# Software specifications

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Chapter number | Software required (With version) | Free/Proprietary | If proprietary, can code testing be performed using a trial version | If proprietary, then cost of the software | Download links to the software | **Hardware specifications** | OS required |
| 1 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 1 | MS Office (Office 365 Home) | Proprietary | yes | $72.04/per year | https://www.microsoft.com/en-in/download/office.aspx |  | Windows/Mac |
| 2 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 3 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 4 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 5 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 6 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 7 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 8 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 9 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 9 | Gephi | Free (Opensource) | No |  | https://gephi.org/users/download/ |  | Windows /Linux/ MAC |
| 10 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 11 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 12 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 12 | QGIS | Free | No |  | http://www.qgis.org/en/site/forusers/download.html |  | Windows /Linux/ MAC |
| 13 | R base  and/or  R Studio Desktop | Free | No |  | <https://cran.r-project.org/>  <https://www.rstudio.com/products/rstudio/download/> |  | Windows /Linux/ MAC |
| 13 | Java (JDK) | Free | No |  | http://www.oracle.com/technetwork/java/javase/downloads/index.html |  | Windows /Linux |
| 13 | MySQL | Free | No |  | https://www.mysql.com/downloads/ |  | Windows /Linux |
| 13 | MongoDB | Free (Community edition) | No |  | https://www.mongodb.com/download-center#community |  | Windows /Linux |
| 13 | Apache Spark | Free | No |  | https://spark.apache.org/downloads.html |  | Linux/Mac |

# Detailed installation steps (software-wise)

The steps should be listed in a way that it prepares the system environment to be able to test the codes of the book.

1. Software R base:
   1. Download the latest version of R base software based on your operating system and Install it by double click.
   2. Verify the installation by type R on the terminal/Cmd window.
   3. Follow these link for installation steps based on your OS:

Windows: <https://cran.r-project.org/bin/windows/base/>

Linux: <https://www.r-bloggers.com/download-and-install-r-in-ubuntu/>

Mac: <https://www.r-bloggers.com/installing-r-on-os-x/>

1. Software RStudio:
   1. Once you have installed the R base. You need to download the latest version R Studio Desktop (Open source license) based on your operating system(OS).
   2. Then do the installation as described in the link based on your OS:

Windows: <http://rprogramming.net/download-and-install-rstudio/>

Linux/Ubuntu: <https://medium.com/@GalarnykMichael/install-r-and-rstudio-on-ubuntu-12-04-14-04-16-04-b6b3107f7779>

**Note**:

1. Software MS Office:

Please follow the instruction: <https://support.office.com/en-us/article/Download-and-install-or-reinstall-Office-365-or-Office-2016-on-a-PC-or-Mac-4414eaaf-0478-48be-9c42-23adc4716658>

1. Software Apache Java (JDK):
   1. Once you have downloaded, Jdk from Oracle, install it based on your OS as given in the following links-
   2. Windows- http://docs.oracle.com/javase/7/docs/webnotes/install/windows/jdk-installation-windows.html
   3. Linux- <https://docs.oracle.com/javase/8/docs/technotes/guides/install/linux_jdk.html>
   4. Make sure to set JAVA\_HOME in your environment/Path variable of your respect OS.
   5. Verify your installation by running following command on your terminal-

java -version

1. Software MySQL:
   1. For installation on Windows refer the following link for detailed steps- <http://www.mysqltutorial.org/install-mysql/>
   2. For linux (RPM)- <https://dev.mysql.com/doc/refman/5.5/en/linux-installation.html>
   3. For Linux (Debian/Ubuntu)- <https://www.linode.com/docs/databases/mysql/install-mysql-on-ubuntu-14-04>
2. Software MongoDB:
   1. After download, extract the file and
   2. Then start by running mongod.exe (for windows) or mongod.sh( for linux).

More Information- <https://docs.mongodb.com/manual/installation/>

1. Software Apache Spark:
   1. Download latest Apache Spark, then extract the zip/tar.gz
   2. Next set the Spark home in your bashrc file or /etc/profile file such as:

export SPARK\_HOME=<path to Spark extracted directory>

After setting home in the bashrc or /etc/profile and verify the Spark installation by running the following command from the $SPARK\_HOME/bin directory.

./spark-shell --master local[2]

More details follow the link: <https://spark.apache.org/docs/latest/>

**Note**:

* At the time of writing this book, the R version (3.4.1) and R Studio version (1.0.153) are used.
* Although all the code should run on R base command line, but I would suggest you to run the code of the book from R Studio instead on R command line, as it is an IDE and easy to use. Also, later on few chapters specifically require the use of R Studio only.
* QGIS installation is little tricky on Mac compared to Windows/Linux. Refer the following link:

<https://cran.r-project.org/web/packages/RQGIS/vignettes/install_guide.html>