

Using Ruby and irb in CS 251¹

Spring 2015

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1 Overview

The last two homeworks will use the Ruby language. We recommend editing your files in emacs and using irb, which is Ruby's REPL. (If you prefer a different editor that has support for Ruby, that is fine.) This document describes basic installation and usage steps sufficient for doing your homework. Unlike when we used SML, we recommend running the REPL from a terminal (shell) window, *not* from within emacs. This is described below.

For installation purposes related to Tetris, there are some key facts:

- You need to have some version of Ruby $\geq 1.9.3$, *not* Ruby 1.8.
- You need to have a version of the Tk graphical toolkit.
- If you have emacs version 23 or higher, you should not need to configure it in any special way for using Ruby: opening a file with extension `.rb` should use Ruby mode.

Because this document describes installation for various operating systems, you do not need to read it all. Just find the section that is most convenient for you. But also notice the last two sections of this document, which have information relevant to all operating systems.

2 Linux

2.1 Using CS Linux Machines

- You do not need to install any software. However, an older version of ruby is currently the default on the CS Linux machines. To use a new version, you must **work on tempest via ssh or ssh -X** and do **one of** the following:
 - Use emacs to open the file `.bash_profile` in your home directory and edit it to add the following line:

```
export PATH=/home/cs251/$(uname -s).$(uname -m)/bin:$PATH
```
 - Use emacs to open the file `.bash_profile` in your home directory and edit it to add the following line:

¹Installation Instructions borrowed from University of Washington CSE 341

```
alias irb=/home/cs251/$(uname -s).$(uname -m)/bin/irb
alias ruby=/home/cs251/$(uname -s).$(uname -m)/bin/ruby
```

These two options both tell the shell where to find ruby, but will not take effect until you open a new terminal/shell. Try the file `.profile` or `.bashrc` if adding to `.profile` appears to have no effect.

- Open, edit, and save your Ruby file in emacs as usual.
- In a shell, `cd` to the directory where your Ruby file is (separating directories with forward slashes). *After* you are in the right directory, type `irb` to start the Ruby REPL.

2.2 Using Your Own Linux machine

Try running `irb ruby` in a shell. If it is not installed, use your package manager to install ruby.

3 Mac

Note: Running Tetris on a Mac is imperfect: the GUI may launch behind other windows, the button text in the GUI is poorly formatted and pressing the quit button may cause an exception. You can ignore these glitches that are due to poor Tk integration.

On Mac OS X 10.10 Yosemite

The built-in version of ruby should work properly. (If you have a later version installed with brew or macports, it won't necessarily work. Try running the built-in version with `/usr/bin/ruby` and `/usr/bin/irb` instead of just `ruby` or `irb`.)

- Open *Terminal* and use the `cd` command to switch to the directory where your Ruby file is (separating directories with forward slashes). *After* you are in the right directory, type `irb` to start the Ruby REPL.
- For a better terminal application, consider *iTerm2*, available free at <http://www.iterm2.com/>.
- (Only) If Tetris is not working, try installing ActiveTCL: <http://www.activestate.com/activetcl>

On Older Versions of Mac OS X

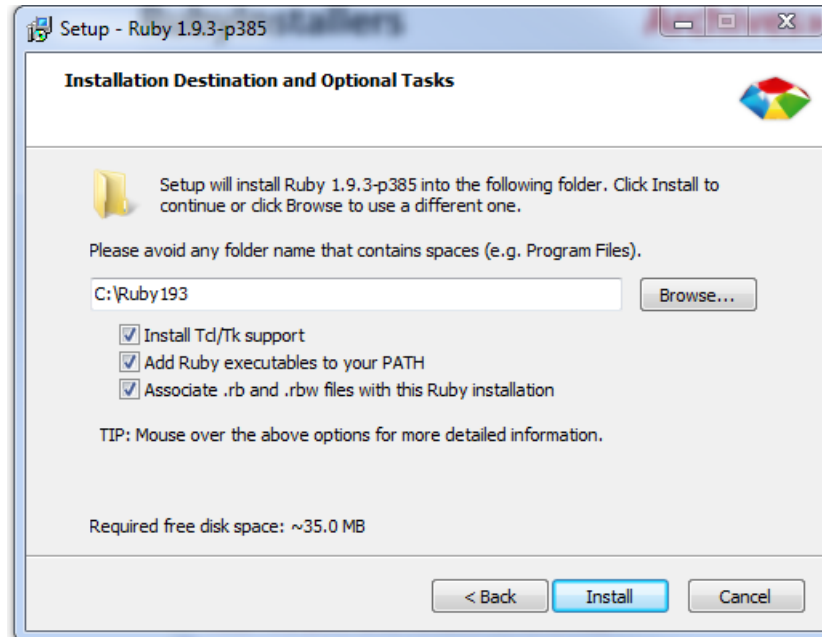
Even though ruby is built-in, getting it to play nicely with Tk for the Tetris game is very difficult. We recommend working on the Linux machines for Tetris.

4 Windows

4.1 Using Your Own Windows Machine

- If you did not install emacs earlier in the course, do so using the instructions for the SML portion of the course. Note you do not need SML mode — all you need to do is install emacs.

- Go to <http://www.rubyinstaller.org/>, click on the giant red ‘Download’ button, and click on the latest Ruby 1.9.3 RubyInstaller (at the time of writing, this is Ruby 1.9.3-p429). (Probably any Ruby \geq will work. Try the latest first.)
- Run the installer.
 - Accept the License.
 - **On the next screen, click all three boxes: Install Tcl/Tk support, Add Ruby executables to your PATH, and Associate .rb and .rbw files with this Ruby installation. Like this:**



- Then click Install.
- Create a Ruby file (e.g., by downloading the provided code and renaming it) wherever is convenient (e.g., where you have been storing your other homework assignments).
- Open emacs however is convenient, e.g., from the Start Menu.
- Open your Ruby file in emacs, by dragging it from an Explorer window onto emacs, or by C-x C-f and then entering the full path to the file, or by using the File menu. You can now edit and save the file as usual.
- In Windows, open a command shell by running `cmd` (a Windows shell). Use the `cd` command to switch to the directory where your Ruby file is (using the Windows shell you separate directories with backward slashes (`\`)). *After* you are in the right directory, type `irb` to start the Ruby REPL.

5 General Information on Using the REPL (or not)

- As described previously, run `irb` from the command line to start the REPL.
- To run the code in file `foo.rb`, do `load "foo.rb"` assuming the file is in the same directory where you started `irb`.

- As usual, it is least error-prone to restart the REPL after editing and resaving any files you are using. Reloading a file without restarting may work depending on what has changed.
- To quit, type `quit` or `exit` or *Control-d* (i.e., `d` while holding down the Control key). As usual in Ruby, there is more than one way to do things.
- You can cycle through previous input lines by using the up and down arrows.
- Unlike in SML, do *not* end a line of REPL input with a semicolon. This will *not* work because this indicates to the REPL exactly that you want to enter another expression before evaluating anything.

You can also run a Ruby program that is in file `foo.rb` by running `ruby "foo.rb"` from the shell command-line (the place where you ran `irb`, *not* from within `irb`). For this to be useful, your Ruby file should have some top-level expression like a call to a method outside of any class or method definition. Otherwise, “nothing will happen” since just defining methods has no effect until you use one of them.

On Windows and perhaps other operating systems, you can also just double-click on your `foo.rb` file to have the same effect as running `ruby foo.rb`. This approach may bring up another blank window, which you can ignore.

6 Main Links for Ruby Documentation, etc.

- The main Ruby home page is <http://www.ruby-lang.org/>.
- For documentation, you may find <http://ruby-doc.org/> as least as useful. See in particular the standard-library documentation at <http://ruby-doc.org/core-1.9.3/>.
- There are many excellent books on Ruby available, which you may find useful but not required for the material in this course. We particularly recommend *Programming Ruby 1.9: The Pragmatic Programmers' Guide* by Dave Thomas et al; see <http://pragprog.com/book/ruby3/programming-ruby-1-9>.