

# Installing R on Mac and Linux (and more)

## Install R in MS Windows

The instructions for installing R in MS Windows can be found in the Learning Guide for Week 1 (see Figure 1)<sup>1</sup>. See Figure 2 for a partial screen print of the installation guide for MS Windows.

The general idea is to install the binary installation from <http://cran.r-project.org/bin/windows/>. You need to install the “base” installation. You can also install the “contrib” files, but I do not think they are needed for MATH1280 at UoPeople.

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<sup>1</sup>These notes were prepared by Robert Hoot for MATH1280 at UoPeople. [robert.hoot@uopeople.edu](mailto:robert.hoot@uopeople.edu)

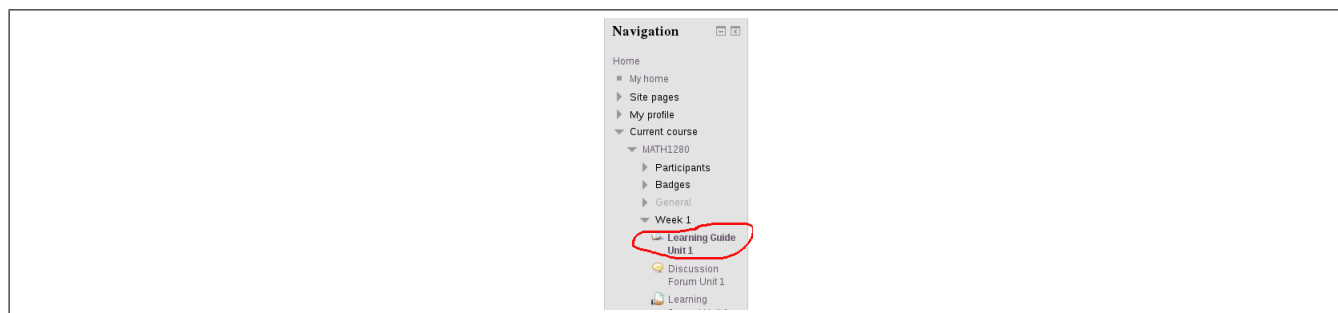
# Installing R in Mac OS X

These instructions are for installing R in Mac OS X. If your computer runs MS Windows, skip this section.

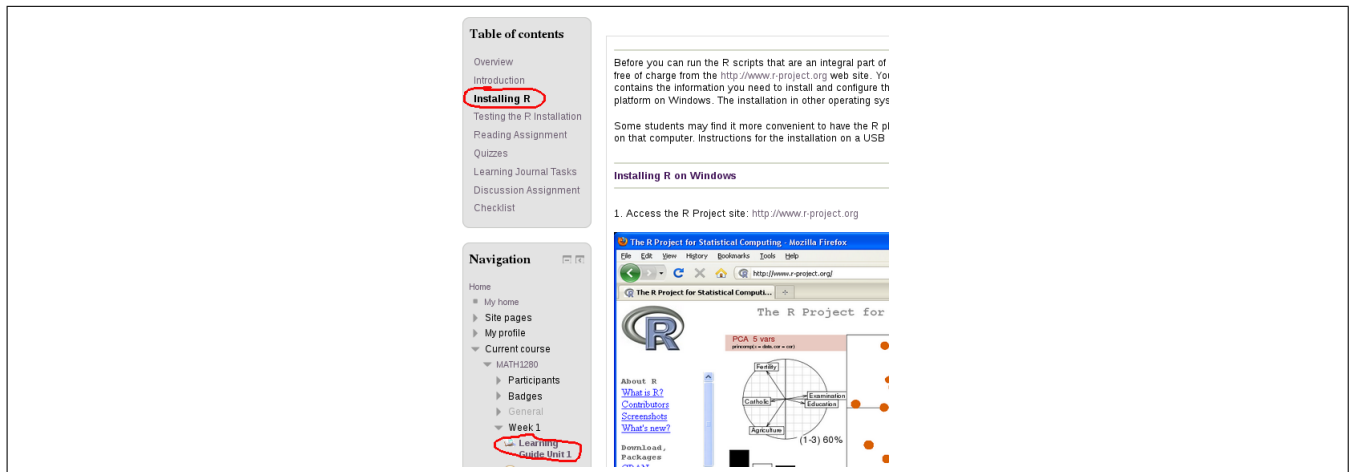
If you are installing R on Mac OS X, use the installation instructions described here and then set the `/emphworking` directory (see section on page 9).

There are several ways to install R in Mac OS X. By far the easiest is to use download the binary installer directly from the CRAN website: <http://cran.r-project.org/bin/macosx/>. You want to install one of the “binaries.” You do not want to install “sources” unless you are a programmer and you are willing to spend days, or maybe years, deciphering the code. The alternative installation methods for Mac OS X (FINK or MacPorts) sometimes require a full day of work, and even then sometimes fails. I have not tried Homebrew to install R, but it is generally much easier than MacPorts. For the UoPeople statistics classes, please download from <http://cran.r-project.org/bin/macosx/>. It should work the first time.

After installing the software, review the section near the end of this document on setting the default directory.



**Figure 1:** Menu entry for the MS Windows installation guide on MATH1280 page. Click on the **Learning Guide** entry for Week 1 on the left.



**Figure 2:** Partial screen print of the top of the installation guide for MS Windows (the online version would contain any recent updates). First, click on the **Learning Guide** entry for Week 1, then click on the **Installing R** entry on the left or page forward from the main Learning Guide page for Week 1.

## Installing R on Ubuntu

### Introduction

These instructions are for installing R in Ubuntu 14 (a Linux operating system). If your computer runs MS Windows or Mac, skip this section.

If you are installing R on Ubuntu, use the installation instructions described here and then set the working directory (see section on page 9).

There are at least two ways to install R in Ubuntu, and the procedure might be similar for Debian. One way is to use the graphical package manager (clicking icons), and the other way is to use terminal commands (shell commands). It is probably easiest for most users to use the graphical installation method shown below, but if you are familiar with installing programs from the command line, you can do so.

## Command-Line installation

If you want to install R on Ubuntu, it is probably easiest to skip this section and go to the Graphical Installation procedures a couple paragraphs below. The general approach for installing R on Ubuntu using the command line is described here: <http://cran.r-project.org/bin/linux/ubuntu/README>, but you can probably skip the part about altering your list of install sources and try using these commands from the terminal command line:

```
sudo apt-get update
sudo apt-get install r-base
```

That should install everything you need for MATH1280. Now create the directory that you will use for this class, and enter that directory before you start R (this will allow you to run the examples from the book without having to translate anything).

```
mkdir ~/IntroStat
cd ~/IntroStat
R
```

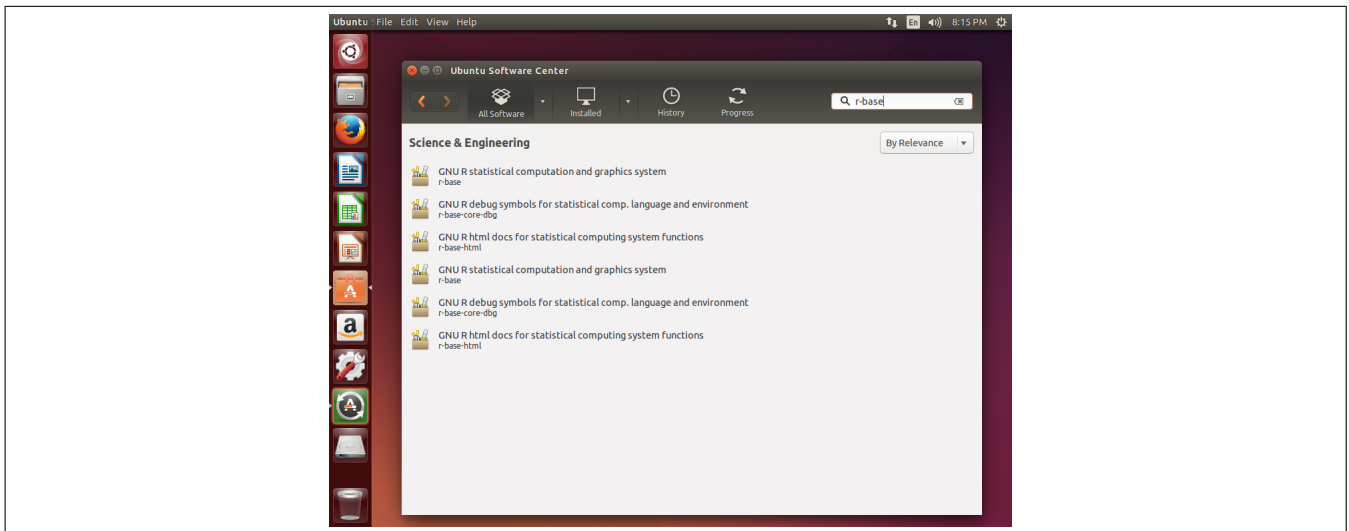
When you download data files from the Internet for this class, put the files in our `~/Introstat` directory and always `cd` into that directory before starting R.

If you want to experiment with R, you can also install the development packages, but this is not needed for this class:

```
sudo apt-get install r-base-dev
```

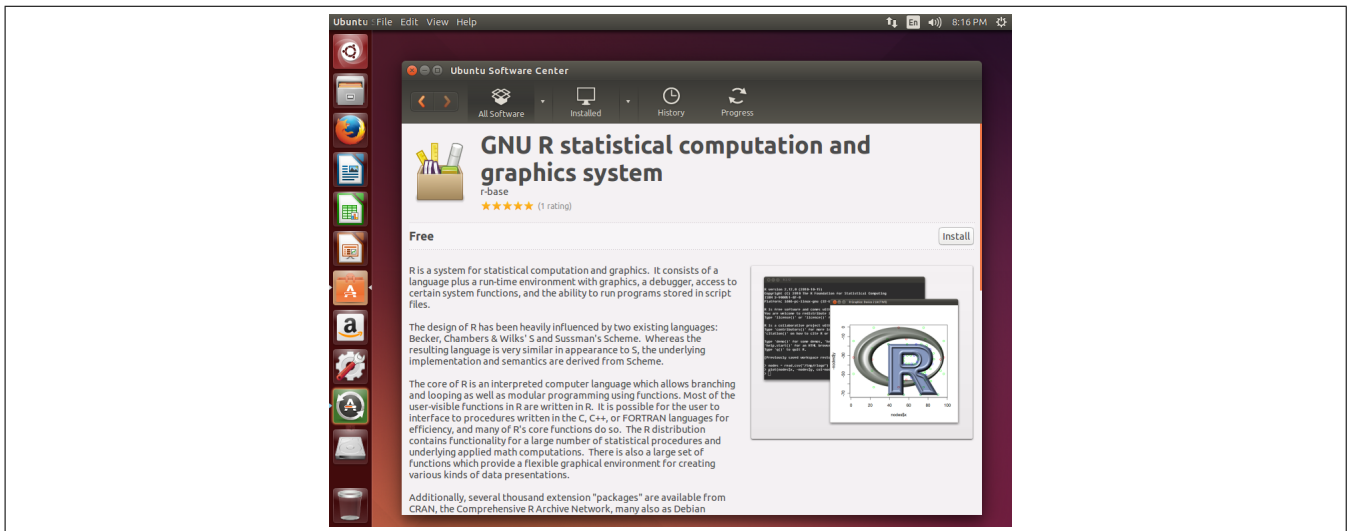
## Graphical Installation of R on Ubuntu

To install R using the graphical interface, first locate the Software Center icon and run it. Figure 3 shows how this looked in Ubuntu 14. When the Software Center opens, you can either look in

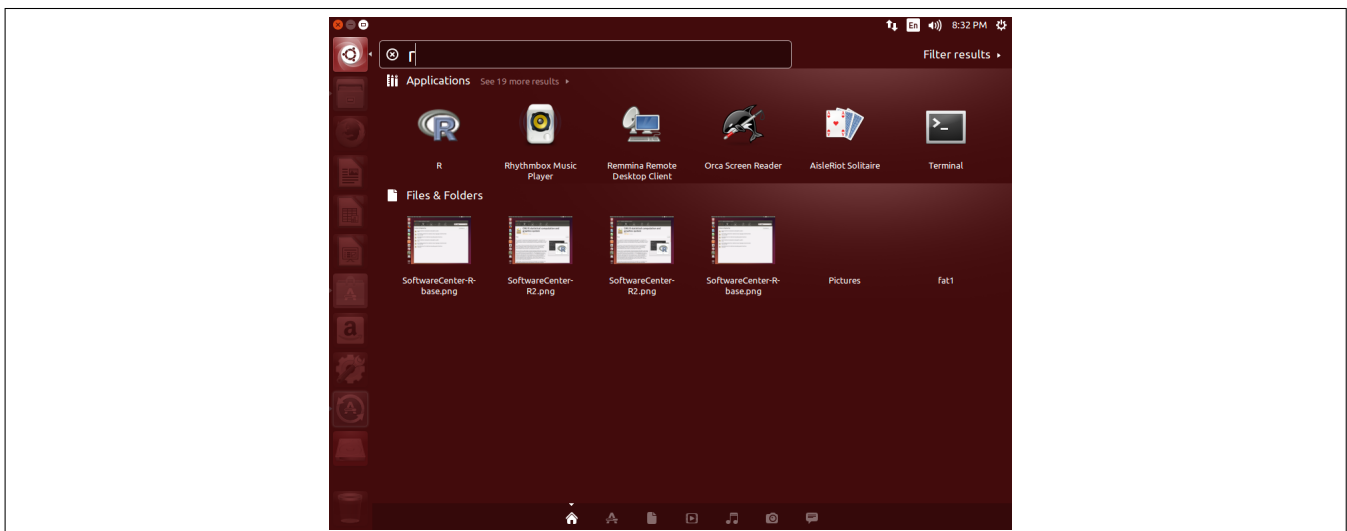


**Figure 3:** The package manager might be called *Software Center* and there should be an icon that is easy to find to run the Software Center. In this image, the icon for the Software Center is in the middle of the launch bar on the left-hand side. If you want to browse the categories, try looking in the Science and Engineering category. You can also enter this into the search box: **r-base**. Your computer might look a bit different, but in Ubuntu 14, the Software Center looks something like this after you enter “r-base” into the search box.

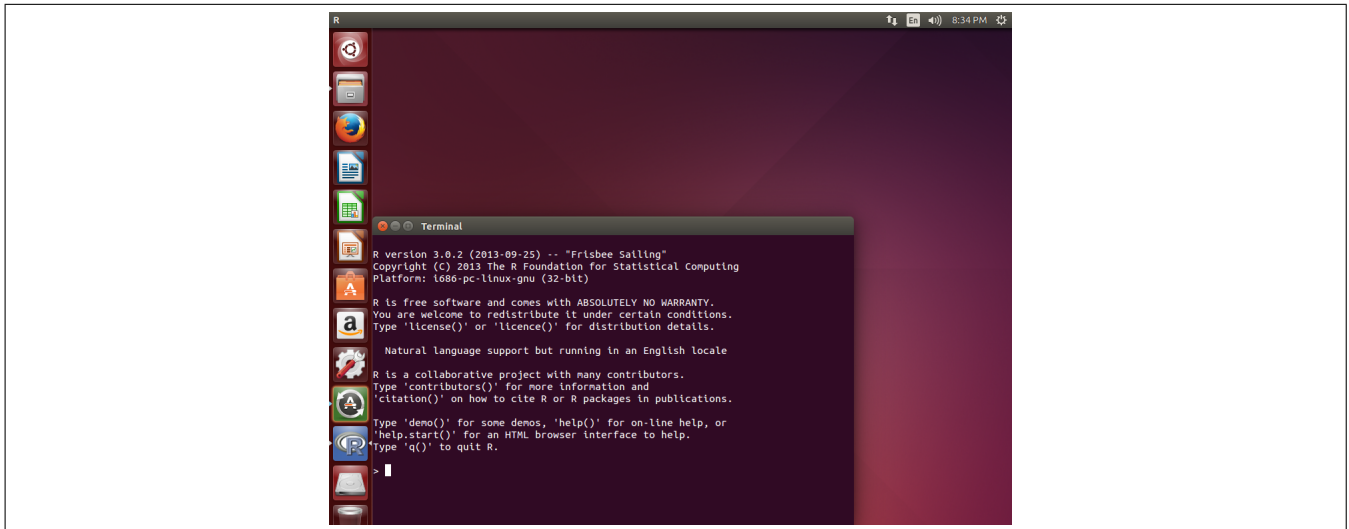
the Science and Engineering category, or type ‘r-base’ into the search box. See Figure 4. You can run R from the command line by typing **R** (upper case) in a terminal window, or run it from the graphical interface by following the tips in Figure 5. When R is running, it should look something like the picture in Figure 6.



**Figure 4:** If you click once on the entry for r-base as shown in the prior screen, you should see more information as shown in this image. Click the ‘install’ button that is shown in the right-hand side of this image.



**Figure 5:** To run R using the menus in Ubuntu, press the Windows Key (or the Command key if you installed Ubuntu on a Mac computer) or access the program search window by clicking on the on the top-left part of the main Ubuntu screen. Then type the letter *r*, and you should see something like this. I disabled all of the Internet search nonsense in Ubuntu, but you might see additional categories of results, including Internet search results, on your screen. Click the fancy R icon in the top left to run R.



**Figure 6:** When you open R, it opens a regular terminal window and might look like this.

## Installing R in Fedora/CentOS

These instructions are for installing R in Fedora 20 (a Linux operating system). If your computer runs MS Windows, skip this section.

Fedora uses the **yum** package manager, so the commands might be similar for other operating systems that use the **yum** package manager (like CentOS and OpenSuse). These are instructions for installing R using shell commands. To run shell commands, run the program called **Terminal**. The terminal command should be listed in the main menu that you used to run programs (the exact procedures depend on your desktop client). For GNOME 3, try pressing the Windows key (or Command key if you installed Fedora on a Mac computer), and then start typing “terminal” (you do not need to click anything first).

The one package that is essential for the class is the main R package, called R-core. If you install R from the **yum** package manager, it will automatically update when you update your system. This is a large package and can take a long time to download over a slow Internet connection:

```
sudo yum install R-core
```

You might want to make a directory for the programs that you write for the class. In Chapter 2, the textbook<sup>2</sup> recommends a directory called **IntroStat** (the location of the directory is your choice, but it might be best to call it IntroStat).

```
mkdir ~/IntroStat
```

You could then run the R program interactively from the command line by changing your directory and running R:

```
cd ~/IntroStat  
R
```

If you want to run a program that you wrote and capture the output from it, try this command:

```
R --no-save < ~/IntroStat/myprogram.r > ~/IntroStat/output01.txt
```

You can then view the output with any text editor or like this:

```
less output01.txt
```

You can also open the output in any text editor or OpenOffice (called LibreOffice in Fedora).

There are some additional packages that you would need if you want to install an R package that needs to be compiled (and many of them need to be compiled). You should not need this for MATH1280, so the following commands are optional:

```
sudo yum install R-devel  
sudo yum install libgfortran  
sudo yum install gcc  
sudo yum install gcc-gfortran
```

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<sup>2</sup>Yakir, B. (2011). Introduction to Statistical Thinking (With R, Without Calculus)



The next two commands are not needed for the statistics classes at UoPeople, but might be useful if you need to run some of the graphical applications in R at a later date (most graphical R programs can run without these libraries). `gtk2` is needed for FAIR and maybe other graphics packages, and `graphviz` is needed for SEM and other packages that graph data.

```
sudo yum install gtk2*
sudo yum install graphviz
```

## Creating and Setting the Working Directory in UNIX-Like OSs

This section is for setting the working directory on computers that run UNIX-like operating systems (Mac OS X, GNU/Linux, BSD, Solaris, etc.). If your computer is running MS Windows, skip this section.

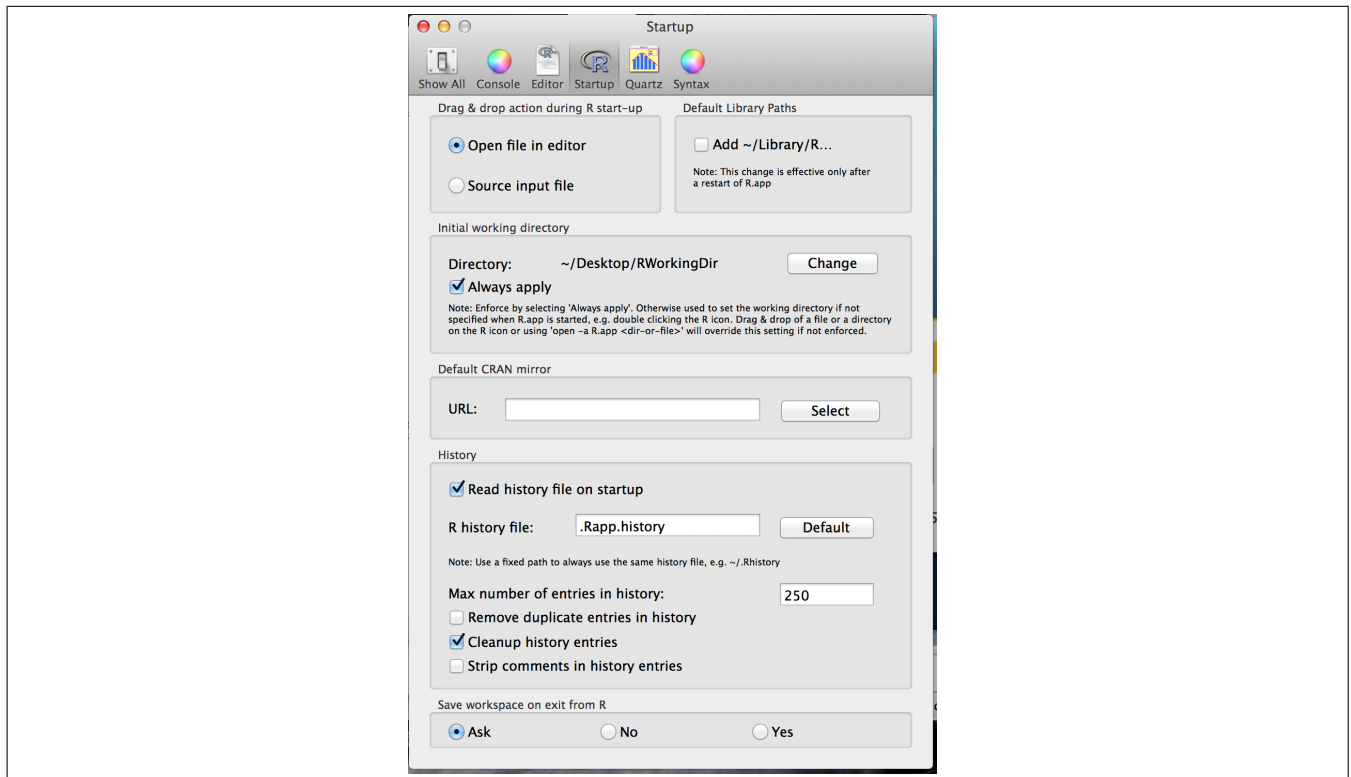
After you install R, create a working directory. The book suggests the name `IntroStat` for the directory that contains the examples for this class, so you could create a directory using your regular file manager (“Finder” in Mac OS X) or you could use Terminal (`bash` shell) commands like this to create the directory and run R from that directory:

```
mkdir ~/IntroStat
cd ~/IntroStat
R
```

When you run R from the command line as shown above, your working directory will be the directory from which you started R, and you do not need to do anything else if you started in the `IntroStat` directory.

You might be able to set the working directory by setting a property in the App that runs R, but you can always run a command to set the working directory while R is running:

```
> setwd("~/IntroStat")
```



**Figure 7:** Setting the working directory in Mac OS X

You would run this command every time you start R if your default working directory does not point to your `~/IntroStat` directory.

Here are some notes from a student for setting the default directory in Mac OS X. See Figure 7 for the option pane.

Go to R -> Preferences (or CMD + , key)  
 then go to the 'Startup' panel  
 "initial working directory" section  
 pick dir with "change" button  
 and mark "always apply"