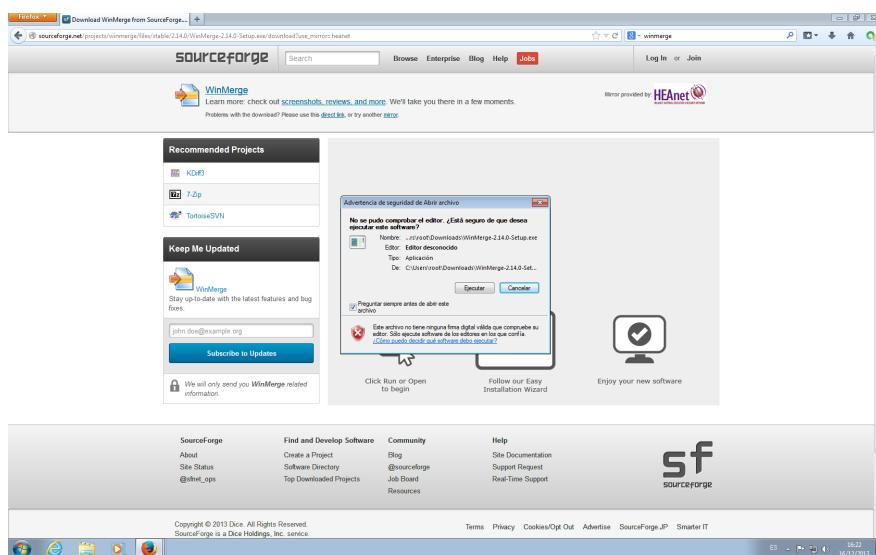
2. Click on the **Save** file button



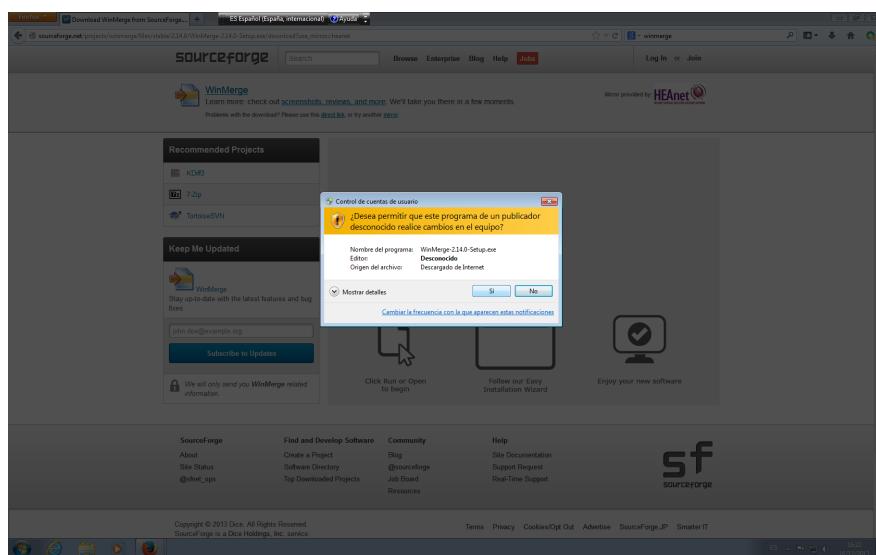
3. Click on the downloaded installer (**WinMerge-2.14.0-Setup.exe** is the last version at the date to make this tutorial)



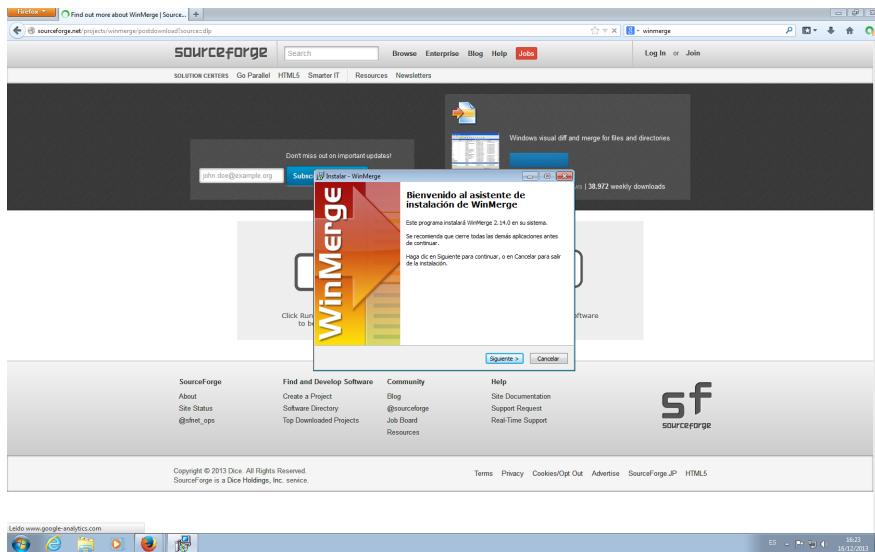
4. Click on the **Execute** button



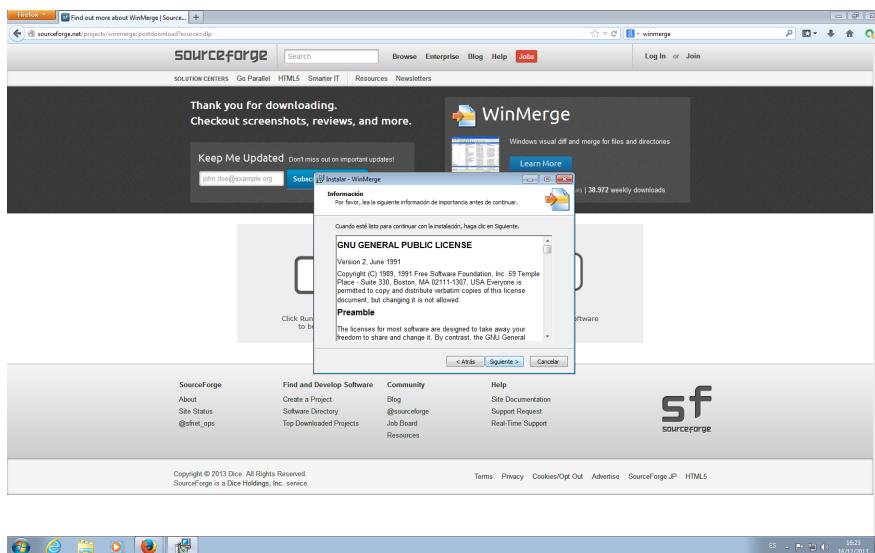
5. Click on the **Yes** button



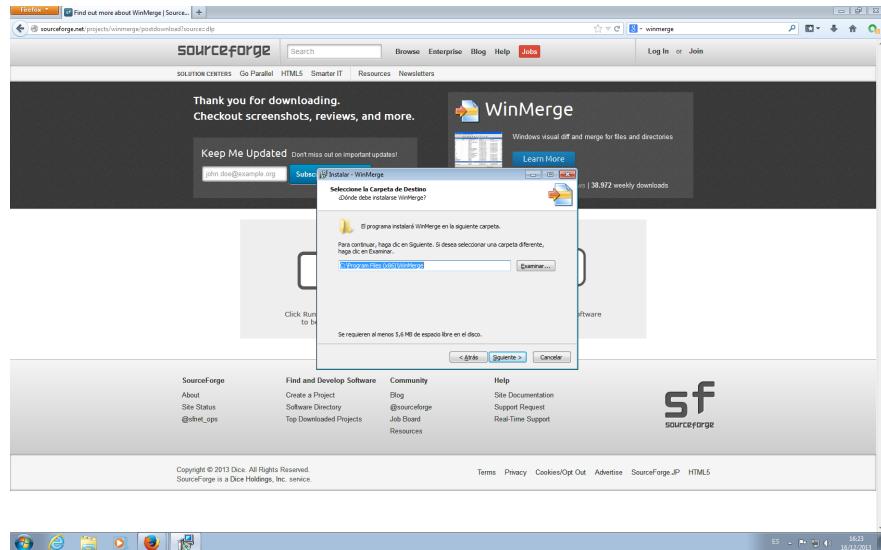
6. Click on the **Next** button



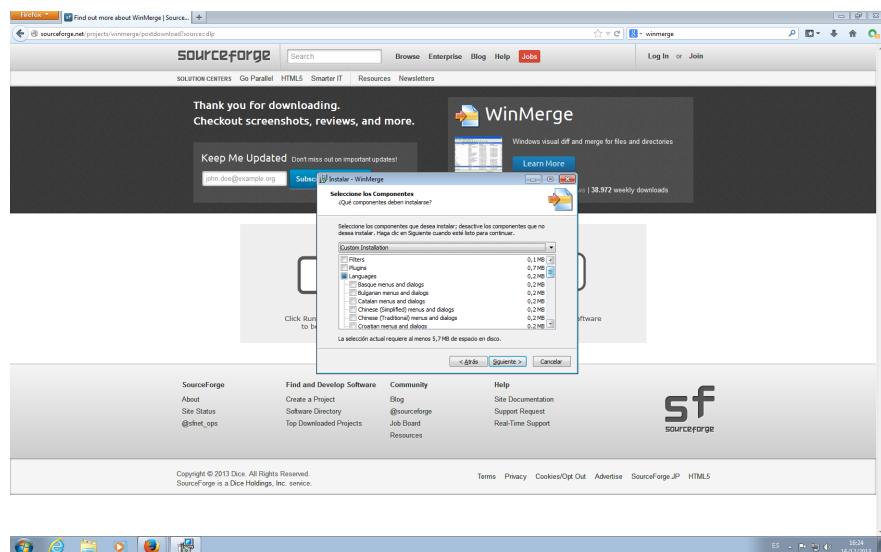
7. Click on the **Next** button



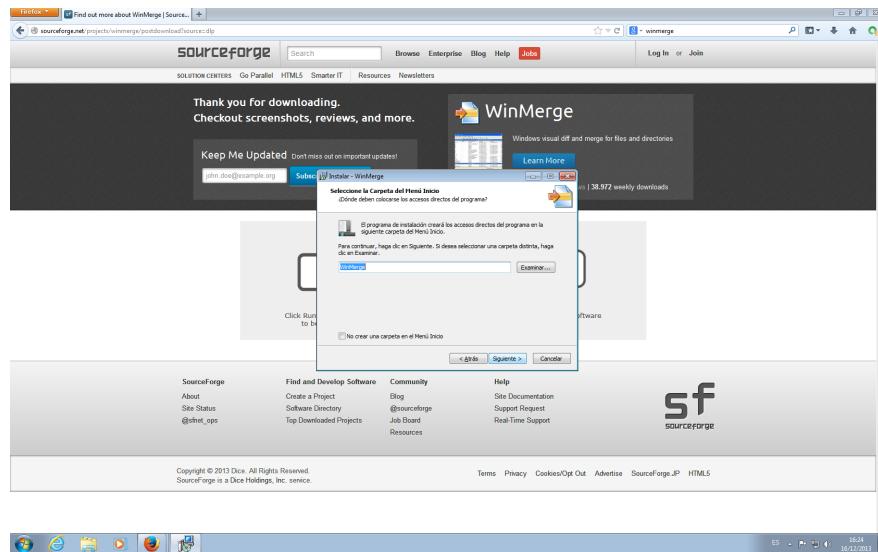
8. Select the installation directory and click on the **Next** button



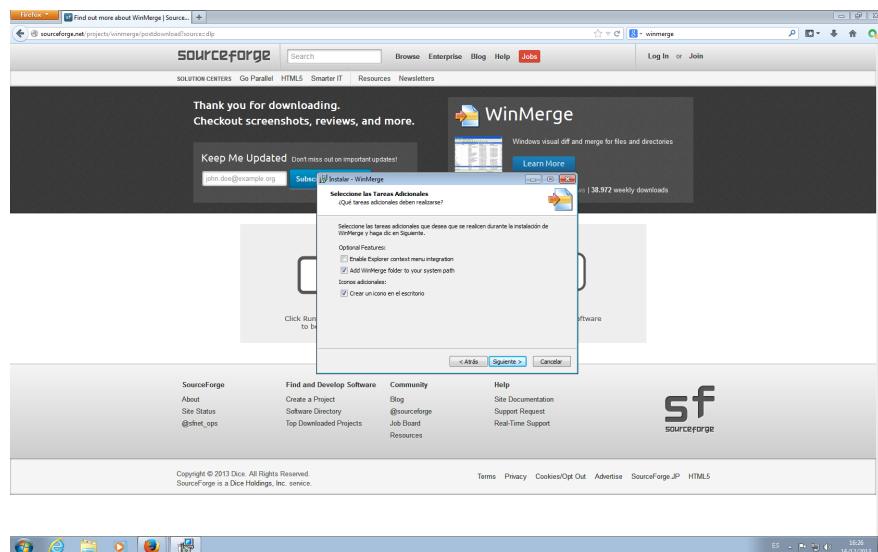
9. Select the components and click on the **Next** button



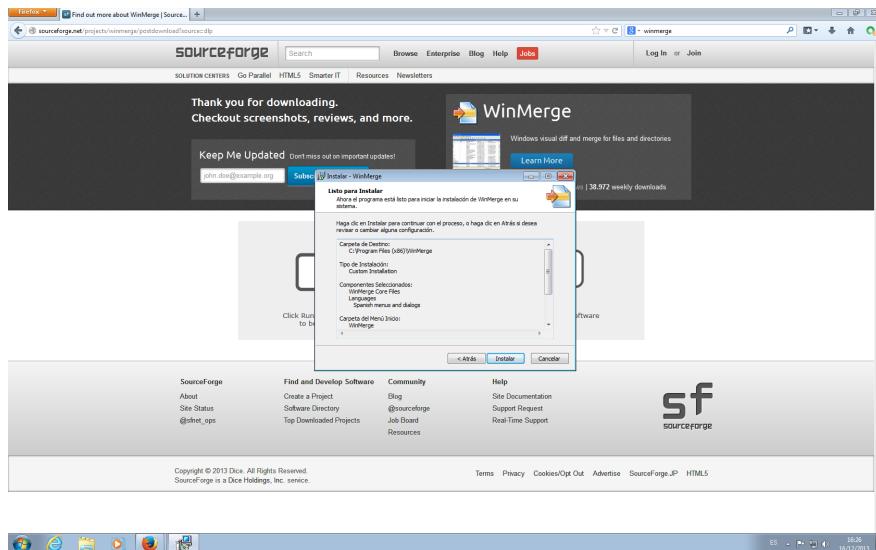
10. Select the start menu folder and click on the **Next** button



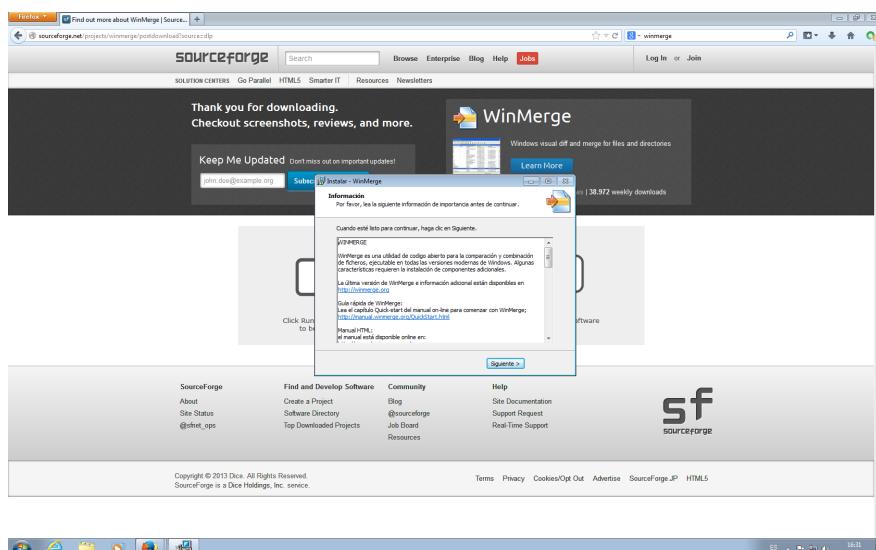
11. Select the **Add WinMerge folder to your system path** option and click on the **Next** button



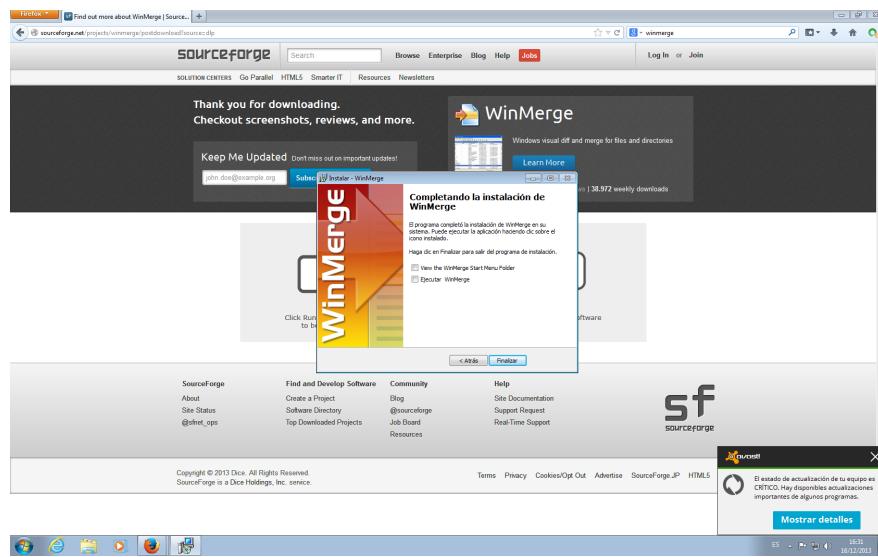
12. Click on the **Install** button



13. Click on the **Next** button



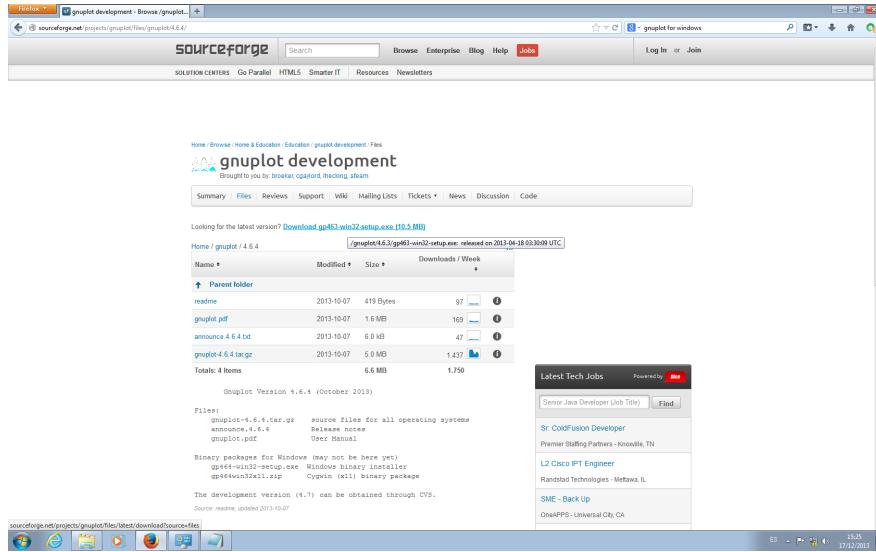
14. Click on the **Finish** button



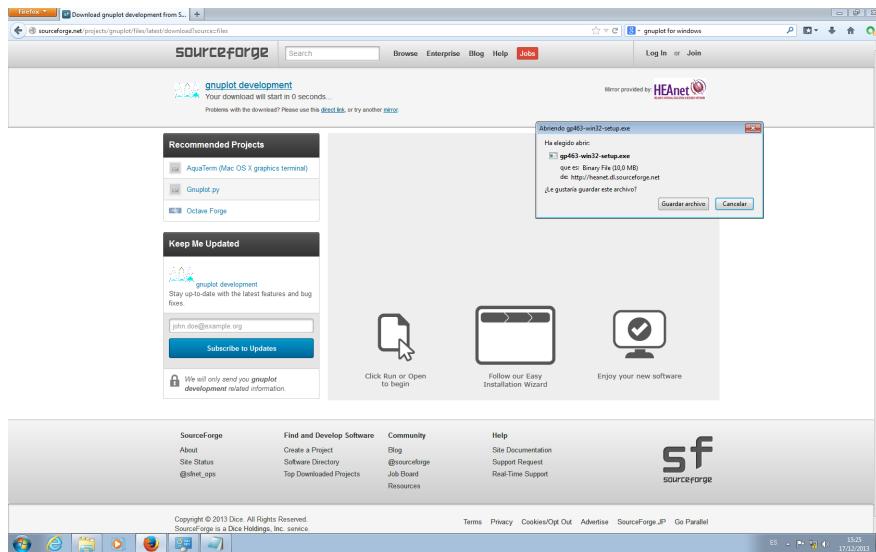
9 Installing GNUPlot (optional)

GNUPlot is a tool to draw mathematical graphicals.

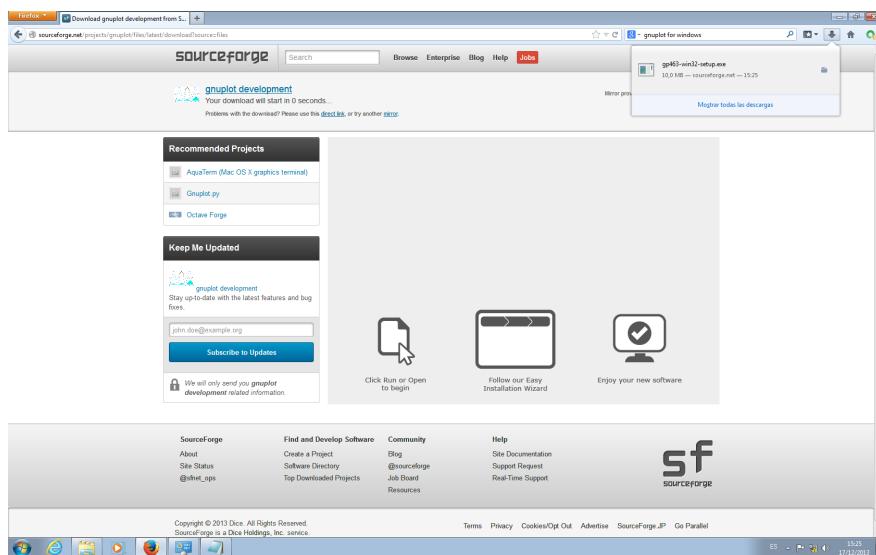
1. Download it from <http://sourceforge.net/projects/gnuplot/files/gnuplot/4.6.4> clicking on the **Download gp463-win32-setup.exe** option (at the moment to make this tutorial 4.6.3 was the last program version)



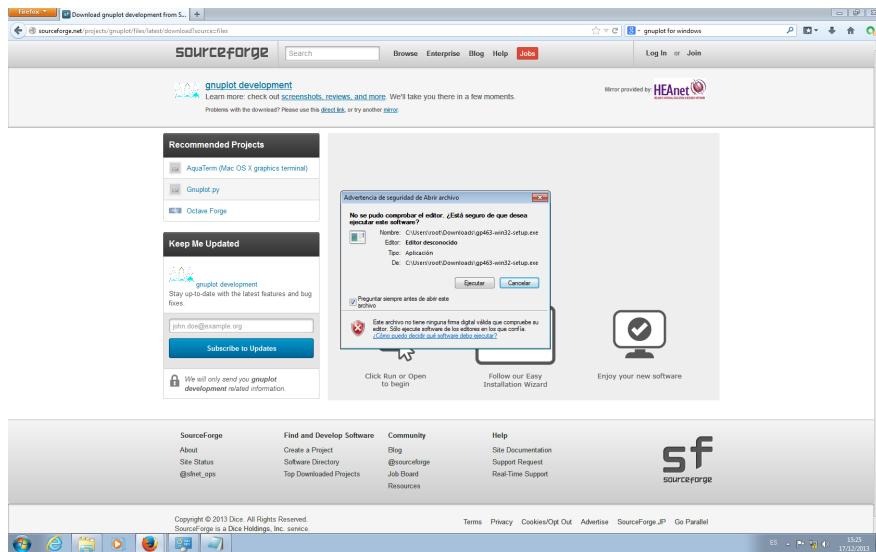
2. Click on the **Save file** button



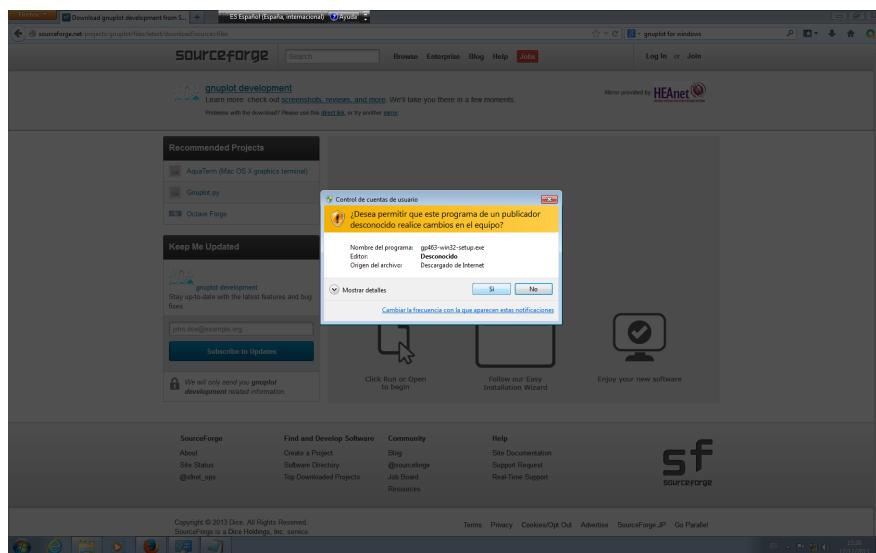
3. Click on the downloaded installer (**WinMerge-2.14.0-Setup.exe** is the last version at the date to make this tutorial)



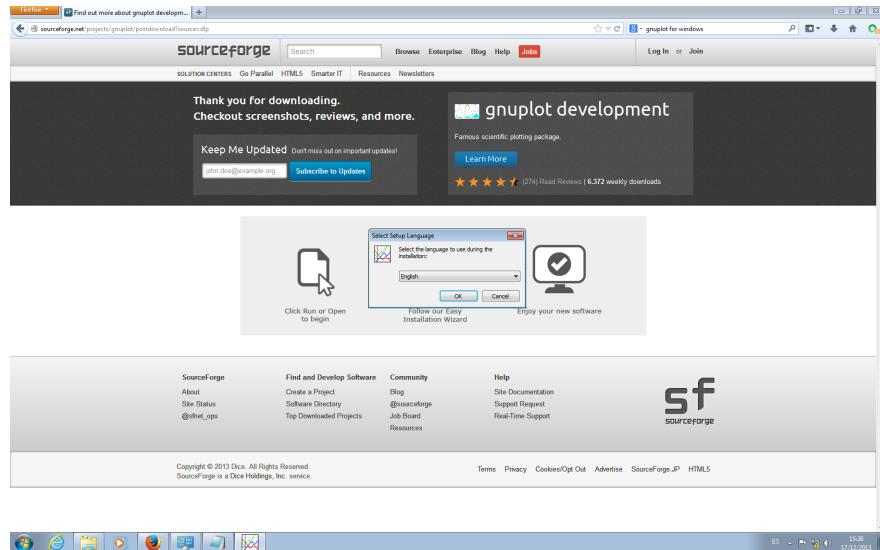
4. Click on the **Execute** button



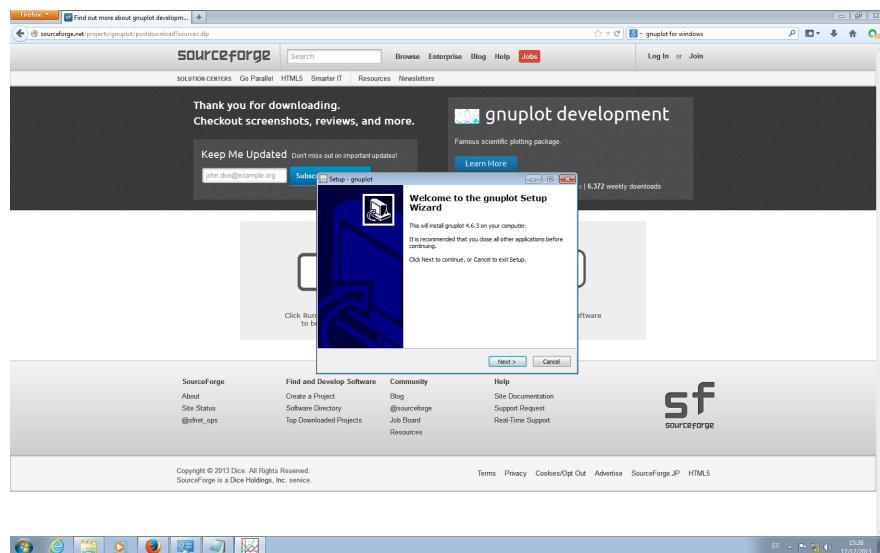
5. Click on the **Yes** button



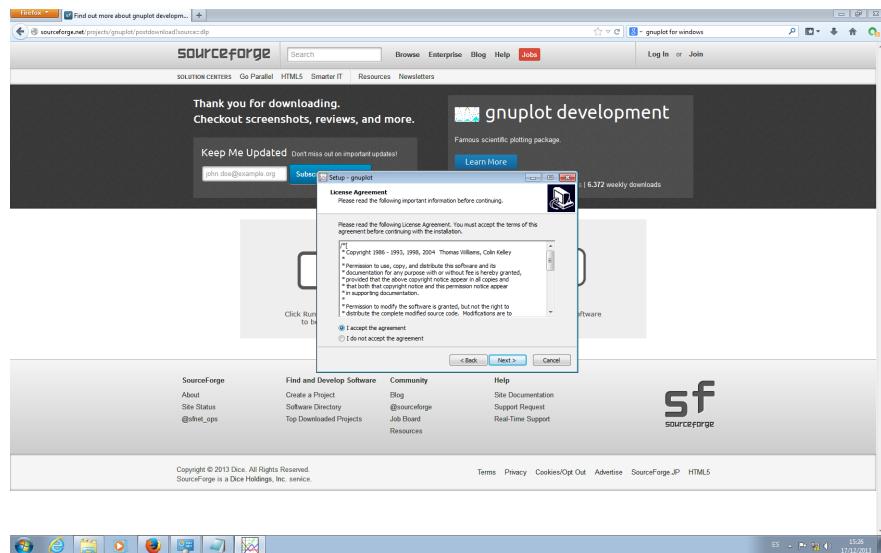
6. Select the language and click on the Yes button



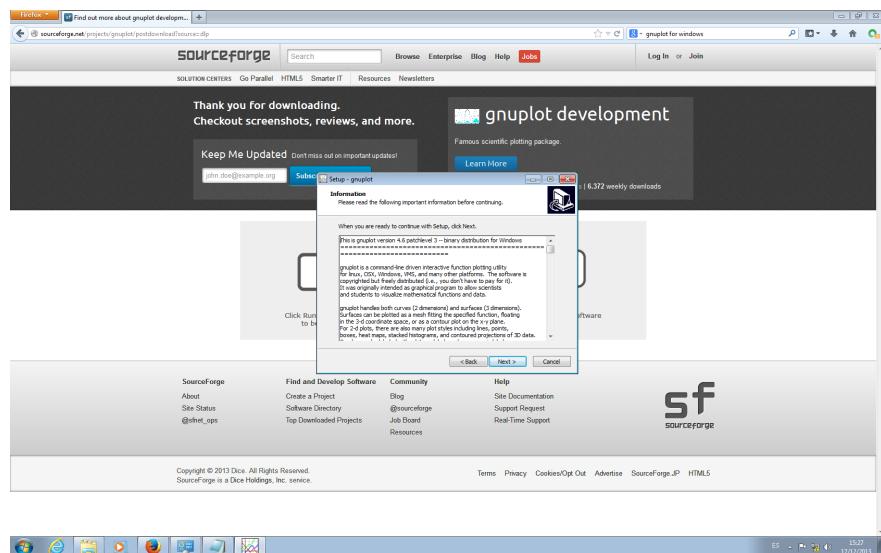
7. Click on the Next button



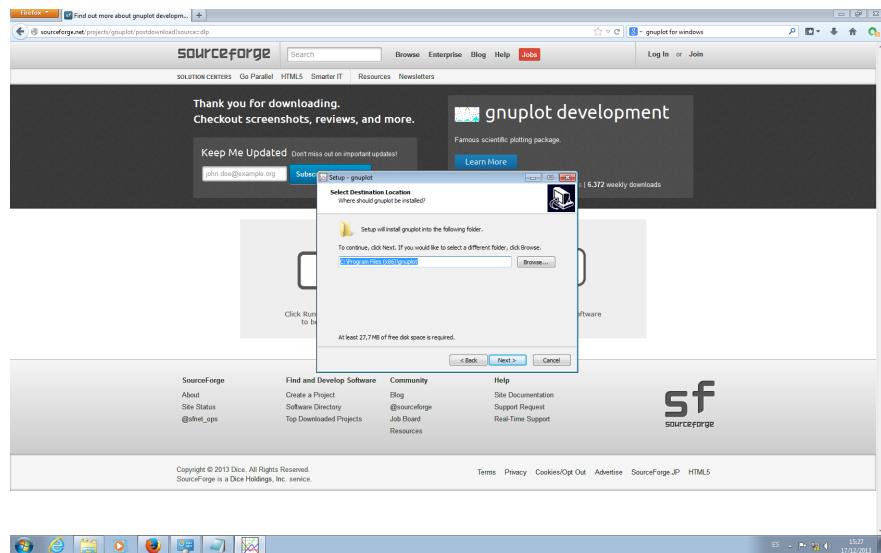
8. Accept the license and click on the **Next** button



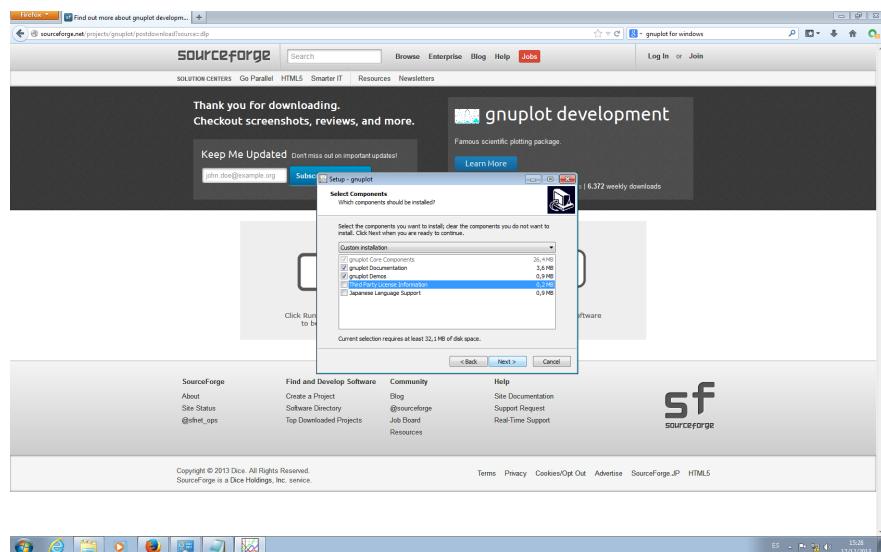
9. Click on the **Next** button



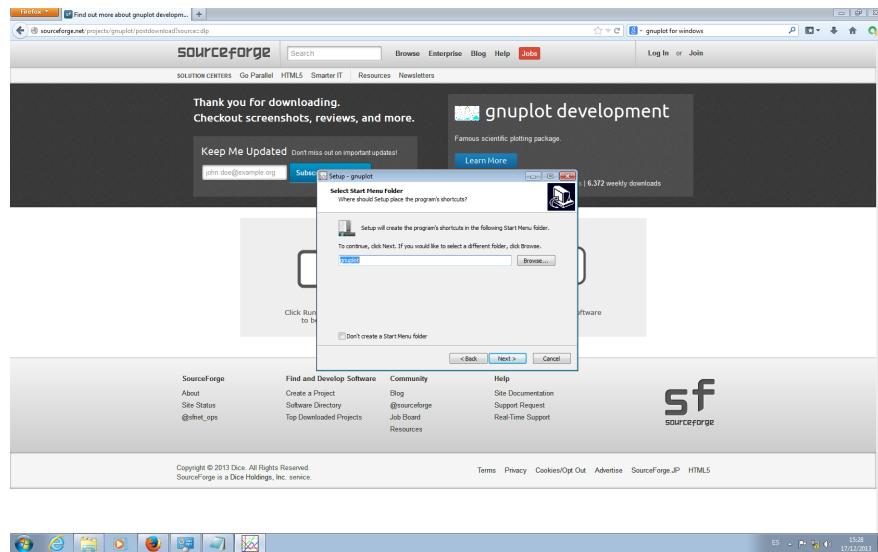
10. Select the installation directory and click on the **Next** button



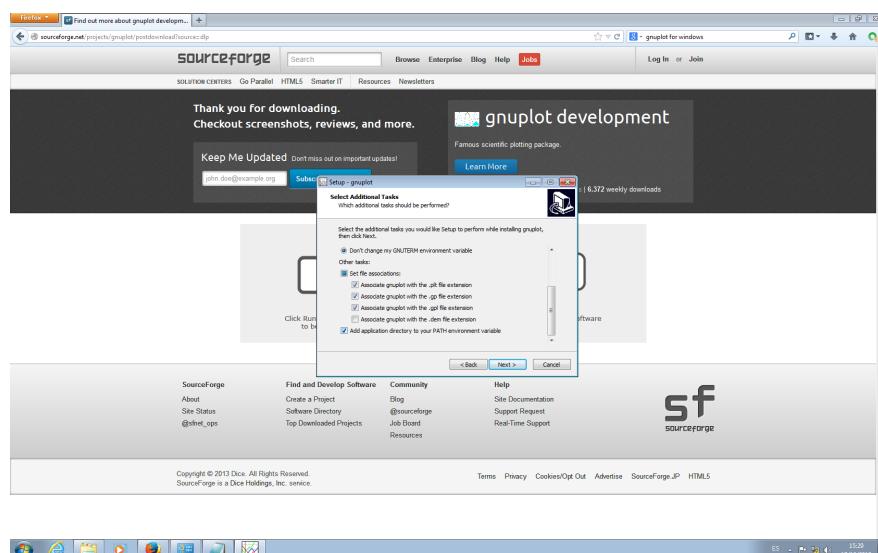
11. Select the components and click on the **Next** button



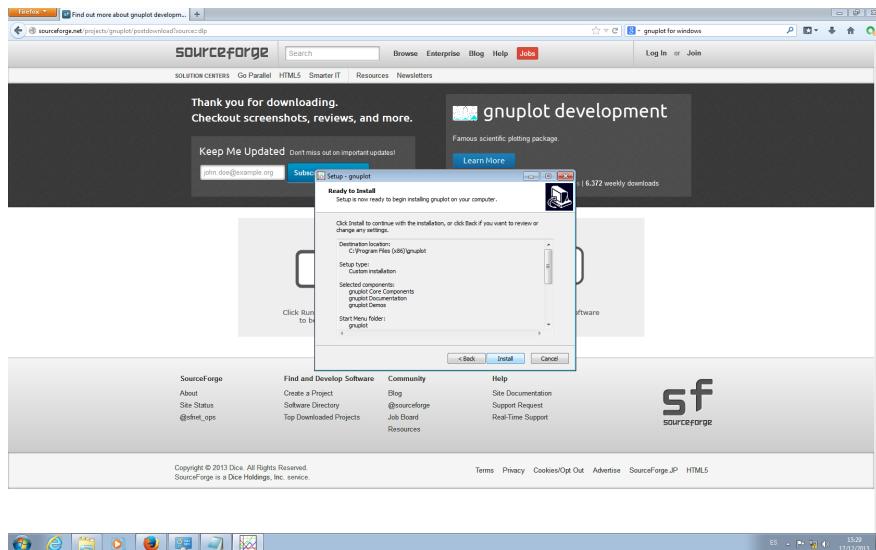
12. Select the start menu folder and click on the **Next** button



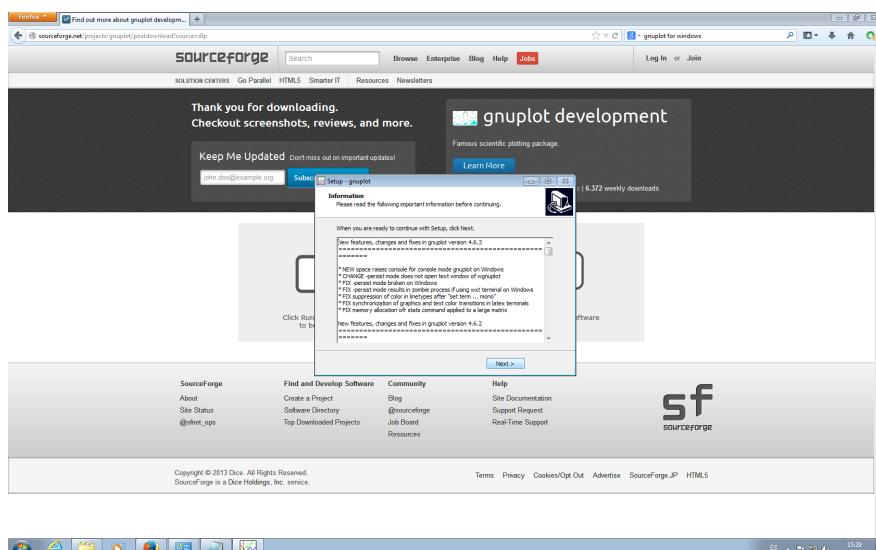
13. Select the **Add application directroy to your PATH environment variable** and click on the **Next** button



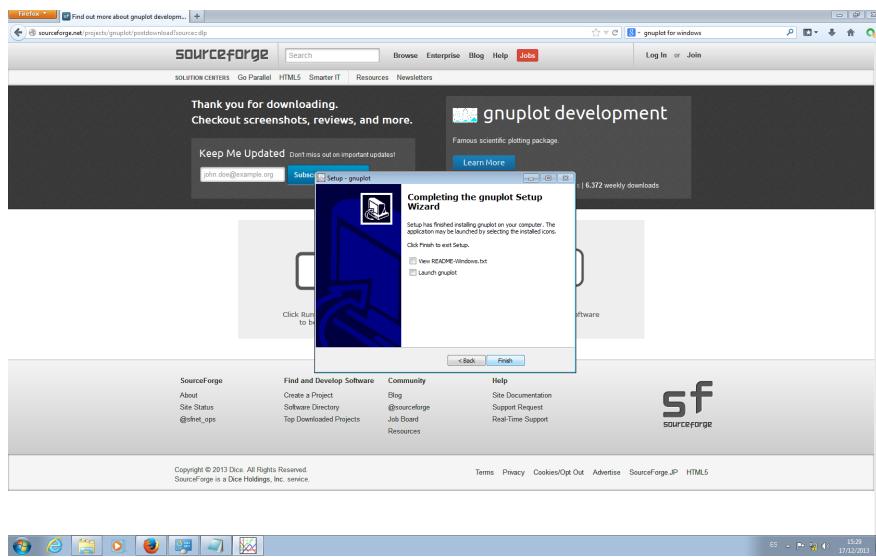
14. Click on the **Install** button



15. Click on the **Next** button



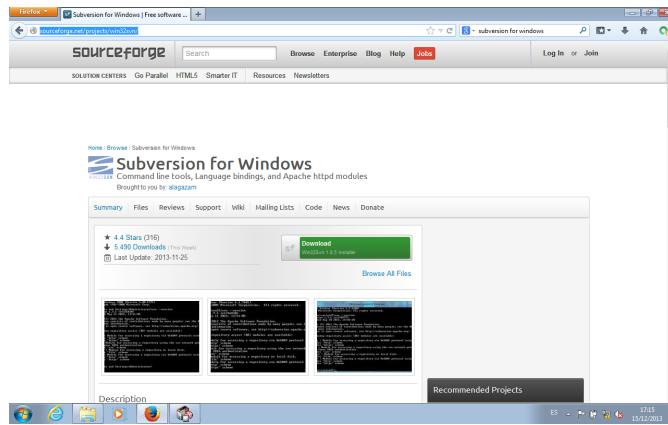
16. Click on the **Finish** button



10 Installing Subversion (optional)

Subversion is a distributed revision control and source code management, similar to Git. In this section we install and configure it to be accessible in the MSYS terminal.

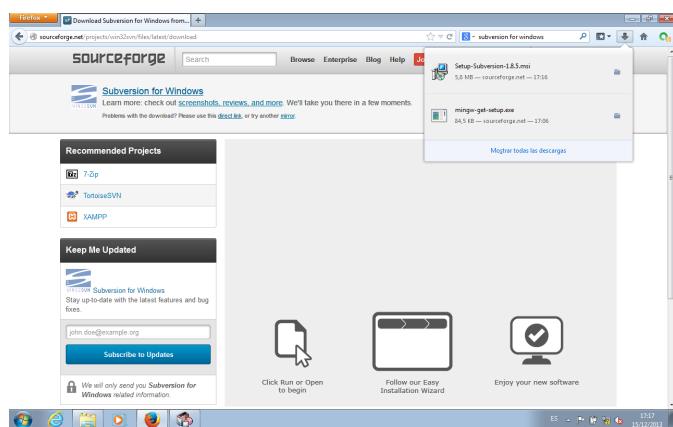
1. Download it from <http://sourceforge.net/projects/win32svn> clicking on the **Download** button



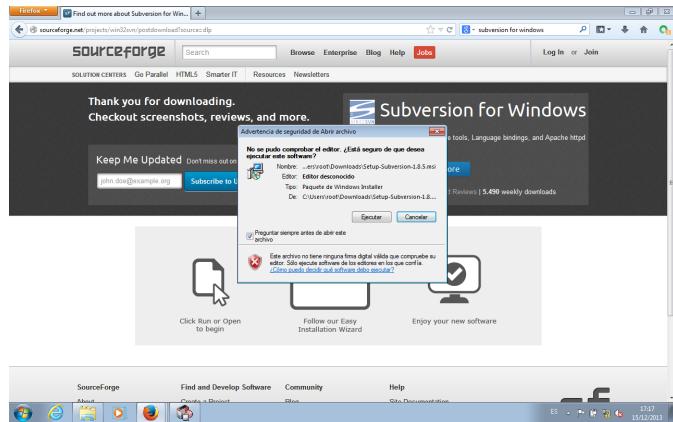
2. Click on the **Save file** button



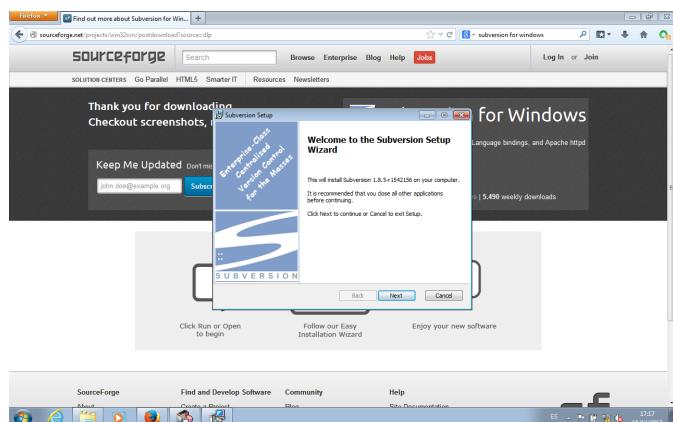
3. Click on the downloaded installer (**Setup-Subversion-1.8.5.msi** is the last version at the date to make this tutorial)



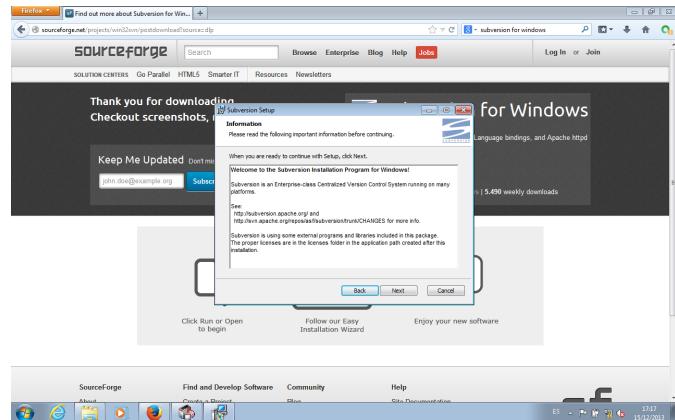
4. Click on the **Execute** button



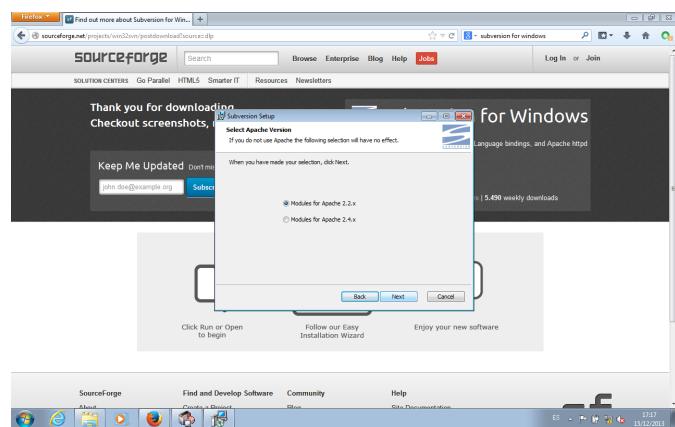
5. Click on the **Next** button



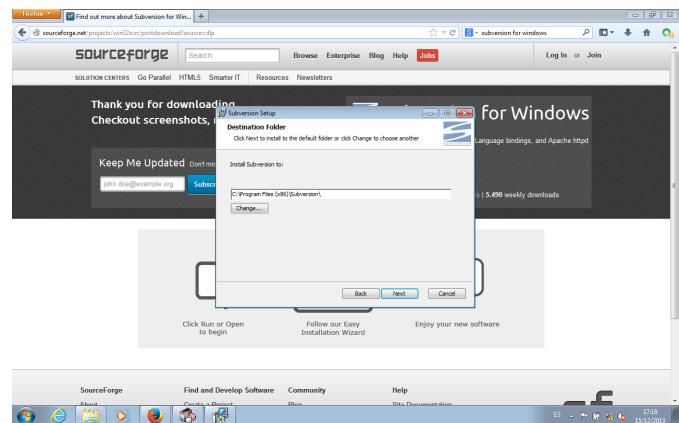
6. Click on the **Next** button



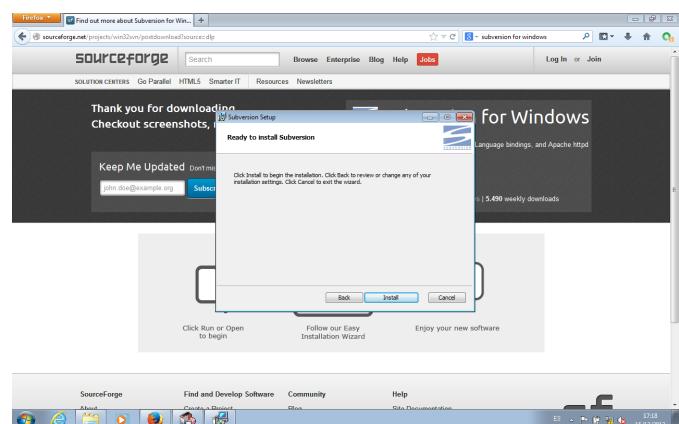
7. Select the more adequate option and click on the **Next** button



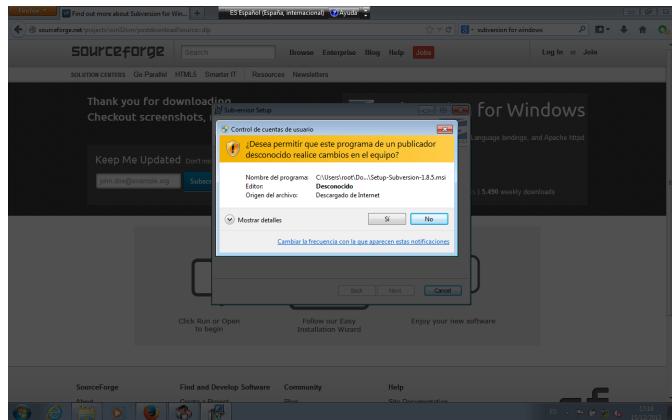
8. Select the installation directory and click on the **Next** button



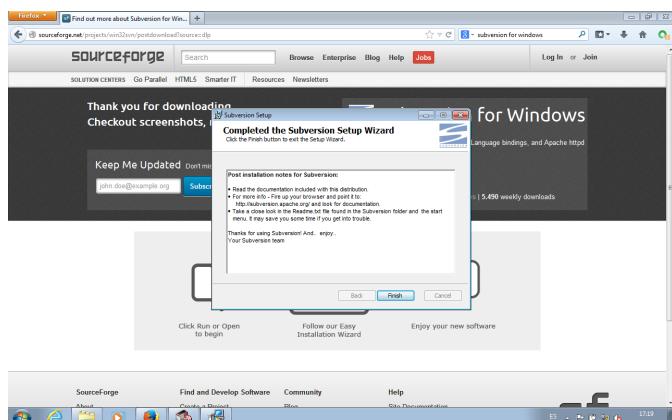
9. Click on the **Install** button



10. Click on the **Yes** button



11. Click on the **Finish** button



11 Installing Eclipse (optional)