

Ruby Explorations 0

Mark Keane...CSI...UCD



This Week's Goals

1. To have all the software properly installed
...and running properly
2. To agree a standard build (sort of)
3. To have a (fairly) standard environment
4. Understand difference between ***ruby*** and ***irb***



The Course

Learning by Doing...

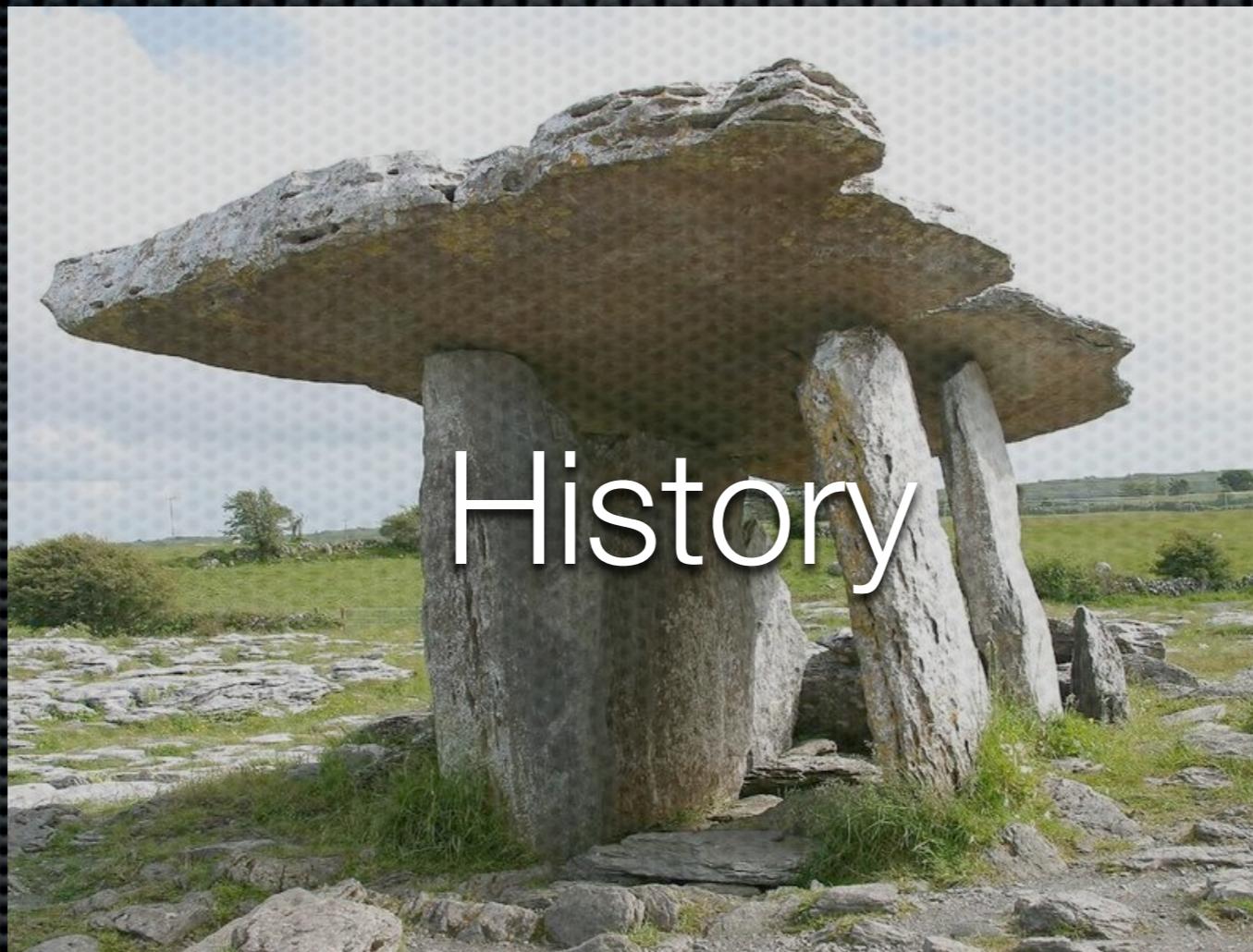
- Lecture (2 hrs, 12-2pm, Thursdays) with open laptop, in which practical will be posed
- Practical (1 hr, 2-3pm, Thursdays) with very open laptop
- Practical work should be finished by following week and submitted via moodle (do not fall behind)
- Practical is like a drop-in clinic; MTK and handsome pals are available for advice

The Exam Bit...

- Examined by coursework (40%) & class-exams (60%)
- **NB this is NEW, NO final written exam**
- Coursework is made up from weekly practicals (40%)
- Class-exams (3) will be carried out (20% x 3)
- ***Provisional*** plan is for these to be in:
 - Week 4: Oct 6th, 2-3pm
 - Week 8: Nov 3rd, 2-3pm
 - Week 11: Nov 24th, 2-3pm

A Word on Plagiarism

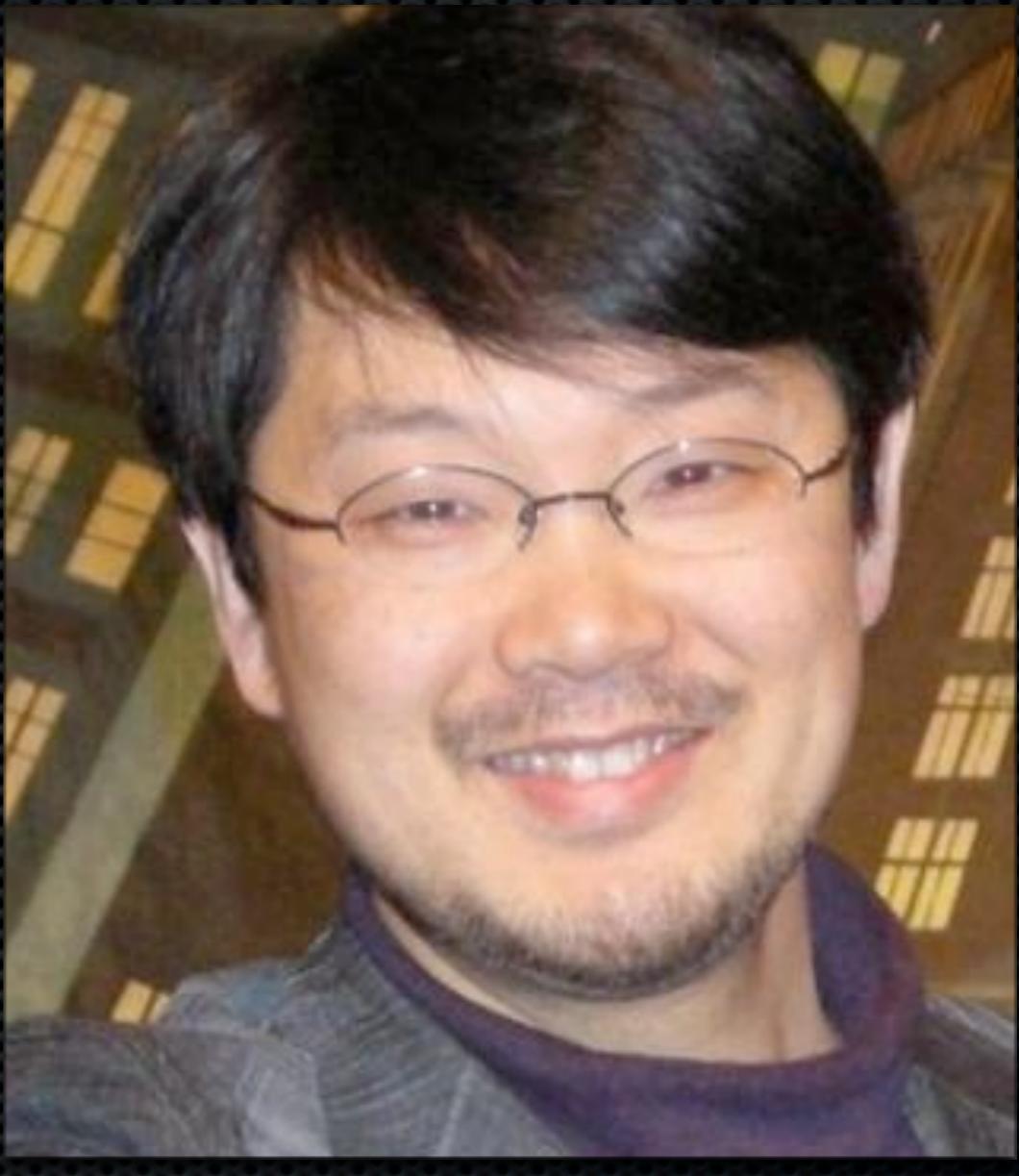
- Plagiarism is NOT an option
- Important to help each other and use the group for advice but that is not the same as copying
- Remember, copyier and copyee are treated equally
- Outcomes vary, from zeroing of assignments up to expulsion from course



History

Ruby History

- created by Yukihiro Matsumoto in 1993
- a language balancing functional and imperative programming
- Tubular Bells of programming...



Flanagan, D & Matsumoto, Y. (2008).
The Ruby Programming Language. O'Reilly.

Aside on Programming

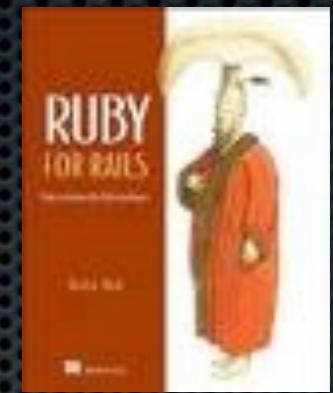
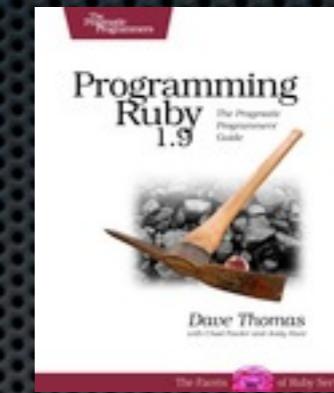
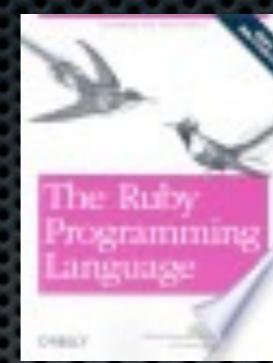
- imperative pg: computation is statements that change a program state; an algorithm with explicit steps or procedures (e.g. C, BASIC)
- declarative pg: logic of computation without flow of control, what the program should achieve not how it achieves it (e.g. Prolog)
- functional pg: computation as the evaluation of mathematical functions avoiding state and mutable data (e.g. Scheme, Lisp)

Ruby Precursors

- imperative languages were first (Fortran, Pascal, Basic, Algol, Ada, C)
- extended to have objects in OOP (**Smalltalk**-80, C++, Python, **Perl**, **Eiffel**); real-world analogy
- into the modern era with Java and Ruby...
- but, with another line from functional programming (many **LISP**-like features)

Installation Summary

Summary Ruby



- <http://www.ruby-lang.org/en/downloads/> for all
 - directions for Windows, MacOSX (bundled or use macports, nb XCode) and Linux (see Thomas , 2009, chapter 1)
- we will all use **Ruby 2.3.1**
- **basically**, use a text editor to write files, a cshell to run files and navigate directories (or ruby2.3.1 if multiples)
 - ▶ ruby finename.rb [runs the file called *filename*]
 - ▶ irb [gets you the interactive version]

Now Let's Do it in Steps...

Ruby Downloads (PC)

- <http://rubyforge.org/>
 - Please use 2.3.1 (for overall compatibility)
- <http://www.ruby-lang.org/en/downloads/>
 - General directions for 2.3.1
- <http://rubyinstaller.org/>
 - One-click installer for 2.3.1



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Downloads Documentation Libraries Community News Security About Ruby

Ruby is...

A dynamic, open source programming language with a focus on simplicity and productivity. It has an elegant syntax that is natural to read and easy to write.

Download Ruby

or [Read More...](#)

```
# Ruby knows what you
# mean, even if you
# want to do math on
# an entire Array
cities = %w[ London
              Oslo
              Paris
              Amsterdam
              Berlin ]
visited = %w[Berlin Oslo]

puts "I still need " +
      "to visit the " +
      "following cities:",
      cities - visited
```

RubyConf Taiwan 2015 Registration Online

RubyConf Taiwan 2015 will be held in Taipei, Taiwan on 11-12 September, 2015.

[Continue Reading...](#)

Posted by Mu-Fan Teng (@ryudoawaru) on 4 Aug 2015

Get Started, it's easy!

[Try Ruby! \(in your browser\)](#)
[Ruby in Twenty Minutes](#)
[Ruby from Other Languages](#)



The easy way to install Ruby on Windows

This is a **self-contained Windows-based installer** that includes the **Ruby language**, an execution environment, important **documentation**, and more.

[Download](#)[Add-ons](#)

Latest News

RubyInstaller 2.1.9, 2.2.5, and 2.3.1 released

Sorry it has taken so long to get these releases out. You can find links to download these versions in the [Downloads section](#) of this site or on [Bintray](#).

July 18, 2016 [Read full article](#)

RubyInstaller 2.0.0-p648, 2.1.8 and 2.2.4 released

These new releases of Ruby address a security issue ([CVE-2015-7551](#)). 2.1.8 and 2.2.4 also address some bugs and fixes. Upgrading to those versions is recommended. You can find the links to those archives in the download section.

February 04, 2016 [Read full article](#)

RubyInstaller 2.0.0-p645, 2.1.6 and 2.2.2 released

These new releases of Ruby address a security issue ([CVE-2015-1855](#)). 2.1.6 and 2.2.2 also address some bugs and fixes. Upgrading to those versions is recommended. You can find the

Extras

Online Ruby Programming Course

If you're new to Ruby, check out this online course from The Pragmatic Studio to learn all the fundamentals of object-oriented programming with Ruby.

Online Rails Programming Course

If you're looking to create Ruby on Rails web apps, you'll learn how to build a complete Rails 4 app step-by-step in this online course also from The Pragmatic Studio.



Ruby

A PROGRAMMER'S BEST FRIEND

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Download Ruby

Here you can get the latest Ruby distributions in your favorite flavor. The current stable version is 2.3.1. Please be sure to read [Ruby's License](#).

Ways of Installing Ruby

We have several tools on each major platform to install Ruby:

- On Linux/UNIX, you can use the package management system of your distribution or third-party tools (rbenv and RVM).
- On OS X machines, you can use third-party tools (rbenv and RVM).
- On Windows machines, you can use RubyInstaller.

See the [Installation](#) page for details on using package management systems or third-party tools.

Of course, you can also install Ruby from source on all major platforms.

Compiling Ruby — Source Code

Installing from the source code is a great solution for when you are comfortable enough with your platform and perhaps need specific settings for your environment. It's also a good solution in the event that there are no other premade packages for your platform.

See the [Installation](#) page for details on building Ruby from source. If you have an issue compiling Ruby, consider using one of the third party tools mentioned above. They may help you.

• Stable releases:

- [Ruby 2.3.1](#)
sha256:
b87c738cb2032bf4920fef8e3864dc5cf8eae9d89d8d523ce0236945c7
97dec
- [Ruby 2.2.5](#)
sha256:

Get Started, it's easy!

[Try Ruby! \(in your browser\)](#)
[Ruby in Twenty Minutes](#)
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[User Groups](#): Get in contact with Rubyists in your area.
[Weblogs](#): Read about what's happening right now in the Ruby community.

[Ruby Core](#): Help polish the rough edges of the latest Ruby.

[Issue Tracking](#): Report or help solve issues in Ruby.

Syndicate

[Recent News \(RSS\)](#)

Ruby Downloads (Mac)

- <http://www.ruby-lang.org/en/downloads/>
- Mac OSX Lions came with 1.8.7
- Mac OSX Yosemite came with 2.0.0
- **MUST use Ruby 2.3.1 (is last most stable...)**
- See Handout on details
- NB; RAILS maps differently onto different RUBY versions

Mammy, what have I done ?

Checking Versions

- Open a command-line window and check !

Last login: Tue Aug 28 15:13:36 on ttys000

Marks-MacBook-Pro:~ mkeane\$ ruby -v
different answers depending on your symlinks

Marks-MacBook-Pro:~ mkeane\$ ruby2.0 -v
ruby 2.0.0p481 (2013-06-27 revision 41674) [x86_64-darwin12]
*** if old version is still there ****

Marks-MacBook-Pro:~ mkeane\$ gem -v
2.5.1

Downloads (Gems)

- Ruby comes with libraries, called Ruby Gems
- A standard gem package will come with most installs
- Hence:
[Mouseking6-3:~] markkean\$ gem -v
2.5.1
- You can look at your collection of gems using *gem list*

*** LOCAL GEMS ***

abstract (1.0.0)
actionmailer (3.1.0, 3.0.1)
actionpack (3.1.0, 3.0.1)
activemodel (3.1.0, 3.0.1)
activerecord (3.1.0, 3.0.1, 2.3.3)
activeresource (3.1.0, 3.0.1)
activesupport (3.1.0, 3.0.1, 2.3.3)
addressable (2.2.6)
ansi (1.3.0)
archive-tar-minitar (0.5.2)
arel (2.2.1, 1.0.1)
bcrypt-ruby (3.0.1)
builder (3.0.0, 2.1.2)
bundler (1.0.18)
capistrano (2.9.0)
coffee-rails (3.1.1)
coffee-script (2.2.0)
coffee-script-source (1.1.2)
columnize (0.3.4)
distance_measures (0.0.6)
em-http-request (1.0.0)
em-socksify (0.1.0)
erubis (2.7.0, 2.6.6)
eventmachine (1.0.0.beta.4, 0.12.10)
execjs (1.2.9)
highline (1.6.2)
hike (1.2.1)
http_parser.rb (0.5.2)
i18n (0.6.0, 0.4.2)
jquery-rails (1.0.14)
json (1.6.1)
k_means (0.0.7)
linecache19 (0.5.12)
mail (2.3.0, 2.2.9)
mime-types (1.16)
minitest (2.6.0, 1.6.0)
multi_json (1.0.3)
net-scp (1.0.4)
net-sftp (2.0.5)
net-ssh (2.2.1)

defaults to
most recent

do this...

Marks-MacBook-Pro:~ mkeane\$ gem update
Updating installed gems
Updating actionmailer
ERROR: While executing gem ... (Gem::FilePermissionError)

You don't have write permissions into the /opt/local/lib/ruby1.9/gems/1.9.1 directory.

Marks-MacBook-Pro:~ mkeane\$ sudo gem update
To proceed, enter your password, or type Ctrl-C to abort.

Password:
Updating installed gems
Updating actionmailer
Successfully installed activesupport-3.2.8
Successfully installed activemodel-3.2.8
...
...

A World of Pain (Gems)

- Gems libraries may be stored in different places
- Mac OSX (unix) versions and gems may be stored in local directories or “higher” system applications dirs
- Sometimes, you load a gem, you list it but then when you try to use it says “FU, Gem does not exist...”
- Problem can often be gems stored in different places; can be very frustrating if occurs (avoid by clean installs)



will
cause
bugs

Geek Crap I: Search Paths

- Move along, there is nothing to see here....
- Ruby uses many environmental variables to store search paths and the like... under the bonnet

```
MacBook-Air-2:~ user$ ruby -e 'puts $LOAD_PATH'  
/opt/local/lib/ruby2.3/gems/2.3.0/gems/did_you_mean-1.0.0/lib  
/opt/local/lib/ruby2.3/site_ruby/2.3.0  
/opt/local/lib/ruby2.3/site_ruby/2.3.0/x86_64-darwin15  
/opt/local/lib/ruby2.3/site_ruby  
/opt/local/lib/ruby2.3/vendor_ruby/2.3.0  
/opt/local/lib/ruby2.3/vendor_ruby/2.3.0/x86_64-darwin15  
/opt/local/lib/ruby2.3/vendor_ruby  
/opt/local/lib/ruby2.3/2.3.0  
/opt/local/lib/ruby2.3/2.3.0/x86_64-darwin15
```

Geek Crap II: Search Paths

- BUT...if I check my other version of Ruby

```
Marks-MacBook-Pro:~ mkeane$ ruby1.8 -e 'puts $LOAD_PATH'  
/Library/Ruby/Site/1.8  
/Library/Ruby/Site/1.8/powerpc-darwin12.0  
/Library/Ruby/Site/1.8/universal-darwin12.0  
/Library/Ruby/Site  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/vendor_ruby/1.8  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/vendor_ruby/1.8/  
universal-darwin12.0  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/vendor_ruby  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/1.8  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/1.8/powerpc-darwin12.0  
/System/Library/Frameworks/Ruby.framework/Versions/1.8/usr/lib/ruby/1.8/universal-darwin12.0  
.
```

YOU...

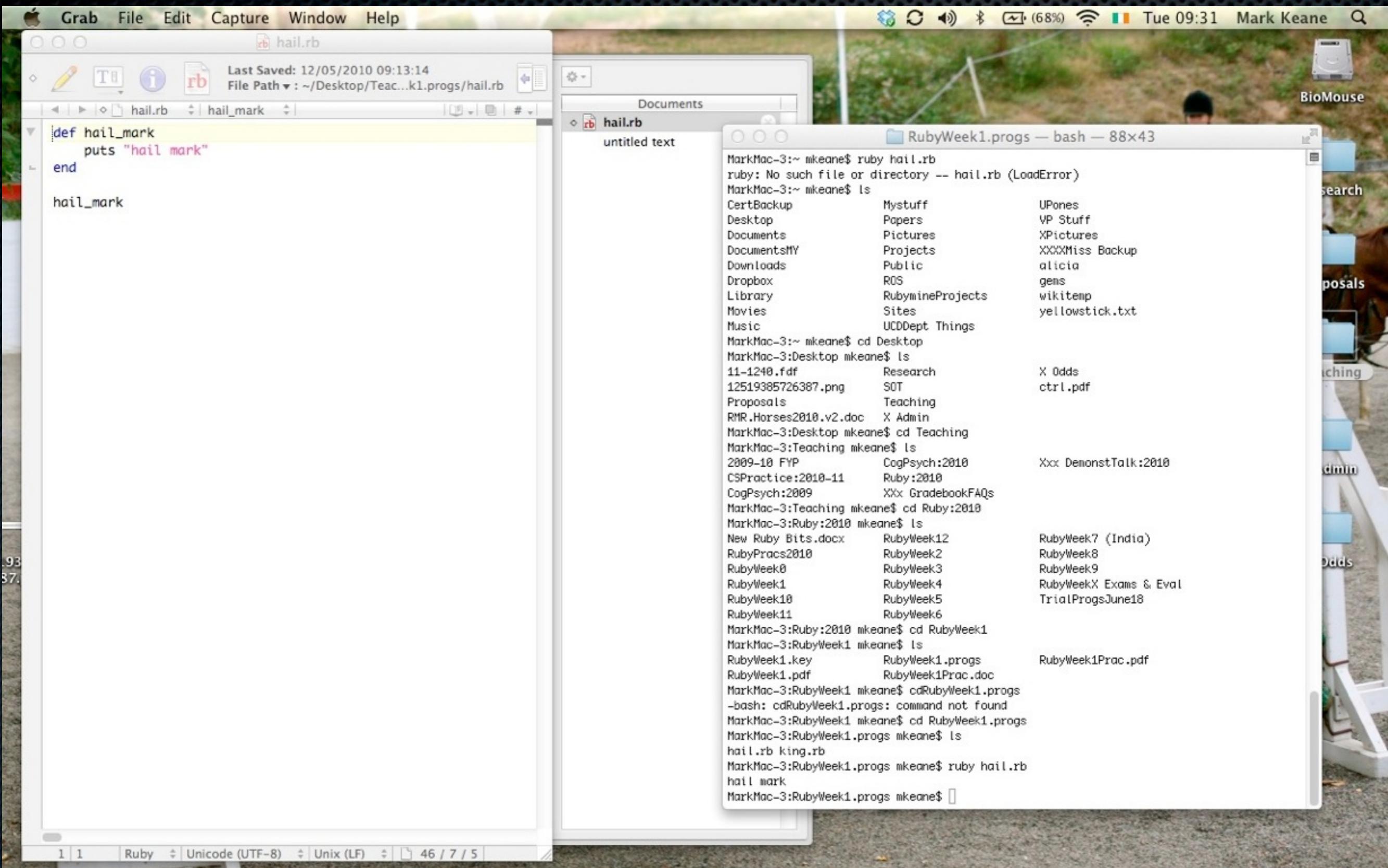


Are now ready to go...

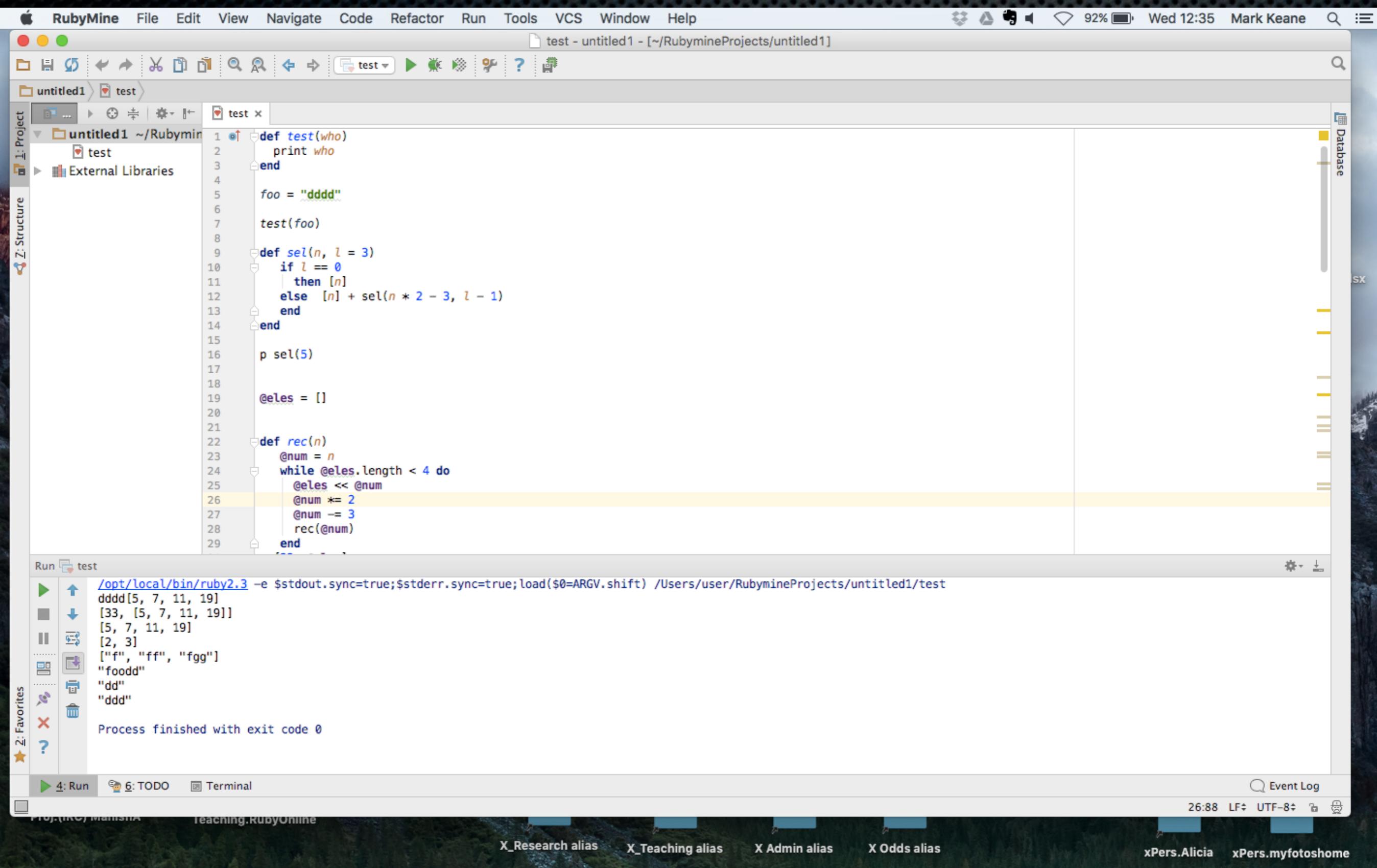
Set Up Your Environment

- We support the ?bear/bare? minimum:
 - Command-line window terminal
 - Text editor of your choice (e.g., Textwrangler, PC?)
- Fancier options exist:
 - Xcode, RubyMine for Macs
 - RDE Ruby IDE, RubyMine for PCs
- But, they are your own business; start with basics

My Old Environment



My Environment (fancier)



The screenshot shows the Rubymine IDE interface. The top menu bar includes RubyMine, File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, Help, and various system status icons. The title bar indicates the project is "test - untitled1 - [~/RubymineProjects/untitled1]".

The left sidebar contains the Project tree (untitled1, test, External Libraries) and Structure view (Z: Structure). The main editor window displays the following Ruby code:

```
1  def test(who)
2    print who
3  end
4
5  foo = "dddd"
6
7  test(foo)
8
9  def sel(n, l = 3)
10   if l == 0
11     then [n]
12   else [n] + sel(n * 2 - 3, l - 1)
13   end
14 end
15
16 p sel(5)
17
18
19 @eles = []
20
21 def rec(n)
22   @num = n
23   while @eles.length < 4 do
24     @eles << @num
25     @num *= 2
26     @num -= 3
27     rec(@num)
28   end
29
```

The code uses recursion to generate a sequence of numbers. The run tool window at the bottom shows the command run and the resulting output:

```
/opt/local/bin/ruby2.3 -e $stdout.sync=true;$stderr.sync=true;load($0=ARGV.shift) /Users/user/RubymineProjects/untitled1/test
dddd[5, 7, 11, 19]
[33, [5, 7, 11, 19]]
[5, 7, 11, 19]
[2, 3]
["f", "ff", "fgg"]
"foodd"
"dd"
"ddd"

Process finished with exit code 0
```

The bottom navigation bar includes tabs for Run (selected), TODO, Terminal, Event Log, and status indicators for Project (IRC), Teaching.RubyOnline, X_Research alias, X_Teaching alias, X Admin alias, X Odds alias, xPers.Alicia, and xPers.myphotoshome.



Now, lets use it !

Open a file...

- Write this in a simple text file, called ***hail.rb***:

```
def hail_mark  
  puts "hail mark"  
end
```

hail_mark

hail.rb

Open your Terminal...

- Move to the directory in which the file sits...

```
markkean$ cd RubyWeek1
```

markkean\$ ls	RubyWeek1.progs	RubyWeek1Prac.pdf
RubyWeek1.key	RubyWeek1Prac.doc	
RubyWeek1.pdf		

```
markkean$ cd RubyWeek1.progs
```

```
markkean$ ls
```



```
hail.rb  king.rb
```

```
markkean$ more hail.rb
```



```
def hail_mark
    puts "hail mark"
end
```

```
hail_mark
```

```
markkean$ ruby hail.rb
```



```
hail mark
```

```
markkean$
```

Well done !



Final Word

Running Ruby Two Ways

- Ruby can be used in two ways...

1. Invoke the ruby interpreter with **ruby** command
2. Invoke a ruby shell with **irb** command, to be interactive

- Running a file with **ruby** (we have just seen)

```
markkean$ ruby hail.rb
```

filename

```
hail mark
```

output when file is executed by ruby

- Interactively, you use **irb** and the type in expressions (see next page)

Running Ruby The 2nd Way

- Call the ruby shell using **irb**:

```
markkean$ irb
>> "foo"
=> "foo"
>> puts "hail mark"
hail mark
=> nil
>> def hail_mark
>> puts "hail mark"
>> end
=> nil
>> hail_mark
hail mark
=> nil
>> quit
markkean$
```

every expression returns a value

awkward way to define a method

after a method does its thing, it returns nil



©Getty Images/Jonstan Fernstrom

Resources |: <http://www.ruby-doc.org/core/>

The screenshot shows a web browser window with the title "RDoc Documentation [ruby-doc.org]" at the top. The address bar contains the URL "http://www.ruby-doc.org/core/". Below the address bar, there is a navigation bar with links to "Most Visited", "Finance", "Home&Abroad", "Popular", "Wikis", "Hacking", "Health&Exer", "Net&Functions", "Wikis", "Latest Headlines", and "InstallUniversity.co...". The main content area displays the RDoc documentation for the "String" class. On the left, a sidebar lists files such as array.c, bignum.c, class.c, compar.c, compile.c, complex.c, cont.c, debug.c, and dir.c. The central part of the page shows the class hierarchy and methods for the String class. The "Methods" section on the right lists various methods like !~, %, %~, %Bignum, %String, %Float, &, &Bignum, &NilClass, &FalseClass, etc. Below this, the "String" class is detailed, mentioning it holds and manipulates bytes, and provides examples of aliasing issues and methods like #[]=.

RDoc Documentation [ruby-doc.org]

http://www.ruby-doc.org/core/

Most Visited Finance Home&Abroad Popular Wikis Hacking Health&Exer Net&Functions Wikis Latest Headlines InstallUniversity.co...

Collapso RubyForge: Ruby Installer for ... RDoc Documentation [ruby-do...]

Files

array.c
bignum.c
class.c
compar.c
compile.c
complex.c
cont.c
debug.c
dir.c

Signal
SignalException
StandardError
StopIteration
String
Struct
Symbol
SyntaxError
SystemCallError

Methods

!~ (Object)
% (Fixnum)
% (Numeric)
% (Bignum)
% (String)
% (Float)
& (Bignum)
& (NilClass)
& (FalseClass)

Class **String**

In: string.c

Ruby version:

A `String` object holds and manipulates an arbitrary sequence of `bytes`, typically representing characters. `String` objects may be created using `string::new` or as literals.

Because of aliasing issues, users of strings should be aware of the methods that modify the contents of a `String` object. Typically, methods with names ending in ``!'' modify their receiver, while those without a ``!'' return a `new String`. However, there are exceptions, such as `String#[]=`.

Methods

% * + << <=> == === =~ [] []= ascii_only? bytes bytesize capitalize capitalize!casecmp center chars chomp chomp! chop chop! chr clear codepoints concat count crypt delete delete! downcase downcase! dump each_byte each_char each_codepoint each_line empty? encode encode! encoding end_with? eql? force_encoding getbyte gsub gsub! hash hex include? index initialize_copy insert inspect intern length lines ljust lstrip lstrip! match new next next! oct ord partition replace reverse reverse! rindex rjust rpartition rstrip rstrip! scan setbyte size slice slice! split squeeze squeeze! start_with? strip strip! sub sub! succ succ! sum swapcase swapcase! to_c to_f to_i to_r to_s to_str to_sym tr! tr_s tr_s! try_convert unpack upcase upcase! upto valid_encoding?

Included Modules

Comparable

Resources II: <http://www.ruby-lang.org/>

The screenshot shows a web browser window with three tabs open: "Ruby Programming Langua", "XE.com - EUR/GBP Chart", and "RubyInstaller for Windows". The main content area displays the Ruby website at <https://www.ruby-lang.org/en/>. The page features the Ruby logo and the tagline "A PROGRAMMER'S BEST FRIEND". A navigation bar includes links for Downloads, Documentation, Libraries, Community, News, Security, and About Ruby. Below the navigation bar, a section titled "Ruby is..." describes Ruby as a dynamic, open source programming language with a focus on simplicity and productivity. It includes a "Download Ruby" button and a link to "Read More...". To the right, a code snippet illustrates Ruby's syntax:

```
# Ruby knows what you
# mean, even if you
# want to do math on
# an entire Array
cities = %w[ London
              Oslo
              Paris
              Amsterdam
              Berlin ]
visited = %w[Berlin Oslo]

puts "I still need " +
      "to visit the " +
      "following cities:",
      cities - visited
```

At the bottom, there are links for "RubyConf Taiwan 2015 Registration Online" and "Get Started, it's easy!". The browser interface includes standard navigation buttons (back, forward, search) and a bookmark bar with various links like Home, Home&Abroad, Finance, Google Scholar, etc.

Resources III: <https://csimoodle.ucd.ie/moodle/>

Google CSIMOODLE.UCD.IE Mark 

https://csimoodle.ucd.ie/moodle/ Apps Home Home&Abroad dope-jokes MarksA Finance Net&Functions Google Scholar Health&Exer Popular Hacking Other Bookmarks You are logged in as Mark Keane (Log out)

Administration UCD CSI My Courses

CSIMOODLE.UCD.IE

getAnswer() {return 42;}

Course categories

▼ Collapse all

- ▷ **LEVEL 1 (22)**
- ▷ **LEVEL 2 (19)**
- ▷ **LEVEL 3 (48)**
- ▷ **LEVEL 4 (63)**
- ▷ **LEVEL 5**
- ▷ **MSc (16)**
- ▷ **Sri Lanka (16)**
- ▼ **Other (11)**
 - ▷ **UC Science & Engineering Summer School 2015 @ UCD (6)**
 - ▷ **Archive (177)**

Search courses: Go

What is CSIMoodle?

CSI Moodle is a Virtual Learning Environment (VLE) used by the UCD School of Computer Science and Informatics. You will find news, notes, details of and solutions to assignments and much more.

... Login to CSI Moodle ...

Calendar

August 2015

Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

My courses

 **COMP10130 Computer Science in Practice (2015)**

Lecturer: Mark Keane

Navigation

CSI News

Resources III: <https://csimoodle.ucd.ie/moodle/>

CSIMOODLE.UCD.IE

You are logged in as Mark Keane (Log out)

Administration

UCD CSI My Courses

Course categories

- ▷ LEVEL 1 (22) **click !**
- ▷ LEVEL 2 (19)
- ▷ LEVEL 3 (48)
- ▷ LEVEL 4 (63)
- ▷ LEVEL 5
- ▷ MSc (16)
- ▷ Sri Lanka (16)
- ▼ Other (11)
 - ▷ UC Science & Engineering Summer School 2015 @ UCD (6)
- ▷ Archive (177)

getAnswer() {return 42;}

Collapsible content area

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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Search courses: Go

My courses

COMP10130 Computer Science in Practice (2015)

Navigation

Resources III: <https://csmoodle.ucd.ie/moodle/>

The screenshot shows a web browser window with the following details:

- Address Bar:** https://csmoodle.ucd.ie/moodle/
- Tab Bar:** CSMOODLE.UCD.IE, UCD Connect, 2016/17 COMP41100 Expl, Editing File, Mark.
- Toolbar:** Back, Forward, Refresh, Home, Stop, Reload, Bookmarks, History, etc.
- Menu Bar:** Apps, Home, Current+Crucial, Home&Abroad, Finance, Net&Functions, Google Scholar, Health&Exer, Popular, Other Bookmarks.
- User Status:** You are not logged in. (Log in)
- Header:** UCD, CS, My Courses.
- Main Content:**
 - CSMOODLE.UCD.IE** (Large Title)
 - getAnswer() {return 42;}
 - Search courses: Go
 - Courses**
 - LEVEL 1**
 - COMP10130 Computer Science in Practice 2016
 - COMP10040 Introduction to Computer Architecture 2015-2016
 - COMP10020 Introduction to Programming II 2015-2016
 - COMP10120 Computer Programming II
 - COMP10060 Computer Science for Engineers 2016
 - COMP10010 Introduction to Programming I
 - COMP10070 Formal Foundations
 - COMP10110 Computer Programming I
 - Collapsible All Courses:** ▾ Collapse all
- Right Sidebar:**
 - What is CS Moodle?** CS Moodle is a Virtual Learning Environment (VLE) used by the UCD School of Computer Science. You will find news, notes, details of and solutions to assignments and much more.
... Login to CS Moodle ...
 - CS Plagiarism Policy** It is very important that you are familiar with the School of Computer Science Plagiarism Policy and Procedures. The policy and procedures document is available here:
https://csiweb.ucd.ie/files/csi-plagiarism-policy_august2015.pdf
 - Calendar** September 2016

Resources III: <https://csmoodle.ucd.ie/moodle/>

The screenshot shows a web browser window with several tabs open. The active tab is 'https://csmoodle.ucd.ie/moodle/'. The page displays a list of courses under 'LEVEL 4'. A blue speech bubble with the text 'click !' is overlaid on the page, pointing towards the first course in the list.

- COMP30220 Distributed Systems
2014-2015
- COMP30440 Software Engineering Project 2014
- [View more](#)
- LEVEL 4**
 - COMP30170 Final Year Project
2016-2017
 - COMP47240 Using Text Analytics to Discover Meaning - 2016
 - COMP41100 Exploring Programming in Ruby - 2016**
 - COMP47490 Machine Learning
2016/2017
 - COMP47360 Research Practicum (MSc Conv)
 - COMP40730 High Performance Computing 2016
 - COMP30490 / COMP41440 Collective Intelligence 2015-2016
 - COMP40630 Human Computer Interaction 2015-2016
 - COMP40320 Recommender Systems 2015-2016
 - COMP40680 Introduction to Sensor Systems (2016)
 - COMP41680 Data Science in Python

Resources III: <https://csimoodle.ucd.ie/moodle/>

CSIMOODLE.UCD.IE: Login to the site

ucd.ie https://csimoodle.ucd.ie/moodle/login/index.php Google

Most Visited ▾ Finance ▾ Home&Abroad ▾ Popular ▾ Wikis ▾ Hacking ▾ Health&Exer ▾ Net&Functions ▾ Wikis ▾ Latest Headlines ▾ InstallUniversity.co... Collapso RubyForge: Ruby Installer for ... CSIMOODLE.UCD.IE: Login to th... +

You are not logged in. ([Login](#))

English (en)

CSIMOODLE.UCD.IE

CSIMOODLE ► Login to the site

Returning to this web site?

Login here using your UCD Connect username and password
(Cookies must be enabled in your browser) [?](#)

Username Password

Some courses may allow guest access

Forgotten your username or password?

You are not logged in. ([Login](#))

Enrollment Key:
2016stilly

Resources III: That's a Bingo!

The screenshot shows a web browser window with several tabs open. The active tab displays a Moodle course page for "COMP41100 Exploring Programming in Ruby - 2016". The page includes a navigation bar with links like "UCD", "CS", and "My Courses". It features a large title, a breadcrumb trail ("Home > LEVEL 4 > COMP41100-2016"), and a "Turn editing on" button. On the right side, there are three sidebar boxes: "Search forums", "Latest announcements", and "Upcoming events". Below the main content, there is a section for "Recent activity" and a "Navigation" menu.

Course: COMP41100 Exploring Programming in Ruby - 2016

https://csmoodle.ucd.ie/moodle/course/view.php?id=503

You are logged in as Mark Keane (Log out)

Administration

UCD CS My Courses

COMP41100 Exploring Programming in Ruby - 2016

Home > LEVEL 4 > COMP41100-2016

Turn editing on

General

- News forum
- Class Chat

12 September - 18 September

12 September - 18 September

The plan for this first week is really just to get the software installed and get us all on the same page with respect to a basic level environment to use. This is the main goal for the week. Next week I will assume all of this is done.

- Lect 1: Installation Stuff 6.1MB
- Lect 1: Installation Stuff (bw) 3.1MB
- Handout: Ruby Cheat
- Handout: CSI Plagiarism
- Handout: UCD Plagiarism

Search forums

Advanced search

Latest announcements

Add a new topic...

(No news has been posted yet)

Upcoming events

There are no upcoming events

Go to calendar...

New event...

Recent activity

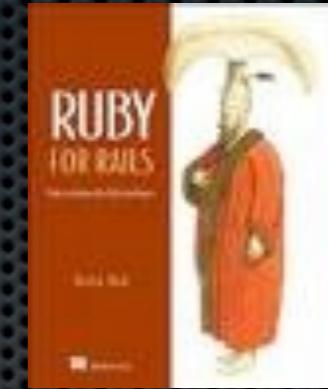
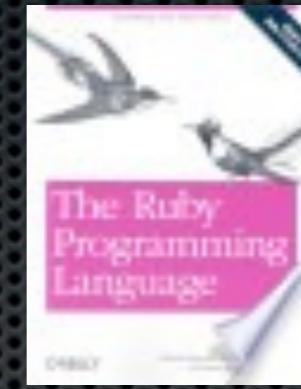
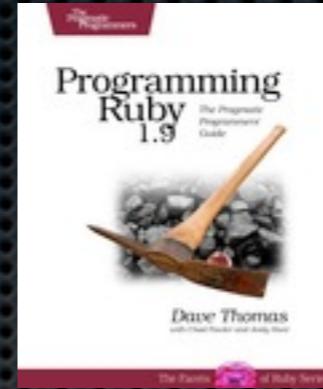
Activity since Sunday, 4 September 2016, 12:28 PM

Full report of recent activity...

No recent activity

Navigation

Books



Thomas, D., Fowler, C. & Hunt, A. (2009).
Programming Ruby 1.9. Pragmatic Bookshelf.

Flanagan, D & Matsumoto, Y. (2008).
The Ruby Programming Language. O'Reilly.

mainly for reference !

Black, D.A. (2006). *Ruby for Rails*. Manning.

My Ruby: August 2016

- Ruby 2.3.1 (p112)
- Gem 2.5.1 (see list)
- irb 0.9.6

```
mkeane$ gem list
*** LOCAL GEMS ***
abstract (1.0.0)
actionmailer (3.2.8, 3.1.0, 3.0.1)
actionpack (3.2.8, 3.1.0, 3.0.1)
activemodel (3.2.8, 3.1.0, 3.0.1)
activerecord (3.2.8, 3.1.0, 3.0.1, 2.3.3)
activeresource (3.2.8, 3.1.0, 3.0.1)
activesupport (3.2.8, 3.1.0, 3.0.1, 2.3.3)
addressable (2.3.2, 2.2.6)
ansi (1.4.3, 1.3.0)
archive-tar-minitar (0.5.2)
arel (3.0.2, 2.2.1, 1.0.1)
bcrypt-ruby (3.0.1)
builder (3.0.0, 2.1.2)
bundler (1.1.5, 1.0.18)
capistrano (2.13.3, 2.9.0)
coffee-rails (3.2.2, 3.1.1)
coffee-script (2.2.0)
coffee-script-source (1.3.3, 1.1.2)
columnize (0.3.6, 0.3.4)
distance_measures (0.0.6)
xecjs (1.4.0, 1.2.9)
highline (1.6.14, 1.6.2)
hike (1.2.1)
http_parser.rb (0.5.2)
i18n (0.6.0, 0.4.2)
journey (1.0.4)
json (1.6.1)
k_means (0.0.7)
linecache19 (0.5.12)
mail (2.4.4, 2.3.0, 2.2.9)
mime-types (1.19, 1.16)
minitest (3.3.0, 2.6.0, 1.6.0)
multi_json (1.3.6, 1.0.3)
net-scp (1.0.4)
net-sftp (2.0.5)
net-ssh (2.5.2, 2.2.1)
net-ssh-gateway (1.1.0)
nokogiri (1.5.0)
polyglot (0.3.3, 0.3.2, 0.3.1)
rack (1.4.1, 1.3.4, 1.3.3, 1.2.1)
rack-cache (1.2, 1.1, 1.0.3)
rack-mount (0.8.3, 0.6.13)
rack-ssl (1.3.2)
rack-test (0.6.1, 0.5.6)
rails (3.2.8, 3.1.0, 3.0.1)
railties (3.2.8, 3.1.0, 3.0.1)
rake (0.9.2.2, 0.9.2, 0.8.7)
rdoc (3.12, 3.10, 3.9.4, 2.5.8)
ruby-debug-base19 (0.11.25,
0.11.25.jb2)
ruby-debug-ide (0.4.16)
ruby_core_source (0.1.5)
sass (3.2.1, 3.1.10)
sass-rails (3.2.5, 3.1.4)
sprockets (2.1.3, 2.0.2, 2.0.0)
sqlite3 (1.3.4)
sqlite3-ruby (1.3.3, 1.3.2)
thor (0.16.0, 0.14.6, 0.14.4)
tilt (1.3.3)
treetop (1.4.10, 1.4.8)
turn (0.9.6, 0.8.3)
tzinfo (0.3.33, 0.3.30, 0.3.29, 0.3.23)
uglifier (1.2.7, 1.0.3)
```