

ECTO

the past, the present, the future

<> Code

🔔 Issues 9

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A database wrapper and language integrated query for Elixir

🔄 3,015 commits

🔗 6 branches

📦 62 releases

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examples/simple	Add tests for the sample application	21 days ago
integration_test	Ensure schema migration is dumped, closes #1410	7 days ago
lib	Ensure schema migration is dumped, closes #1410	7 days ago
test	Clean up validate_required check	7 days ago
.gitignore	Require interpolation operator on external joins	a year ago
.travis.yml	Run sample app tests in CI	21 days ago
CHANGELOG.md	Remove dots, update changelog	17 days ago
ISSUE_TEMPLATE.md	docs(ISSUE_TEMPLATE.md): initial version	3 months ago
LICENSE.md	Move License to a separate Markdown file [ci skip]	7 months ago
README.md	Fix some documentation typos/syntactical errors (#1359)	a month ago
mix.exs	Release v2.0.0-rc.4	7 days ago

ecto

 2.0.0-rc.4

Ecto is a domain specific language for writing queries and interacting with databases in Elixir.

Maintainers

Eric Meadows-Jönsson, José Valim, James Fish, Michał Muskala

Links

[GitHub](#)

[Online documentation \(download\)](#)

License

Apache 2.0



1 603
downloads
this version



4 114
downloads
yesterday



23 334
downloads
last 7 days



770 442
downloads
all time

Versions

2.0.0-rc.4 May 3, 2016 ([docs](#))

2.0.0-rc.3 April 23, 2016 ([docs](#))

2.0.0-rc.2 April 23, 2016 ([docs](#))

2.0.0-rc.1 April 19, 2016 ([docs](#))

2.0.0-rc.0 April 16, 2016 ([docs](#))

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Dependencies

decimal ~> 1.0

mariaex ~> 0.7.1 (optional)

poison ~> 1.5 or ~> 2.0 (optional)

poolboy ~> 1.5

postgrex ~> 0.11.1 (optional)

sbroker ~> 0.7 (optional)

Config

mix.exs

```
{:ecto, "~> 2.0.0-rc.4"}
```



Build Tools

mix

ECTO

the past, the present, the future

Michał Muskała

<http://michal.muskala.eu/>

<https://github.com/michalmuskala/>

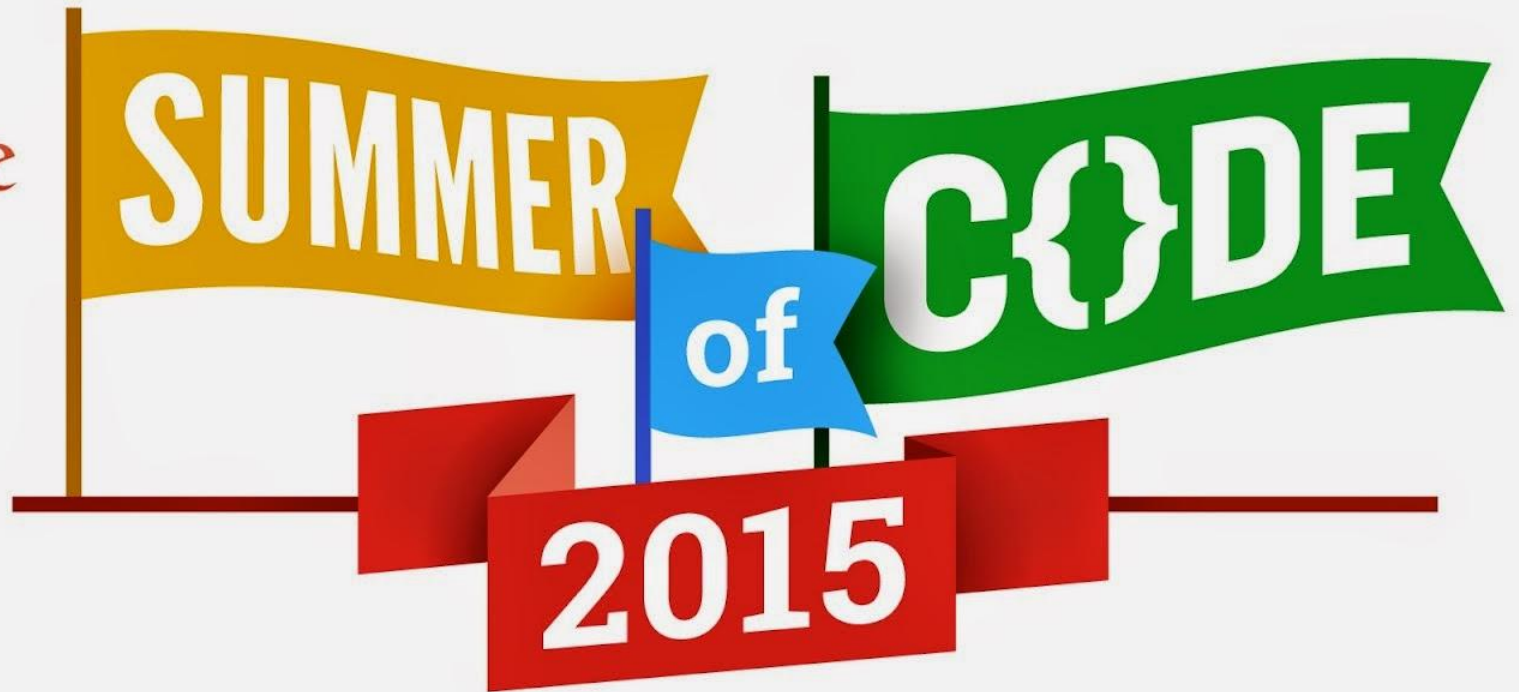
@michalmuskala



woumedia



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- ⚙ Settings

MongoDB adapter for Ecto — Edit

179 commits
 5 branches
 6 releases
 9 contributors

Branch: **master** ▾ [New pull request](#)

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 SSH ▾ git@github.com:michalmuskala
[Download ZIP](#)

michalmuskala Merge pull request #75 from greentornado/master Latest commit f8ddfaf on 10 Mar

📁 config	Check if repo is already started	a year ago
📁 examples/simple	Pin ecto version again, fix sample app autogenerate	10 months ago
📁 lib	fix fragment doc	2 months ago
📁 test	Clean up 3.2 support	2 months ago
📄 .gitignore	Add ex_doc for generating documentation	9 months ago
📄 .travis.yml	have a mongodb 3.2 working with library	2 months ago
📄 CHANGELOG.md	Release 0.1.4	2 months ago
📄 README.md	Update README.md	5 months ago
📄 mix.exs	Update docs setting	2 months ago

Question time

Who's using Ecto?

Who's using mongodb_ecto?

Who's using Ecto 2.0- whatever?

Ecto history

v0.1.0 - 01.05.2014

```
defmodule User do
  use Ecto.Model

  queryable "users" do
    field :name, :string
    field :age, :string
  end

  validate user,
    name: present(),
    age: present(message: "must be present"),
    age: greater_than(18)
end
```


fragments

fragments

v0.3.0

:map type

:map type

v0.13.0

associations

associations

v0.2.0

changesets

changesets

v0.5.0

timestamps

timestamps

v0.6.0

Ecto.Type

Ecto.Type

v0.5.0

embeds

embeds

v0.14.0

MySQL

MySQL

v0.9.0

inspirations

SQL + NoSQL = ?

v1.0.0

25.08.2015

v1.1.0

25.08.2015

v2.0.0

?

v2.0.0-rc2145

12.04.2025

db_connection

subqueries

subqueries

```
query = from p in Post,  
        select: [:visits],  
        order_by: [desc: :visits],  
        limit: 10
```

```
TestRepo.all(from p in subquery(query),  
             select: avg(p.visits))
```

many_to_many

concurrent, transactional tests

concurrent, transactional tests

```
Ecto.Adapters.SQL.begin_test_transaction(MyApp.Repo)

      by

Ecto.Adapters.SQL.Sandbox.mode(MyApp.Repo, :manual)

      and

unless tags[:async] do
  Ecto.Adapters.SQL.restart_test_transaction(MyApp.Repo, [])
end

      by

:ok = Ecto.Adapters.SQL.Sandbox.checkout(MyApp.Repo)
unless tags[:async] do
  Ecto.Adapters.SQL.Sandbox.mode(MyApp.Repo, {:shared, self()})
end
```

parallel preloads

by default

easier associations

no callbacks

Ecto.Schema

changeset changes

Ecto.Multi

Ecto.Multi

```
defmodule UserManager do
  alias Ecto.Multi
  import Ecto

  def password_reset(params) do
    with {:ok, account} <- load_account(params),
         multi = password_reset_multi(account, params),
         {:ok, results} <- Repo.transaction(multi),
         :ok <- send_notification(results.account),
         do: {:ok, results}
    end

    # ...
  end
end
```

Ecto.Multi

```
@doc false
def password_reset_multi(account, params) do
  account      = account_password_reset(account, params)
  access_log   = log_password_reset(account, params)

  Multi.new
  |> Multi.update(:account, account)
  |> Multi.insert(:log, access_log)
  |> Multi.delete_all(:sessions, assoc(account, :sessions))
end
```

schemaless queries

schemaless queries

```
from u in "users",
  join: a in "activities",
  on: a.user_id == u.id,
  where: a.start_at > type(^start_at, Ecto.DateTime) and
         a.end_at < type(^end_at, Ecto.DateTime),
  group_by: a.user_id,
  select: %{user_id: a.user_id,
            interval: a.start_at - a.end_at,
            count: count(u.id)}
```

schemaless queries

```
# insert data
[%{id: id}] =
  MyApp.Repo.insert_all("posts", [[title: "hello"]],
                        returning: [:id])

# use query for updates
post = from p in "posts", where: p.id == ^id
{1, _} = MyApp.Repo.update_all(post,
                               set: [title: "new title"])

# and deletes
{1, _} = MyApp.Repo.delete_all post
```

multiple schemas, same table

tableless schemas

tableless schemas

```
defmodule RegistrationSchema do
  use Ecto.Schema

  schema "" do
    field :foo, :string
    field :bar, :integer
    embeds_one :resource, Resource do
      field :baz, MyEctoType
    end
  end

  # ...
end
```

tableless schemas

```
def validate(params) do
  %RegistrationSchema{}
  |> cast(params, [:foo, :bar, :baz])
  |> validate_required([:foo, :bar])
  |> # some other validations
  |> to_tuple
end
```

```
defp to_tuple(%{valid?: true} = c) do
  {:ok, apply_changes(c)}
end
defp to_tuple(%{errors: errors}) do
  {:error, errors}
end
```

schemaless changesets

schemaless changesets

```
data = %{}
types = %{first_name: :string,
          last_name: :string,
          email: :string}
fields = Map.keys(types)

changeset =
  {data, types}
  |> Ecto.Changeset.cast(params, types)
  |> validate_required(...)
  |> validate_length(...)
```

KISS

Future?

tableless schemas

```
defmodule RegistrationSchema do
  use Ecto.Schema

  schema "" do
    field :foo, :string
    field :bar, :integer
    embeds_one :resource, Resource do
      field :baz, MyEctoType
    end
  end

  # ...
end
```


Separate data and database

Ecto 2.0 is data-centric

Ecto 2.0 is less opinionated

Ecto 2.0 is not your model

Ecto 2.0 is not a solution

Ecto 2.0 is a toolbox

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