

Ruby for Beginner

A Programmer's Best Friend

Speaker:
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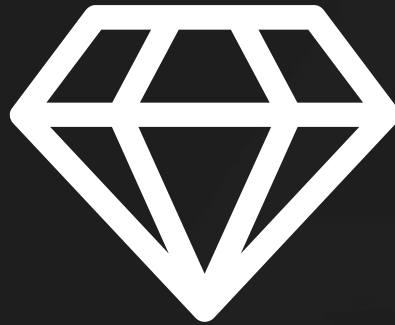
t.me



/GNUlinuxIndonesia /VimID
/JekyllID /ArchLinuxID
/dotfiles_id /ruby_id



bandithijo



- **2017**
Agung Setiawan
IDRails.com
Online Course
- **2019**
VirtualSpirit
Technology
Malaysia
Junior Backend
Ruby on Rails
Developer

Introduction to Ruby

Ruby for Beginner
A Programmer's Best Friend

> Sedikit tentang Ruby

:creator ⇒ Yukihiro “Matz” Matsumoto

:inspired ⇒ [Perl, Smalltalk, Eiffel, Ada, Lisp]

:public_release ⇒ 1995

Matz.said("trying to make Ruby natural, not simple")

_.append("Ruby is simple in appearance,
but is very complex inside,
just like our human body.")

:mass_acceptance ⇒ 2006 < DHH.create(
David Heinemeier Hansson,
Ruby on Rails,
Basecamp, 2003)

Source: About Ruby - <http://www.ruby-lang.org/en/about/>

世界が Ruby を 愛する理由

まつもと ゆきひろ 氏 ネットワーク応用通信研究所 特別研究員

Matz

> Is Ruby Dead Programming Language?

We moved away
from Ruby.
It's dying language...
and it has scalability
problem.

Let's host our projects on
GitHub & **GitLab**, use **Stripe** as
our payment processor, crowdfund
with **KickStarter**, and
livestream on **Twitch**. Also,
write about our industry and
programming on **dev.to**

Source: Nate Hopkins @hopsoft - <https://twitter.com/hopsoft/status/1169706322851328000>

> Is Ruby Dead Programming Language?

```
success_stories("Ruby")
```

```
⇒ {
```

```
Simulations: [Nasa, Motorola, etc.]
```

```
3D_Modeling: [Google Scketchup, etc.]
```

```
Robotics : [Morpha Project (Siemens), etc.]
```

```
Security : [Metasploit Framework, etc.]
```

```
Web Apps : [Basecamp, GitHub, GitLab, etc.]
```

```
etc. : [...] }
```

Source: Ruby Lang Success Stories - <http://www.ruby-lang.org/en/documentation/success-stories/>

> Is Ruby Dead Programming Language?

`Ruby.who("INDONESIA").value`

⇒ [Bukalapak, Cookpad Indonesia, Midtrans, Quipper, Vidio, HIJUP, Alodokter, Apisentris, BBM, BelanjaQu, Binary Academy, Dropsuite, Forstok, GO-JEK, Jualo, Jurnal, Karir.com, KlikDokter, KMK Online, Mekari, Mitrais, Peentar, Qontak, Sejasa.com, Sleekr, Sribulancer, Starqle, Virkea, Wego, WGS, etc...]

Source: :id_ruby - Komunitas Ruby Indonesia - <https://ruby.id>

> Is Ruby Dead Programming Language?

```
Language::Ruby.is_dead(  
  "Ruby is alive and thinking about next 25 years"  
  "dev.to/teaglebuilt/is-ruby-dead-17em"  
  "hackernoon.com/the-state-of-ruby-2019-is-it-dying"  
  "GitHub Blog - Upgrading GitHub to Ruby 2.7"  
  "...")  
⇒ false
```

> Is Ruby Dead Programming Language?

```
Framework::Rails.is_dead(  
  "similartech.com/technologies/ruby-on-rails"  
  "similartech.com/categories/framework"  
  "hackernoon.com/is-ruby-on-rails-dead-in-2019"  
  "dockyard.com/blog/ruby-on-rails-in-2020"  
  "Is Ruby on Rails dying: Myth or Reality?"  
  "...")  
⇒ false
```

> Is Ruby Dead Programming Language?

```
Language::Ruby.is_dead(  
  "Ruby is dead. (rubyisdead.science)"  
⇒ false!
```

```
@jmcharnes.said("isrubydead.com")  
⇒ NO
```

Just because Ruby is not popular anymore,
it doesn't mean Ruby is dead, right?

> Kenapa Memilih Ruby?

Learning::Ruby.is_worth?(:me).value

⇒ {

a: "Membantu menyederhanakan kerumitan"

b: "Membantu menerjemahkan ide/solusi, menjadi sebuah script atau program"

c: "Sintaks yang mudah dipahami"

d: "Ketersediaan library (gem) yang lengkap"

e: "Ketersediaan dokumentasi API yang lengkap"

f: "Dukungan komunitas yang solid"

g: "Open source"

h: "Digunakan oleh Organisasi/Company Besar"

i: "..."

}

> Kenapa Memilih Ruby?

```
PracticalThing::Ruby.can_do(:you)
```

```
⇒ {
```

```
a: "Full-stack web development"
```

```
b: "Web scraping & crawling"
```

```
c: "Static website generators"
```

```
d: "Automation, Backup, & DevOps tools"
```

```
e: "Build your own servers"
```

```
f: "Parsing data, cleaning & filtering"
```

```
g: "API clients (like Twitter's or GitHub's)"
```

```
h: "Report generators (PDF, HTML, CSV, SpreadSheet)"
```

```
i: "Command-line tools"
```

```
j: "Games (Ruby2D, etc.)"
```

```
k: "Data Science"
```

```
l: "Machine Learning & AI"
```

```
}
```

Source: RubyGuide - Jesus Castello - <https://www.rubyguides.com/2019/11/what-can-you-do-with-ruby/>

> What's new on Ruby 2.7?

Ruby.whats_new?(2.7)

⇒ {

a: "Enumerable#tally"

b: "Numbered params for Blocks [Experimental]"

c: "Array#intersection"

d: "Enumerable#filter_map"

e: "Enumerator#produce"

f: "IRB gets a face lift"

g: "Ruby pattern matching [Experimental]"

h: "10x performance ↑ for fiber & thread creation"

i: "Others changes, *go to source"

}

Source: RubyGuide - Jesus Castello - <https://www.rubyguides.com/2019/12/ruby-2-7-new-features/>

> What's new on Ruby 2.7?



Ruby NEVER STOPS Improving!

According to Matz...

**This is the last 2.x version release.
Because next year,
we're getting Ruby 3.0!**

Source: RubyGuide - Jesus Castello - <https://www.rubyguides.com/2019/12/ruby-2-7-new-features/>

> Tips Memasang Ruby for Dev

Groom your app's Ruby env. with Rbenv

Basic GitHub Checkout way:

```
$ cd
$ git clone https://github.com/rbenv/rbenv.git ~/.rbenv
$ echo 'export PATH="$HOME/.rbenv/bin:$PATH"' >> ~/.bashrc # ~/.zshrc
$ echo 'eval "$(rbenv init -)"' >> ~/.bashrc # ~/.zshrc
$ exec $SHELL

$ git clone https://github.com/rbenv/ruby-build.git ~/.rbenv/plugins/ruby-build
$ echo 'export PATH="$HOME/.rbenv/plugins/ruby-build/bin:$PATH"' >> ~/.bashrc
# ~/.zshrc

$ exec $SHELL

$ rbenv install 2.7.1 ← 📄
$ rbenv global 2.7.1
$ ruby -v
```

```
🏠 /home/bandithijo
├─ 📁 project_a      ← ruby 2.7.1
├─ 📁 project_b      ← ruby 2.6.3
│   └─ 📁 project_c  ← ruby 2.5.3
└─ 📁 project_d      ← ruby 2.4.2
```

Source: Rbenv (GitHub) - <https://github.com/rbenv/rbenv/blob/master/README.md>

Source: GoRails.com - <https://gorails.com/setup/ubuntu/20.04#ruby-rbenv>

> Tips Memasang Ruby for Dev

Groom your app's Ruby env. with Rbenv

Verify that rbenv is properly set up:

```
$ curl -fsSL \
https://github.com/rbenv/rbenv-installer/raw/master/bin/rbenv-doctor | bash
```

```
https://github.com/rbenv/rbenv-installer/raw/master/bin/rbenv-doctor | bash
Checking for `rbenv' in PATH: /home/bandithijo/.rbenv/bin/rbenv
Checking for rbenv shims in PATH: OK
Checking `rbenv install' support: /home/bandithijo/.rbenv/plugins/ruby-build/
bin/rbenv-install (ruby-build 20200520-10-g157c719)
Counting installed Ruby versions: 8 versions
Checking RubyGems settings: OK
Auditing installed plugins: OK
```

```
🏠 /home/bandithijo
├─ 📁 project_a      ← ruby 2.7.1
├─ 📁 project_b      ← ruby 2.6.3
│   └─ 📁 project_c  ← ruby 2.5.3
└─ 📁 project_d      ← ruby 2.4.2
```

Source: Rbenv (GitHub) - <https://github.com/rbenv/rbenv/blob/master/README.md>

Source: GoRails.com - <https://gorails.com/setup/ubuntu/20.04#ruby-rbenv>

Ruby Style Guide

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> Ruby Style Guide

Adalah panduan menulis kode Ruby dengan “best practice” sehingga sesama programmer Ruby dapat menulis kode yang dapat dipelihara satu sama lain.

Indentation

Gunakan **2** spasi per level indentasi.

```
# bad - four spaces
def some_method
  do_something
end
```



```
# good
def some_method
  do_something
end
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Should I Terminate Expression with ; ?

Don't use ; to terminate statements and expressions.

```
# bad  
puts 'foobar'; # superfluous semicolon
```



```
# good  
puts 'foobar'
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>


> Ruby Style Guide

One Expression Per Line

```
# bad  
puts 'foo'; puts 'bar' # two expressions on the same line
```



```
# good  
puts 'foo'  
puts 'bar'
```



```
puts 'foo', 'bar' # this applies to puts in particular
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Spaces & Operators

Use spaces **around operators**, **after commas**, **colons** and **semicolons**

```
# bad
sum=1+2
a,b=1,2
class FooError<StandardError;end
```



```
# good
sum = 1 + 2
a, b = 1, 2
class FooError < StandardError; end
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Spaces & Operators (Exceptions)

Exponent operator

```
# bad  
e = M * c ** 2
```



```
# good  
e = M * c**2
```



Safe navigation operator

```
# bad  
foo &. bar  
foo &.bar  
foo&. bar
```



```
# good  
foo&.bar
```



Slash in rational literals

```
# bad  
o_scale = 1 / 48r
```



```
# good  
o_scale = 1/48r
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Spaces & Braces

No! spaces after `(`, `[` or before `]`, `)`
Use spaces around `{` and before `}`

bad

```
some( arg ).other  
[ 1, 2, 3 ].each{|e| puts e}
```



good

```
some(arg).other  
[1, 2, 3].each { |e| puts e }
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Spaces & Braces (Exceptions)

Hash literals

```
# good - space after { and before }  
{ one: 1, two: 2 }
```



```
# good - no space after { and before }  
{one: 1, two: 2}
```



String interpolation expressions

```
# bad  
"From: #{ user.first_name }, #{ user.last_name }"
```



```
# good  
"From: #{user.first_name}, #{user.last_name}"
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

CamelCase for Classes

Use CamelCase for **classes** and **modules**.
(Keep acronyms like HTTP, RFC, XML uppercase).

bad

```
class Someclass
  # some code
end
```



```
class Some_Class
  # some code
end
```



```
class XmlSomething
  # some code
end
```



good

```
class SomeClass
  # some code
end
```



```
class SomeXML
  # some code
end
```



```
class XMLSomething
  # some code
end
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

> Ruby Style Guide

Snake Case for Symbols, Methods, & Variables

Use snake_case for **symbols**, **methods** and **variables**.

```
# bad
:'some symbol'
:SomeSymbol
:someSymbol
```



```
someVar = 5
```



```
def someMethod
  # some code
end
```



```
def SomeMethod
  # some code
end
```



```
# good
:some_symbol
```



```
some_var = 5
```



```
def some_method
  # some code
end
```



Source: The Ruby Style Guide - <https://rubystyle.guide/>

More . . . ,

The Ruby Style Guide

<https://rubystyle.guide>



IRB

(Interactive Ruby Shell)

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> Apa itu IRB?

IRB adalah kependekan dari **Interactive Ruby**.

Sebuah shell yang dapat kita gunakan untuk bermain-main dan bereksplorasi dengan Ruby dan langsung melihat hasilnya. Definisi ini diistilahkan dengan REPL (Read-Eval-Print-Loop).

Untuk menjalankan IRB, cukup tulis di terminal dengan perintah:

```
$ irb  
irb(main):001:0> _
```

Ayo kita coba jalankan operasi matematika!

```
irb(main):001:0> 1 + 2 * (3**4) / 5 - 6  
⇒ 27
```

Source: RubyGuides - <https://www.rubyguides.com/2018/12/what-is-a-repl-in-ruby/>

> Customisasi IRB

Secara default, bentuk dari "prompt" IRB akan seperti ini

```
$ irb
irb(main):001:0> _
```

Secara pribadi, saya kurang suka melihat prompt yang terlalu panjang.

Kita bisa menyederhanakan dengan memanggil dengan cara berbeda.

```
$ irb --prompt simple
>> _
```

Untuk membuat prompt "simple" menjadi default yang digunakan, cukup tambahkan pada file ~/.irbrc (buka dengan text editor).

```
IRB.conf[:PROMPT_MODE] = :SIMPLE
```

Nah, sekarang apabila teman-teman memanggil irb, maka otomatis akan menggunakan "simple" prompt.

Source: Rake Routes - <https://www.rakeroutes.com/customize-your-irb/>



.rb

(dot rb file)

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> .rb

Ruby memiliki file ekstensi .rb

Tujuannya agar Ruby interpreter dapat mengenali kalau file yang kita jalankan adalah file Ruby.

nama_file.rb

```
puts 'Helo, rubyist!'
puts 'Selamat belajar bahasa pemrograman Ruby.'
```

Untuk menjalankan file .rb

```
$ ruby nama_file.rb
```

```
Helo, rubyist!
Selamat belajar bahasa pemrograman Ruby.
```

Variabel

> Apa itu Variabel?

Digunakan untuk memberikan nama & menyimpan nilai (value)

In Ruby, Variable is **just a label**.

...a name for something that you can use to reference this value in your Ruby programs.

Just like the name we give to real-world things.
When I say "apple" you know what I'm talking about.
I don't have to describe it to you.
That's what variables do!

```
nama_lengkap = 'Yukihiro Matsumoto' ← String
tahun_lahir   = 1995                  ← Integer
penjajahan    = 3.5                   ← Float
bumi_datar     = false                 ← Boolean
kamar_kosong   = nil                  ← NilClass
tim_dev        = ['budi', 1, true]     ← Array
kontak_dev     = { 'nama': 'budi' }    ← Hash
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/variables/>

> Mengecek Class dari Variabel

Darimana kita tahu `variable` tertentu termasuk dalam Class apa?

Menggunakan method `.class()`

```
>> nama = 'Yukihiko Matsumoto'
>> nama.class
=> String

>> umur = 55
>> umur.class
=> Integer

>> tim_dev = ['Rizal', 'Reza', 'Rizqi']
>> tim_dev.class
=> Array
```

INFO!

Cara memanggil sebuah method dengan menggunakan tanda `.` (dot)

> Scope/Jangkauan Variabel?

Local variable

```
team_name = "Elite Lokal"
```

Global variable (prefix: \$)

```
$team_name = "Elite Global"
```

Instance variable (prefix: @)

```
@fav_food = "Indomie Instance"
```

Class variable (prefix: @@)

```
@@fav_drama = "Itaewon Class"
```

Constant variable (Huruf Besar)

```
PHI = 3.14
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/variables/>

> Scope/Jangkauan Variabel?

The difference between them?

It's on their "**scope**".

A variable scope answers this question:

"From where can I access this variable?"

This is only going to matter when you start learning about Object-Oriented Programming.

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/variables/>

Source: RubyGuides - <https://www.rubyguides.com/2019/03/ruby-scope-binding/>

Puts, Print, P Console

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> Puts, Print, P

puts

Menampilkan isi dari object & menambahkan newline “\n” di akhir.

```
>> nama_lengkap = 'Yukihiro Matsumoto'  
>> puts nama_lengkap  
Yukihiro Matsumoto  
⇒ nil
```

print

Menampilkan isi dari object tanpa newline “\n” di akhir.

```
>> print nama_lengkap  
Yukihiro Matsumoto⇒ nil
```

p

Menampilkan isi dari object & mengembalikan nilai dari object tsb.

```
>> p nama_lengkap  
"Yukihiro Matsumoto"  
⇒ "Yukihiro Matsumoto"
```

Source: RubyGuides - <https://www.rubyguides.com/2018/10/puts-vs-print/>

Working with String (a)

.Working with String (a)

- > String Concatenation
- > String Interpolation
- > Mengecek Method pada Class
- > String Method yang Biasa Digunakan
- > Escaping Character

> String Concatenation

Combining multiple string

a. Menggunakan operator **+**

```
>> nama_depan      = 'Yukihiro'
>> nama_belakang   = 'Matsumoto'
>> nama_lengkap    = nama_depan + nama_belakang

>> nama_lengkap
"YukihiroMatsumoto"

>> puts nama_depan + ' ' + nama_belakang
"Yukihiro Matsumoto"

>> puts 'Yukihiro' + ' ' + 'Matsumoto'
"Yukihiro Matsumoto"
```

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

> String Concatenation

Combining multiple string

b. Menggunakan operator `+=`

```
>> nama = ''  
  
>> nama += 'Yukihiro'  
>> nama += ' '  
>> nama += 'Matsumoto'  
  
>> puts nama  
"Yukihiro Matsumoto"
```

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

> String Concatenation

Combining multiple string

c. Menggunakan `.concat()` method

```
>> nama = ''  
  
>> nama.concat('Yukihiro')  
>> nama.concat(' ')  
>> nama.concat('Matsumoto')  
  
>> puts nama  
"Yukihiro Matsumoto"
```

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

> String Concatenation

Combining multiple string

d. Menggunakan operator `<<` (alias dari `concat()` method)

```
>> nama = ''  
  
>> nama << 'Yukihiro'  
>> nama << ''  
>> nama << 'Matsumoto'  
  
>> puts nama  
"Yukihiro Matsumoto"  
  
>> puts nama << 'Yukihiro' << ' ' << 'Matsumoto'  
"Yukihiro Matsumoto"
```

```
>> 'berat badan = ' << 70  
# TypeError: no implicit conversion of Integer into String
```

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

> String Concatenation

Combining multiple string

d. Menggunakan operator `<<` (alias dari `concat()` method)

Problem:

```
>> 'berat badan = ' << 70  
⇒ "berat badan = F"
```

Solusi:

```
>> 'tinggi badan = ' << 70.to_s  
⇒ "tinggi badan = 70"
```

Menggunakan `to_s` method untuk mengkonversi Integer ke String.

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

Source: RubyGuides - <https://www.rubyguides.com/2018/09/ruby-conversion-methods/>

> String Concatenation

Combining multiple string

e. Menggunakan `.prepend()` method (kebalikan dari `concat`)

```
>> nama = ''  
  
>> nama.prepend('Yukihiro')  
>> nama.prepend(' ')  
>> nama.prepend('Matsumoto')  
  
>> puts nama  
"Matsumoto Yukihiro"
```

📄 If you're thinking there is an `append` method, well there isn't for String. `append` method only for arrays.

Source: RubyGuides - <https://www.rubyguides.com/2019/07/ruby-string-concatenation/>

> String Interpolation

Interpolation or merging of variables into strings is a powerful technique. It allows you to "templatize" a string.

a. Menggunakan "#{ }"

```
>> nama_depan      = 'Yukihiko'  
>> nama_belakang   = 'Matsumoto'  
>> umur_sekarang   = 55  
  
>> puts "Nama: #{nama_depan} #{nama_belakang}. Umur: #{umur}"  
"Nama: Yukihiko Matsumoto. Umur: 55"
```

! Syarat: String harus menggunakan tanda petik ganda ("...")

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/variables/>

> Mengecek Method pada Class

Darimana kita tahu method apa yang tersedia dari sebuah Class?

Menggunakan `.methods()` method

```
>> nama = 'Yukihiro Matsumoto'
>> nama.class
=> String

>> nama.methods
=> [ :unicode_normalize, :unicode_normalize!, :ascii_only?, :unpack,
    :unpack1, :to_r, :shellsplit, :encode, :encode!, :shellescape, :
    %, :include?, :*, :+, :pretty_print, ..., ..., ... ]
```

Berapa banyak jumlah method yang tersedia? (misal: String)

```
>> nama.class
=> String

>> nama.methods.count
=> 192
```

> String Method yang Biasa Digunakan

.upcase()

```
>> nama = 'Yukihiro Matsumoto'  
>> nama.upcase  
⇒ "YUKIHIRO MATSUMOTO"
```

.capitalize()

```
>> nama = 'yukihiro matsumoto'  
>> nama.capitalize  
⇒ "Yukihiro matsumoto"
```

.length()

```
>> nama = 'Yukihiro Matsumoto'  
>> nama.length  
⇒ 18
```

.downcase()

```
>> nama = 'Yukihiro Matsumoto'  
>> nama.downcase  
⇒ "yukihiro matsumoto"
```

.reverse()

```
>> nama = 'yukihiro matsumoto'  
>> nama.reverse  
⇒ "otomustam orihikuy"
```

> String Method yang Biasa Digunakan

`.sub()`

```
>> nama = 'Yukihiro Matz'  
>> nama.sub('Matz', 'Akita')  
⇒ "Yukihiro Akita"
```

`.strip()`

```
>> nama = '      matsumoto      '  
>> nama.strip  
⇒ "matsumoto"
```

`.gsub()`

```
>> nama = 'Budi Budi Bayu'  
>> nama.gsub('Budi', 'Bayu')  
⇒ "Bayu Bayu Bayu"
```

`.split()`

```
>> nama = 'Budi Budi Bayu'  
>> nama.split(' ')  
⇒ ["Budi", "Budi", "Bayu"]
```

dan masih banyak lagi...

More: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/String.html>

> Escaping Character

backslashed
notation

Bagaimana cara melakukan escaping character pada String?

```
>> 'malam jum'at'
```

```
SyntaxError: unexpected local variable or method...
```

```
>> 'malam jum\'at'  
"malam jum'at"
```

Alternatif gunakan double quote untuk escaping single quote:

```
>> "malam jum'at"  
"malam jum'at"
```

Contoh-contoh escaping character

```
\' : single quote  
\" : double quote  
\\ : backslash  
\\n : new line  
\\r : carriage return
```

```
\\t : tab  
\\b : backspace  
\\f : form feed  
\\v : vertical tab  
est.
```

More: AppSignal - <https://blog.appsignal.com/2016/12/21/ruby-magic-escaping-in-ruby.html>

Working with String (b)

.Working with String (b)

> Get Input from User (Console)

> Get Input from User (Console)

Ruby use `gets()` method to get the user input (as a string).

`.gets`

```
>> print 'Nama kamu siapa? '; nama = gets
Yukihiro←
>> nama
⇒ "Yukihiro\n"
```

"\n" didapatkan saat kita menekan tombol enter.

Bagaimana cara menghilangkannya?

Gunakan `String#chomp` method.

`.gets.chomp`

```
>> puts "Nama kamu siapa? "; nama = gets.chomp
Yukihiro←
>> nama
⇒ "Yukihiro"
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.1/IO.html>

Working with Number

Ruby for Beginner
A Programmer's Best Friend

.Working with Number

- > Arithmetic Operation
- > Order Arithmetic Operation
- > Loop with Times
- > Upto & Downto

> Arithmetic Operation

```
>> 5 + 5  
⇒ 10
```

```
>> 10 * 2  
⇒ 20
```

```
>> 2**3  
⇒ 8
```

```
>> 10 % 2  
⇒ 0
```

```
>> 10.even?  
⇒ true
```

```
>> 4.odd?  
⇒ false
```

```
>> 10 / 2.0  
⇒ 5.0
```

```
>> 9.0 / 3  
⇒ 3.0
```

_ delimiter

```
>> 10_000 + 500  
⇒ 10500
```

```
>> 2_000_000 / 20  
⇒ 100000
```

```
>> 10_0 / 2  
⇒ 50
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.1/I0.html>

> Order Arithmetic Operation

Perhatikan urutan dari pengerjaan operator.

Gunakan jembatan “PEMDAS” untuk mengingatnya.

Parenthesis	()
Exponential	**
Multiplication	*
Division	/
Addition	+
Substraction	-

```
>> 1 + 2 * 3**4 / (5 - 6)  
⇒ -161
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.1/I0.html>

> Loop with times

Salah satu method yang mudah untuk melakukan looping / perulangan terhadap angka.

`.times`

```
?> 3.times do  
?>   puts 'DILo Balikpapan'  
>> end
```

```
DILo Balikpapan  
DILo Balikpapan  
DILo Balikpapan
```

```
?> 2.times do |n|  
?>   puts "Dilo ke-#{n}"  
>> end
```

```
DILo ke-0  
DILo ke-1
```

`.times (one line)`

```
>> 3.times { puts 'DILo Bppn' }
```

```
DILo Bppn  
DILo Bppn  
DILo Bppn
```

```
>> 2.times { |n| puts n }
```

```
0  
1
```

> Upto & Downto

Salah satu method yang mudah untuk melakukan looping / perulangan terhadap angka dengan rentang tertentu.

.upto().each

```
?> 1.upto(3).each do  
?>   puts 'DILo Bppn'  
>> end
```

```
DILo Bppn  
DILo Bppn  
DILo Bppn
```

```
?> 1.upto(3) do |n|  
?>   puts n  
>> end
```

```
1  
2  
3
```

.downto().each

```
?> 3.downto(1).each do  
?>   puts 'DILo Bppn'  
>> end
```

```
DILo Bppn  
DILo Bppn  
DILo Bppn
```

```
?> 3.downto(1).each do |n|  
?>   puts n  
>> end
```

```
3  
2  
1
```

Comparison & Logical Operators

.Comparison & Logical Operators

- > Comparison Operators
- > Logical Operators

> Comparison Operators

Membandingkan 2 (atau lebih) objek.

Dan membuat keputusan berdasarkan hasil perbandingan.

Operator	Deskripsi
<	Kurang dari
<=	Kurang dari sama dengan
>	Lebih dari
>=	Lebih dari sama dengan
==	Sama dengan
!=	Tidak sama dengan

📄 All these operators are methods,
and they return a boolean value.

Source: RubyGuides - <https://www.rubyguides.com/2018/07/ruby-operators/>

> Logical Operators

Membandingkan 2 (atau lebih) condition.

Dan membuat keputusan berdasarkan hasil perbandingan.

A	B	A && B	A B
T	T	T	T
T	F	F	T
F	T	F	T
F	F	F	F

```
if (Condition A) && (Condition B)
  # statement
end
```

```
if (Condition A) || (Condition B)
  # statement
end
```

Source: RubyGuides - <https://www.rubyguides.com/2018/07/ruby-operators/>

Branching /Condition

. Branching / Condition

- > If
- > Unless
- > If/Unless for One Statement
- > If, Else
- > If, Elsif, Else
- > If with Multiple Condition
- > If Nested (bertingkat)
- > Case
- > Ternary Operator

> if Statements

```
if condition  
  statement 1  
  statement 2  
end
```

```
if condition then statement 1; statement 2 end
```

```
if condition; statement 1; statement 2 end
```

📄 Ruby executes code if the condition is **true**.
True is interpreted as **anything** that **isn't false or nil**.

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> unless Statements

```
if !condition      # ← negasi dari condition
  statement
end
```

Sama dengan,

```
unless condition
  statement
end
```

```
unless condition then statement end
```

```
unless condition; statement end
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> if/unless (reversed form)

if Statement (reversed)

```
statement if condition
```

```
statement 1; statement 2; statement n; if condition
```

unless Statement (reversed)

```
statement unless condition
```

```
statement 1; statement 2; statement n; unless condition
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> if else

```
if condition
  statement 1
  statement 2
else
  statement 3
end
```

📄 If the **condition** isn't true,
code specified in the **else** clause is executed.

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> if elsif else

```
if condition A
  statement 1
  statement 2
elsif condition B
  statement 3
elsif condition C
  statement 4
elsif condition X
  statement n
else
  statement 5
end
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> if with Multiple Condition

```
if condition A && condition B
  statement 1
  statement 2
else
  statement 3
end
```

```
if condition A && condition B
  statement 1
  statement 2
elsif condition C || condition D
  statement 3
elsif condition E && (condition F || condition G)
  statement 4
else
  statement 5
end
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> if Nested (bertingkat)

```
if condition A
  if condition A.1
    statement 1
  end

  statement 2
elsif condition B
  statement 3
else
  statement 4
end
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/ruby-if-else/>

> case

```
if variable = 'A'  
  statement 1  
elsif variable = 'B'  
  statement 2  
elsif variable = 'C'  
  statement 3  
else  
  statement 4  
end
```



```
case variable  
when 'A'  
  statement 1  
when 'B'  
  statement 2  
when 'C'  
  statement 3  
else  
  statement 4  
end
```

```
if var = 'A' || var = 'a'  
  statement 1  
elsif var = 'B'  
  statement 3  
else  
  statement 4  
end
```



```
case var  
when 'A', 'a'  
  statement 2  
when 'B'  
  statement 3  
else  
  statement 4  
end
```

Source: RubyGuides - <https://www.rubyguides.com/2015/10/ruby-case/>

> ternary Operator

```
if condition  
  statement 1  
else  
  statement 2  
end
```

```
condition ? statement 1 : statement 2
```

ternary operator general syntax:

```
condition ? true : false
```

example,

```
tinggi = 150  
tinggi > 170 ? 'tinggi' : 'pendek'  
⇒ 'pendek'
```

```
tinggi < 170 ? (tinggi + 20) : tinggi  
⇒ 180
```

Source: RubyGuides - <https://www.rubyguides.com/2019/10/ruby-ternary-operator/>

Collection

Ruby for Beginner
A Programmer's Best Friend

.Collection

- > Array
- > Array Modification
- > Hash
- > Hash Modification

> Array

An array is a built-in Ruby class, which holds a list of zero or more items, and includes methods that help you easily add, access, and loop over all these items.

This is helpful, because if arrays didn't exist you would have to use many variables.

```
a = 1  
b = 2  
c = 3
```

But instead you can do:

```
numbers = [1, 2, 3]
```

The best part? You can put everything inside array!

```
numbers = [1, 'Dua', num_tiga, true, :enam, [7, 'Depalan', false]]
```

Source: RubyGuides - <https://www.rubyguides.com/2015/05/ruby-arrays/>

> Array

You can access the elements inside an array using their index, which starts at 0.

ELEMENT	1	2	3	4	5	6
---------	---	---	---	---	---	---

```
numbers = [1, 'Dua', 3, 'Empat', 5, 'Enam']
```

INDEX	0	1	2	3	4	5
-------	---	---	---	---	---	---

```
numbers[0]
```

```
⇒ 1
```

```
numbers[1]
```

```
⇒ 'Dua'
```

```
numbers[5]
```

```
⇒ 'Enam'
```

```
numbers[-1]
```

```
⇒ 'Enam'
```

```
numbers.first
```

```
⇒ 1
```

```
numbers.last
```

```
⇒ 'Enam'
```

Source: RubyGuides - <https://www.rubyguides.com/2015/05/ruby-arrays/>

> Array

Bagaimana cara membuat array kosong/baru?

```
numbers = []
```

```
numbers  
⇒ []
```

```
numbers = Array.new
```

```
numbers  
⇒ []
```

Source: RubyGuides - <https://www.rubyguides.com/2015/05/ruby-arrays/>

> Array

Bagaimana cara memasukkan nilai ke dalam array?

```
numbers = []  
numbers[0] = 1
```

```
numbers  
⇒ [1]
```

```
numbers[1] = 'Dua'
```

```
numbers  
⇒ [1, 'Dua']
```

Apa yang terjadi jika kita melompati index saat menginput array?

```
numbers[3] = 3
```

```
numbers  
⇒ [1, 'Dua', nil, 3]
```

Source: RubyGuides - <https://www.rubyguides.com/2015/05/ruby-arrays/>

> Array

Bagaimana cara mengetahui panjang array?

```
numbers = [1, 'Dua', 3, 'Empat', 5, 'Enam', 5]
```

```
numbers.length
```

```
⇒ 6
```

Bagaimana cara mengetahui jumlah element di dalam array?

```
numbers = [1, 'Dua', 3, 'Empat', 5, 'Enam', 5]
```

```
numbers.count
```

```
⇒ 6
```

```
numbers.count(5)
```

```
⇒ 2
```

```
numbers.count { |num| num.class == Integer }
```

```
⇒ 4
```

Source: RubyGuides - <https://www.rubyguides.com/2015/05/ruby-arrays/>

> Array Modification (Delete)

`.delete(obj)`

Deletes all items that are equal to `obj`.

```
numbers = [1, 'Dua', 3, 'Empat', 5, 5, 5, 'Enam', 'Enam']
```

```
numbers.delete(5)          # ⇒ 5
```

```
numbers
```

```
⇒ [1, 'Dua', 3, 'Empat', 'Enam', 'Enam']
```

```
numbers.delete('Enam')     # ⇒ "Enam"
```

```
numbers
```

```
⇒ [1, 'Dua', 3, 'Empat']
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-delete>

> Array Modification (Delete)

`.delete_at(index)`

Deletes the element at the specified index, returning that element, or nil if the index is out of range.

```
numbers = [1, 'Dua', 3, 'Empat', 5, 'Enam']  
           0   1   2   3   4   5
```

```
numbers.delete_at(1)      # ⇒ "Dua"
```

```
numbers  
⇒ [1, 3, 'Empat', 5, 'Enam']  
   0  1   2   3   4
```

```
numbers.delete_at(6)      # ⇒ nil
```

```
numbers  
⇒ [1, 3, 'Empat', 5, 'Enam']
```

Source: Ruby-Doc - https://ruby-doc.org/core-2.7.0/Array.html#method-i-delete_at

> Array Modification (Delete)

```
.delete_if { |item| block }
```

Deletes every element of self for which block evaluates to true.

The array is changed instantly every time the block is called, not after the iteration is over.

```
nilai_siswa = [60, 98, 46, 76, 89, 48, 90, 75, 55]
```

```
nilai_siswa.delete_if { |nilai| nilai > 55 }  
⇒ [60, 98, 76, 89, 90, 75]
```

```
nilai_siswa.delete_if do |nilai|  
  nilai > 55  
end  
⇒ [60, 98, 76, 89, 90, 75]
```

Source: Ruby-Doc - https://ruby-doc.org/core-2.7.0/Array.html#method-i-delete_if

> Array Modification (Join)

`.join(separator=$,)`

Returns a string created by converting each element of the array to a string, separated by the given separator.

If the separator is nil, it uses current \$,.

If both the separator and \$, are nil, it uses an empty string.

```
nama_siswa = ['Bora', 'Bimo', 'Bayu', 'Bela', 'Buti']
```

```
nama_siswa.join('-')  
⇒ "Bora-Bimo-Bayu-Bela-Buti"
```

```
nama_siswa.join  
⇒ "BoraBimoBayuBelaButi"
```

```
siswa = ['DokSun', 18, true, 159.5]
```

```
siswa.join  
⇒ "DokSun18true159.5"
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-join>

> Array Modification (Push)

.push(obj) **.append(obj)**

Append – Pushes the given object(s) on to the end of this array.

This expression returns the array itself, so several appends may be chained together.

```
alphabet = ['A', 'B', 'C', 'D']  
  
alphabet.push('E', 'F', 'G')  
⇒ ['A', 'B', 'C', 'D', 'E', 'F', 'G']  
  
[1, 2, 3].push(4).push(5)  
⇒ [1, 2, 3, 4, 5]
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-push>

> Array Modification (Pop)

`.pop` → `obj/nil` `.pop(n)` → `new_ary`

Removes the last element from self and returns it, or nil if the array is empty.

If a number n is given, returns an array of the last n elements (or less) just like `array.slice!(-n, n)` does.

```
alphabet = ['A', 'B', 'C', 'D', 'E', 'F', 'G']
```

```
alphabet.pop(2)  
⇒ ['F', 'G']
```

```
alphabet  
⇒ ['A', 'B', 'C', 'D', 'E']
```

```
alphabet.pop  
⇒ 'E'
```

```
alphabet  
⇒ ['A', 'B', 'C', 'D']
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-pop>

> Array Modification (Unshift)

`.unshift(obj, ...) → ary` `.prepend(obj, ...) → ary`

Prepends objects to the front of self, moving other elements upwards.

```
alphabet = ['A', 'B', 'C', 'D']
```

```
alphabet.unshift(1, '2')  
⇒ [1, '2', 'A', 'B', 'C', 'D']
```

```
alphabet.prepend(0.4, true)  
⇒ [0.4, true, 1, '2', 'A', 'B', 'C', 'D']
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-unshift>

> Array Modification (Shift)

.shift → obj/nil **.shift(n)** → new_ary

Removes the first element of self and returns it (shifting all other elements down by one). Returns nil if the array is empty.

```
alphabet = ['A', 'B', 'C', 'D', 'E', 'F']
```

```
alphabet.unshift  
⇒ 'A'
```

```
alphabet  
⇒ ['B', 'C', 'D', 'E', 'F']
```

```
alphabet.unshift(2)  
⇒ ['B', 'C']
```

```
alphabet  
⇒ ['D', 'E', 'F']
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-shift>

> Hash

A Hash is a dictionary-like collection of unique keys and their values.

Also called associative arrays, they are similar to Arrays, but where an Array uses integers as its index, a Hash allows you to use any object type.

```
grades = { "Jane Doe" => 10, "Jim Doe" => 6 }  
           key      value  key      value
```

```
grades["Jane Doe"]  
=> 10
```

```
abse = { 1 => 'Won Deuk', 2 => 'Hong Sim' }
```

```
absen[2]  
=> 'Hong Sim'
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Hash.html>

> Hash

Bagaimana cara membuat hash kosong/baru?

```
grades = {}
```

```
grades  
⇒ {}
```

```
grades = Hash.new
```

```
grades  
⇒ {}
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Hash.html>

> Hash

Bagaimana cara memasukkan nilai ke dalam hash?

```
grades = {}
```

```
grades['Won Deuk'] = 40
```

```
grades  
⇒ { 'Won Deuk' ⇒ 40 }
```

```
grades['Hong Sim'] = 80
```

```
grades  
⇒ { 'Won Deuk' ⇒ 40, 'Hong Sim' ⇒ 80 }
```

```
grades['Won Deuk'] = 50
```

```
grades  
⇒ { 'Won Deuk' ⇒ 50, 'Hong Sim' ⇒ 80 }
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Hash.html>

> Hash Modification (Delete)

`.delete(key)`

Deletes the key-value pair and returns the value from hsh whose key is equal to key. If the key is not found, it returns nil.

```
grades = { 'Won Deuk' => 40, 'Hong Sim' => 80 }
```

```
grades.delete('Won Deuk')  
=> 40
```

```
grades  
=> { 'Hong Sim' => 80 }
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Hash.html#method-i-delete>

> Hash Modification (Delete If)

.delete_if **.delete_if { |key, value| block }**

Deletes every key-value pair from hash for which block evaluates to true.

If no block is given, an enumerator is returned instead.

```
grades = { 'Won Deuk' => 40, 'Hong Sim' => 80, 'So Hee' => 100 }
```

```
grades.delete_if { |key, value| key == 'Won Deuk' }  
=> { 'Hong Sim' => 80, 'So Hee' => 100 }
```

```
grades.delete_if { |key, value| value < 90 }  
=> { 'So Hee' => 100 }
```

Source: Ruby-Doc - https://ruby-doc.org/core-2.7.0/Hash.html#method-i-delete_if

Looping

Ruby for Beginner
A Programmer's Best Friend

. Looping

- > For
- > Each
- > While
- > Map
- > Select

> For

The for loop consists of **for** followed by a variable to contain the iteration argument followed by **in** and the value to iterate over using **each**.

```
nama_siswa = ['Bora', 'Bimo', 'Bayu', 'Bela', 'Buti']
```

```
for siswa in nama_siswa do  
  puts siswa  
end
```

```
Bora  
Bimo  
Bayu  
Bela  
Buti  
⇒ ["Bora", "Bimo", "Bayu", "Bela", "Buti"]
```

 The **do** keyword is optional

Source: Ruby-Doc - https://ruby-doc.org/core-2.6/doc/syntax/control_expressions_rdoc.html#label-for+Loop

> Each

The Ruby method `each` allows you to go over a list of items, without having to keep track of the number of iterations, or having to increase some kind of counter.

It's the Ruby way of doing "repeat until done".

Before you can use `each`, you need a collection of items like an array, a range or a hash.

```
nama_siswa = ['Bora', 'Bimo', 'Bayu', 'Bela', 'Buti']  
  
nama_siswa.each do |nama|  
  puts nama  
end
```

```
Bora  
Bimo  
Bayu  
Bela  
Buti  
⇒ ["Bora", "Bimo", "Bayu", "Bela", "Buti"]
```

Source: RubyGuides - <https://www.rubyguides.com/ruby-tutorial/loops/>

> While

The `while` loop executes while a condition is true:

```
antrian = 96
```

```
while antrian < 100 do
  puts "Nomor antrian #{antrian}, silahkan masuk!"
  antrian += 1
end
```

```
Nomor antrian 96, silahkan masuk!
Nomor antrian 97, silahkan masuk!
Nomor antrian 98, silahkan masuk!
Nomor antrian 99, silahkan masuk!
⇒ nil
```

 The `do` keyword is optional

Source: Ruby-Doc - https://ruby-doc.org/core-2.6/doc/syntax/control_expressions_rdoc.html#label-while+Loop

> Map

Creates a new array containing the values returned by the block.

```
nama_siswa = ['Bora', 'Bimo', 'Bayu', 'Bela', 'Buti']
```

```
nama_siswa.map do |nama|  
  'dr. ' + nama  
end
```

```
⇒ ["dr. Bora", "dr. Bimo", "dr. Bayu", "dr. Bela", "dr. Buti"]
```

```
nama_siswa.map { |nama| 'dr. ' + nama }
```

```
⇒ ["dr. Bora", "dr. Bimo", "dr. Bayu", "dr. Bela", "dr. Buti"]
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-map>

> Select

Returns a new array containing all elements of ary for which the given block returns a true value.

```
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
numbers.select do |num|  
  num.even?  
end
```

```
⇒ [2, 4, 6, 8, 10]
```

```
numbers.select { |num| num.odd? }
```

```
⇒ [1, 3, 5, 7, 9]
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Array.html#method-i-map>

Method

Ruby for Beginner
A Programmer's Best Friend

.Method

- > Method (tanpa parameter)
- > Method (dengan parameter)
- > Return Value
- > Map
- > Select

> Method (tanpa parameter)

Method adalah blok kode yang memiliki fungsi tertentu.
Yang dapat kita gunakan berkali-kali.

```
def hello_dev  
  puts 'Halo, saya sedang belajar Ruby'  
end
```

```
hello_dev  
hello_dev  
hello_dev
```

```
Halo, saya sedang belajar Ruby  
Halo, saya sedang belajar Ruby  
Halo, saya sedang belajar Ruby
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Method.html>

> Method (dengan parameter)

Kita dapat memberikan parameter berupa variabel,
Untuk kita olah di dalam blok method.

```
def hello_dev(nama)
  puts "Halo #{nama}, saya sedang belajar Ruby!"
end
```

```
hello_dev('DalPo')
hello_dev('InHa')
```

```
Halo DalPo, saya sedang belajar Ruby!
Halo Inha, saya sedang belajar Ruby!
```

```
def hello_dev(nama, bahasa)
  puts "Halo #{nama}, saya sedang belajar bahasa #{bahasa}!"
end
```

```
hello_dev('DalPo', 'Korea')
```

```
Halo DalPo, saya sedang belajar bahasa Korea!
```

Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Method.html>

> Return Value

Nilai kembalian dari method

```
def penjumlahan(num_1, num_2)
  hasil = num_1 + num_2
  return hasil
end

puts penjumlahan(25, 9)
```

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Keyword **return** adalah opsional

```
def penjumlahan(num_1, num_2)
  num_1 + num_2
end

puts penjumlahan(25, 9)
```

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Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Method.html>

> Return Value

Nilai kembalian dari method, akan selalu diambil yang paling akhir

```
def penjumlahan(num_1, num_2)
  num_1 - num_2
  num_1 + num_2      # ← return value
end
```

```
puts penjumlahan(25, 9)
```

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```
def penjumlahan(num_1, num_2)
  num_1 + num_2
  num_1 - num_2      # ← return value
end
```

```
puts penjumlahan(25, 9)
```

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Source: Ruby-Doc - <https://ruby-doc.org/core-2.7.0/Method.html>

EXTENDED

Ruby for Beginner
A Programmer's Best Friend

.File IO

.Error Handling

.Object Oriented Programming

Ruby for Beginner
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.Module

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> Tips mencari dengan Google

Gunakan prefix "ruby" sebagai awalan kata kunci untuk mencari di Google.

 **ruby**

Kemudian, diikuti dengan keyword apa yang mau dicari. Misal, tentang perulangan dengan method "each".

 **ruby each loop**

Dengan cara ini, kita dapat membuat hasil pencarian yang lebih spesifik untuk bahasa pemrograman Ruby.

> Referensi Belajar Ruby

▶ YouTube:

- GoRails
- Jesus Castello
- Drifting Ruby
- Nate Berkopec
- TechmakerTV
- Decypher Media
- zayne
- Code School
- FreeCodeCamp.org
- Sekolah Koding
- Agung Setiawan

📡 WebPage:

- Ruby in 20 minutes
- RubyGuides.com

🎓 Online Course:

- IDRails.com

> Referensi Group Telegram untuk Bertanya seputar Ruby

- 1) Ruby Indonesia
- 2) Rails Indonesia

> Referensi Channel Telegram untuk Berita tentang Ruby

- 1) Ruby/Rails Inside

: Terima_Kasih

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