

# The Ruby Masterclass

## Contents:

### **SECTION 1: Getting Started**

1. Introduction to Ruby.
  - About Dynamically Typed Nature.
  - About Interpreted Nature.
  - Pure Object Oriented Nature.
  - Comparison with C.
  - A bit about Ruby vs. Perl vs. Python vs. C++ and their similarities.
  - Philosophy.
  - introducing ruby-lang.org.
2. Installation of the latest version of Ruby on GNU/Linux, Windows and Android:
  - Arch / Arch Based systems, Fedora / CentOS / OpenSUSE systems, Debian / Debian based systems.
  - Installation of Ruby on Windows based systems – with Devkit.
  - Running Ruby on Android with Termux.

### **SECTION 2: Introduction to Standard Output and Interactive Ruby (REPL)**

1. Printing A simple 'Hello World' to the standard output with ``puts`` method.
2. Introducing the ``p`` method.
3. Introducing the ``print`` and ``printf`` and ``sprintf`` method in short.
4. Introduction to basic loops: times and while loop.

### **SECTION 3: Intro to Open Source Atom Editor**

1. Customizing the editor.
2. Installing atom runner.
3. Using Atom runner and atom for convenience.

### **SECTION 4: Familiarize Yourself with Ruby**

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2. Intro to variables:
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  - local variables
  - global variables.
3. Intro to constants.
4. Intro to object methods:
  - the ``methods`` method.
  - the ``class`` method.
  - Intro to method chaining.
  - Intro to syntactical sugar / syntactic shorthand.
5. Intro to comments:
  - Intro to single line comments.
  - Intro to multi-line comments.
6. A brief intro to String objects.

7. Intro to the gets method.
8. Intro to the tap method on objects.
9. Intro to the then method on objects.
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## **SECTION 5: Basic Arithmetic I**

1. Intro to Integer class and Float class.
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4. `odd?`, `even?` methods.
5. Integer / Float to String, String to Integer / Float conversion.
6. More methods on Float class: truncate, to\_i, round, next\_float, ceil, floor, zero?
7. The nil? method on objects.
8. The object\_id methods on objects.
9. The is\_a?, kind\_of and === methods.
10. The Spaceship operator (<=>).
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13. Quiz: Celsius to Fahrenheit converter.

## **SECTION 6: Boolean**

[We will be using String and Integer / Float class for demonstration.]

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4. Lesser Than Operator (<)
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9. The respond\_to? Method.
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## **SECTION 7: Strings I**

1. Creating strings: ", ' ", %q(), %Q(), %// syntax.
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4. The \* method.
5. Using the ==, ===, eql? Methods
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7. Using the upcase, downcase, capitalize and swapcase methods.
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9. String concatenation:
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  - concat method.
  - Shovel operator (<<).

- Efficient practices.

10. The empty? Method on a string object.
11. Extract character(s) from string using Bracket Syntax [].
12. Intro to mutation of string objects.
13. The clear and replace methods.
14. The slice method with various arguments.
15. Introduction to bang methods on string.
16. Intro to chomp, chop, strip, lstrip, rstrip and their complementary bang methods.
17. Intro to index, rindex methods.
18. Intro to squeeze, squeeze! Methods.
19. The include? method.
20. Quiz: Palindrome in least SLOC.

## **SECTION 8: Methods I**

1. Introduction to the def keyword.
2. Introduction to the complementary define\_method keyword.
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4. Parameters and arguments.
5. More on returning booleans.
6. Calling a method from another method.
7. Challenge: Adding binary numbers in method!
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## **SECTION 9: Conditions, Eager Operators and Short-Circuit Operators**

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4. Intro to if, elsif, and nested if conditions.
5. The unless keyword.
6. The &&, &, and Operators.
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- Alphabetical Ranges.
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- last and end methods.
- 2. The size, count methods.
- 3. min, max, minmax methods.
- 4. min\_by, max\_by, minmax\_by methods.
- 5. The include? method.
- 6. The cover? method.
- 7. The Kernel.rand / rand method.
- 8. The exclude\_end? method.
- 9. The each, map, collect, reduce, inject methods.
- 10. Quiz: Converting a Range of Hexadecimal numbers to decimal. (1 line).
- 11. The partition and group\_by methods.

### **SECTION 13: Accessing ruby-doc.org, apidock.com for online documentation.**

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3. Creating an Array with Array.new
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5. The size, length, and count methods.
6. Accessing Array Items with Bracket Syntax.
7. Using the slice method.
8. The index, and rindex methods.
9. Finding array elements with the find, and select methods.
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11. The reverse method.
12. The push, append, concat, += and the Shovel Operator (<<).
13. The pop, delete, delete\_at methods.
14. shift and unshift Methods.
15. Accessing array elements with fetch and at methods.
16. Overwrite values with the bracket syntax.
17. The first, and last methods.
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19. The Spaceship (<=>) operator.
20. sort method with <=> operators.
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2. The inject / reduce method for one liners!
3. The sum method.

4. The clone and dup method.
5. The flat\_map method.
6. The clear method.
7. The permutation and combination methods.
8. The select!, reject, reject!, drop, drop\_while Methods
9. the find, any?, all? Methods.
10. Quiz: Make our custom select\_index method.
11. The shuffle, shuffle! Methods.
12. The sample method.
13. The rotate method.
14. The empty? Method.
15. The cycle method.
16. The each\_with\_object method
17. The compact, and compact! Methods.
18. Quiz: Make our custom compact! Method.

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2. The map / collect, map! / collect! method for one liners!
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4. The freeze method.
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2. Usage of Symbols.
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4. The store method.
5. The merge and merge! methods.
6. The clear method.
7. The length and empty? methods
8. The keys and values methods.
9. The each method for iteration.
10. The flatten method, and conversion of Hash to Array and vice versa.
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13. The default\_proc method on a Hash.
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6. The block\_given? method.
7. {} vs. do end block.
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  - knowing the owner of a method.
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12. Quiz: Creating our own modified map + inject iterator.

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3. Reading Linux's /dev/urandom for a custom random generator.
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7. Intro to blockdev?, chardev?, symlink? methods.
8. Loading gems into Ruby:
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9. Introduction to the standard library.
10. Using the prime gem from the standard library.
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13. Intro to [www.rubygems.org](http://www.rubygems.org)

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3. Performance comparison: String Concatenation: +=, concat, and << methods.
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3. Blinking / underlining texts and many more.
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9. Looking at the SimpleDelegator class and patching \$stdout object.
10. Intro to 'io/console' gem from the standard library:
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