



Computer Engineering Technology – Computing Science

Course: Numerical Computing – CST8233

Term: Fall 2021

Lab #1

1. Objectives

The main objective of this lab is to set up the environment that will be used for all labs and assignments of this course. As mentioned in the course outline and CSI, R language will be used as the programming tool during this course. Therefore, in this lab, you need to download and install R on your machine. In addition, you need to download and install an IDE called, RStudio, that includes a console and syntax highlighting editor that supports code execution, in addition to many other handy features.

2. Earning

This lab worth 1% of your final course mark. Each student should complete this lab, i.e., setting up the environment, and demo a simple program to the lab professor during the lab session.

3. Steps

Step 1. Installing R

In this step, you will download and install R on your machine. This step must be completed BEFORE you install the IDE, RStudio. Go to the following link:

<https://cran.r-project.org/mirrors.html>

and choose one of the mirrors available. For example, you can choose the one available at University of Toronto:

<https://utstat.toronto.edu/cran/>

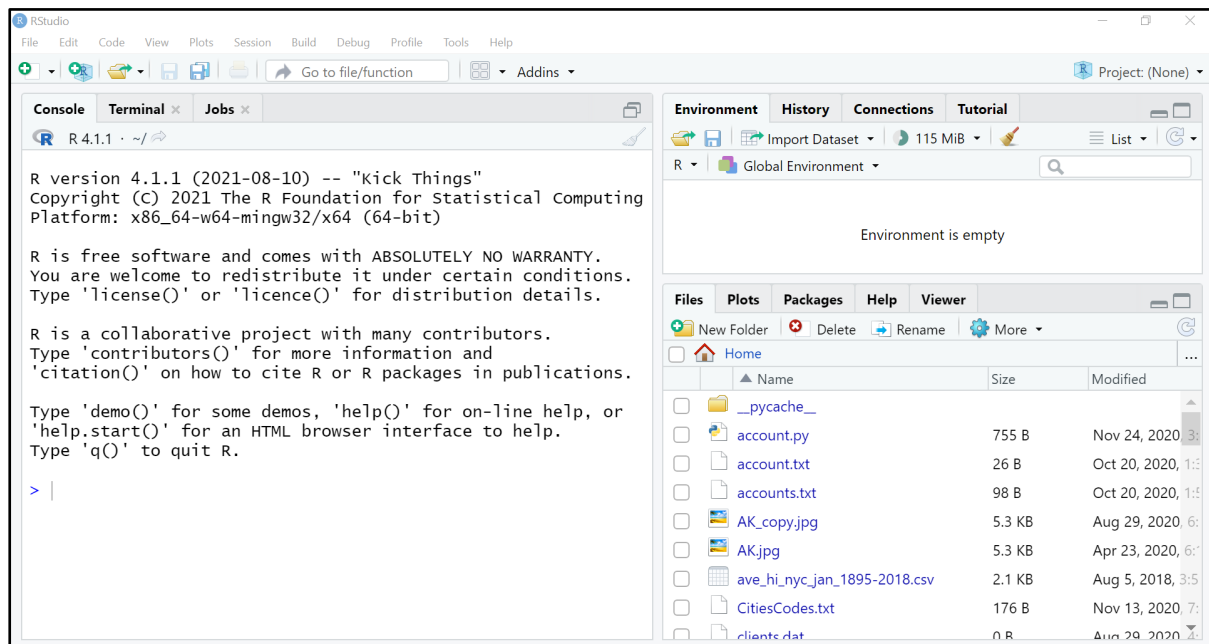
Then, click on “*Download R for Windows*” and then, on “*install R for the first time*” and finally click on “*Download R 4.1.1 for Windows*”. Once the installer is downloaded, right click the file and run it as administrator. Follow the instructions shown during the setup. For the Startup options, you need to accept defaults. Installing the software will take a few minutes. Once the setup is completed, click on “Finish”.

Step 2. Installing RStudio

To install the RStudio IDE, go to the following link:

<https://www.rstudio.com/products/rstudio/>

and choose “RStudio Desktop” option. Click on “Download RStudio Desktop” and then, click on “Download RStudio For Windows”. Once the installer is downloaded, right click the file and run it as administrator. Follow the instructions shown during the setup. Once the installation is completed, open RStudio. The window should be similar to the below screen shot.



Step 3. Get Familiar with RStudio

In order to get familiar with RStudio, watch the following videos:

1. [RStudio for the Total Beginner.](#)
2. [Getting started with RStudio.](#)

Step 4. Examples

Example 1. Hello World Program

```
> # We can use the print() function
> print("Hello World!")
[1] "Hello World!"
> # Quotes can be suppressed in the output
> print("Hello World!", quote = FALSE)
[1] Hello World!
> # If there are more than 1 item, we can concatenate using paste()
> print(paste("How","are","you?"))
[1] "How are you?"
```

You need to demo this to your lab professor.

Example 2. Take input from user

```
my.name <- readline(prompt="Enter name: ")
my.age <- readline(prompt="Enter age: ")
# convert character into integer
my.age <- as.integer(my.age)
print(paste("Hi,", my.name, "next year you will be", my.age+1, "years old."))
```

You need to demo this to your lab professor.

"The only way to learn a new programming language is by writing programs in it." - Dennis Ritchie