Installing R, RStudio, Swirl for R Programming

During this course we'll be using R and RStudio as well as the swirl software package for R in order to illustrate some key concepts. The swirl package turns the R console into an interactive learning environment. Using swirl will also give you the opportunity to be completely immersed in an authentic R programming environment. In this programming assignment, you'll have the opportunity to practice some key concepts from this course.

Install R and RStudio in Ubuntu

As you need to build Makefile that only works at Linux, I strongly recommend you use Linux OS for this lab. This lab should work at Ubuntu. I believe it should work at Mac as well.

If you have Windows OS, you may install VMPlayer and then install Ubuntu on it. The following link shows how to install Ubuntu in VMPlayer on your Windows: https://www.maketecheasier.com/install-ubuntu-in-vmware-player-windows/

The following shows how to install RStudio in Ubuntu: https://www.r-bloggers.com/download-and-install-r-in-ubuntu/

Install R and RStudio in Windows

- swirl requires R 3.0.2 or later. If you have an older version of R, please update before going any further. If you're not sure what version of R you have, type R.version.string at the R prompt. You can download the latest version of R from https://www.r-project.org/.
    - For example, R for Windows > **install R for the first time** > Download R 3.3.2 for Windows
- Install RStudio. You can download the latest version of RStudio at https://www.rstudio.com/products/rstudio/ .
    - Download and install "RStudio Desktop Open Source Edition"

Set up a new RStudio Project

In RStudio: *File > New Project > New Directory > Empty Project.*

For example, Directory name: lab8, Create project as subdirectory of: ~/proj/MSDS6306/

1. Install swirl

Open RStudio and type in the following swirl command to install the package. Since swirl is an R package, you can easily install it by entering a single command from the R console:

```
install.packages("swirl")
```

If you've installed swirl in the past make sure you have version 2.2.21 or later. You can check this with: `packageVersion("swirl")`

2. Load swirl

Every time you want to use swirl, you need to first load the package. From the R console:

```
library(swirl)
```

3. Install the R Programming course

swirl offers a variety of interactive courses, but for our purposes, you want the one called R Programming. Type the following from the R prompt to install this course:

```
install_from_swirl("R Programming")
```

4. Start swirl and complete the lessons

```
swirl()
```

Then, follow the menus and select the R Programming course when given the option. For the first part of this course you should complete the following lessons:

1. Basic Building Blocks
2. Workspace and Files
3. Sequences of Numbers
4. Vectors
5. Missing Values
6. Subsetting Vectors
7. Matrices and Data Frames

Some commands in swirl to remember:

```
| You can exit swirl and return to the R prompt (>) at any time by
| pressing the Esc key. If you are already at the prompt, type
```

| bye() to exit and save your progress. When you exit properly,
| you'll see a short message letting you know you've done so.

| When you are at the R prompt (>):
| -- Typing skip() allows you to skip the current question.
| -- Typing play() lets you experiment with R on your own; swirl
| will ignore what you do...
| -- UNTIL you type nxt() which will regain swirl's attention.
| -- Typing bye() causes swirl to exit. Your progress will be
| saved.
| -- Typing main() returns you to swirl's main menu.
| -- Typing info() displays these options again.

type 0 to exit swirl.
type 0 to return to course menu.

| If at any point you'd like more information on a particular topic
| related to R, you can type help.start() at the prompt, which will
| open a menu of resources (either within RStudio or your default
| web browser, depending on your setup). Alternatively, a simple
| web search often yields the answer you're looking for.

Reference:

1. Swirl, http://swirlstats.com/
2. Swirl github, https://github.com/swirldev/swirl_courses
3. R Programming using swirl by Johns Hopkins University
4. Analytics Using R and R Studio in Bluemix with dashDB,
   http://blog.armandruiz.com/2014/12/02/analytics-using-r-and-r-studio-in-bluemix-with-dashdb/,
5. https://www.ibm.com/developerworks/community/files/form/anonymous/api/library/c03f9727-2438-4beb-b75a-3e0cfc71ac26/document/85fec06c-d7d1-480f-b40a-62415e023bea/media/Analytics%20with%20R%20dashDB%20Warehouse%20Bluemix.pdf