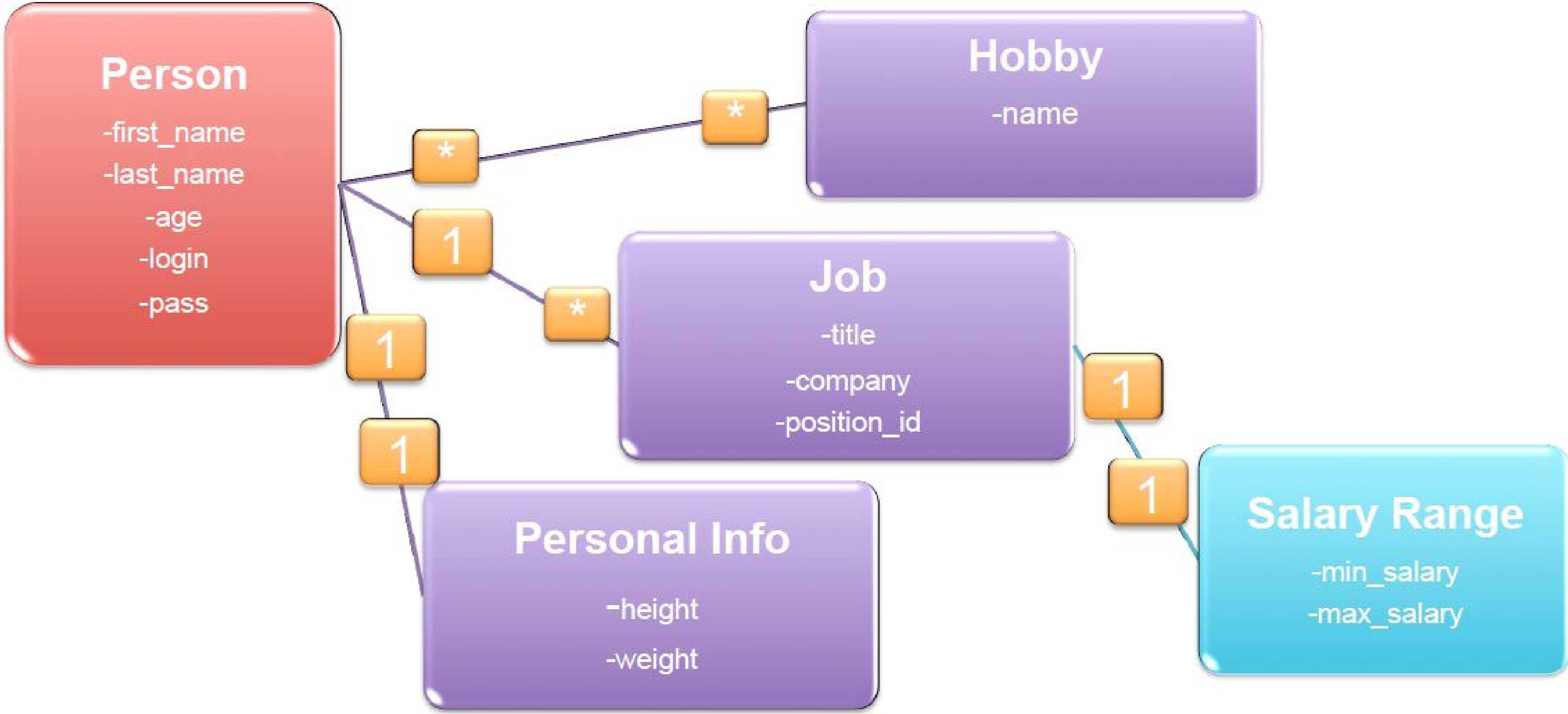
Ruby on Rails

Active Record Relations

Overview

- Relaciones entre entidades
  - one-to-one
  - one-to-many
  - many-to-many

Relaciones


Person
-first_name
-last_name
-age
-login
-pass
Hobby
-name
Job
-title
-company
-position_id
Personal Info
-height
-weight
Salary Range
-min_salary
-max_salary
*
*
1
*
1
1
1
1

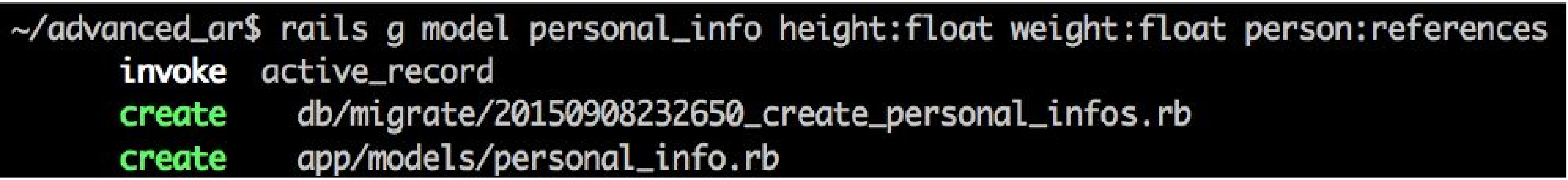
Asociación one-to-one

One-to-One

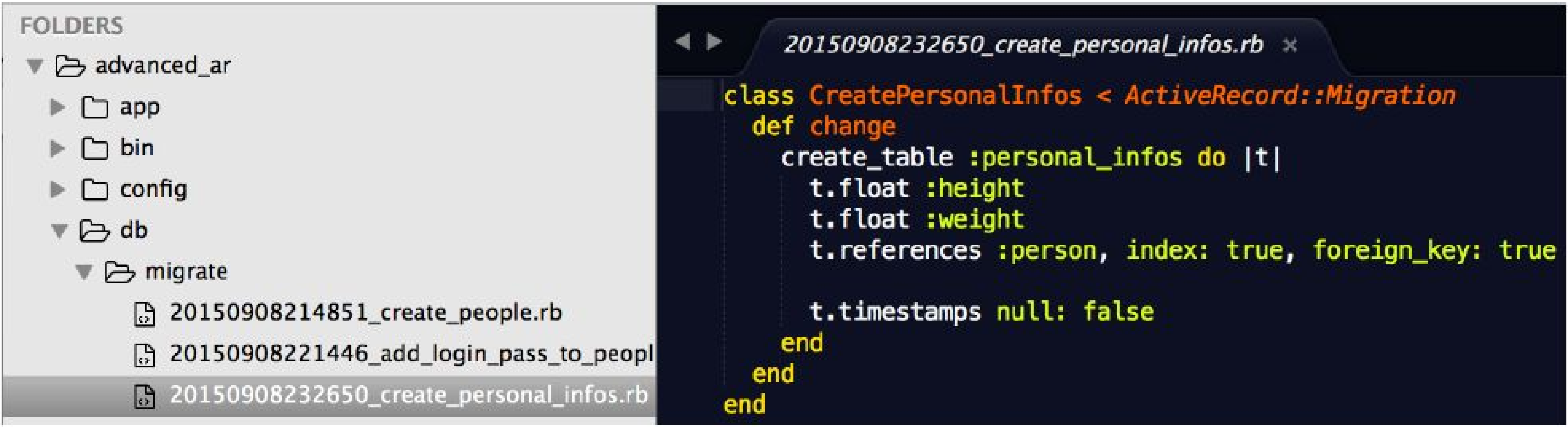
- Un **`person`** tiene exactamente **`una entrada`** en **`personal_info`**
- Un entrada **`personal_info`** **`pertenece`** exactamente a un **`person`**.
- El lado “**`belongs to`**” o “pertenece” es el que tiene la **`clave foránea`**.

Convención: El nombre por defecto de la clave foránea es {master_table_singular}_id, ejemplo: person_id

One-to-One



```
~/advanced_ar$ rails g model personal_info height:float weight:float person:references
      invoke  active_record
      create    db/migrate/20150908232650_create_personal_infos.rb
      create    app/models/personal_info.rb
```



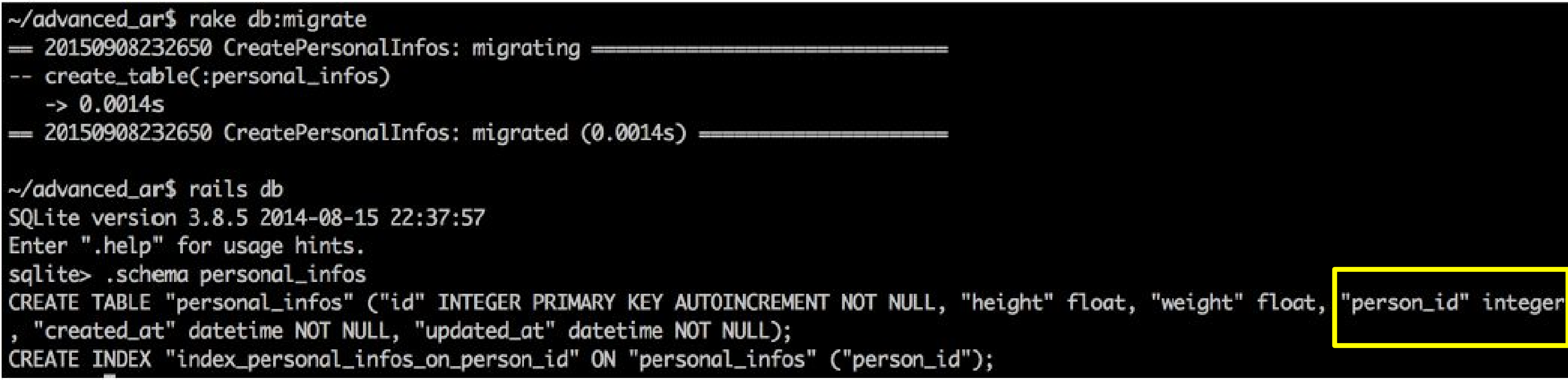
```
FOLDERS
▼ advanced_ar
  ▶ app
  ▶ bin
  ▶ config
  ▼ db
    ▼ migrate
        20150908214851_create_people.rb
        20150908221446_add_login_pass_to_peopl
        20150908232650_create_personal_infos.rb
```

20150908232650_create_personal_infos.rb

```ruby
class CreatePersonalInfos < ActiveRecord::Migration
  def change
    create_table :personal_infos do |t|
      t.float :height
      t.float :weight
      t.references :person, index: true, foreign_key: true

      t.timestamps null: false
    end
  end
end
```

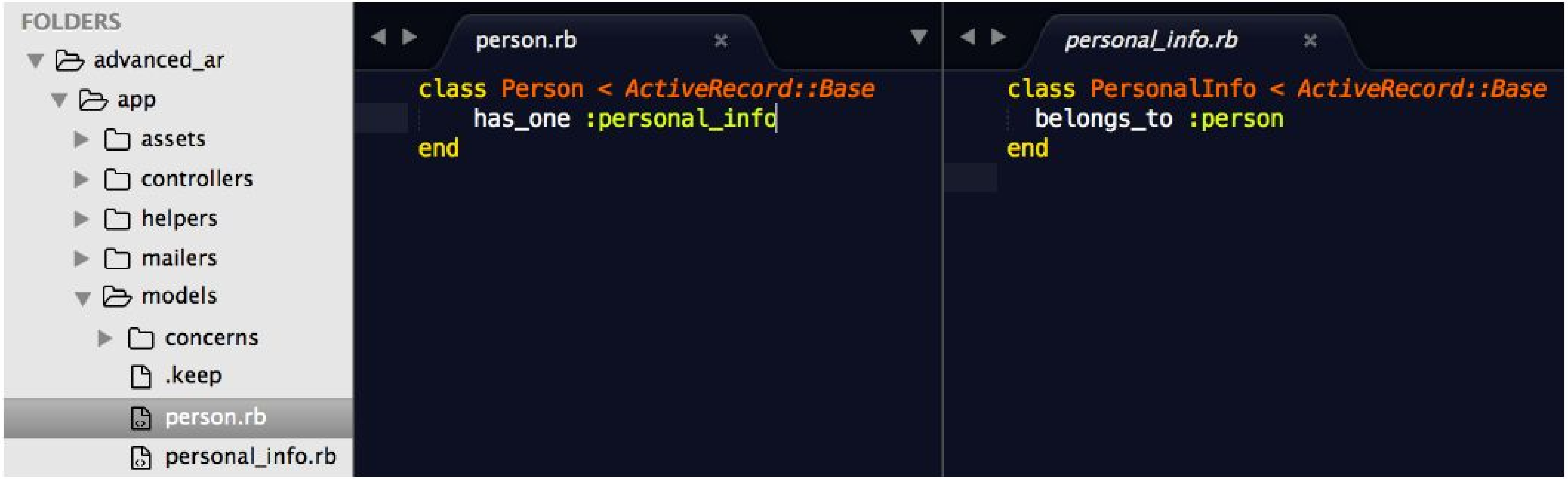
Clave foránea



```
~/advanced_ar$ rake db:migrate
== 20150908232650 CreatePersonalInfos: migrating ==============================
-- create_table(:personal_infos)
   -> 0.0014s
== 20150908232650 CreatePersonalInfos: migrated (0.0014s) =====================

~/advanced_ar$ rails db
SQLite version 3.8.5 2014-08-15 22:37:57
Enter ".help" for usage hints.
sqlite> .schema personal_infos
CREATE TABLE "personal_infos" ("id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL, "height" float, "weight" float, "person_id" integer
, "created_at" datetime NOT NULL, "updated_at" datetime NOT NULL);
CREATE INDEX "index_personal_infos_on_person_id" ON "personal_infos" ("person_id");
```

has_one / belongs_to



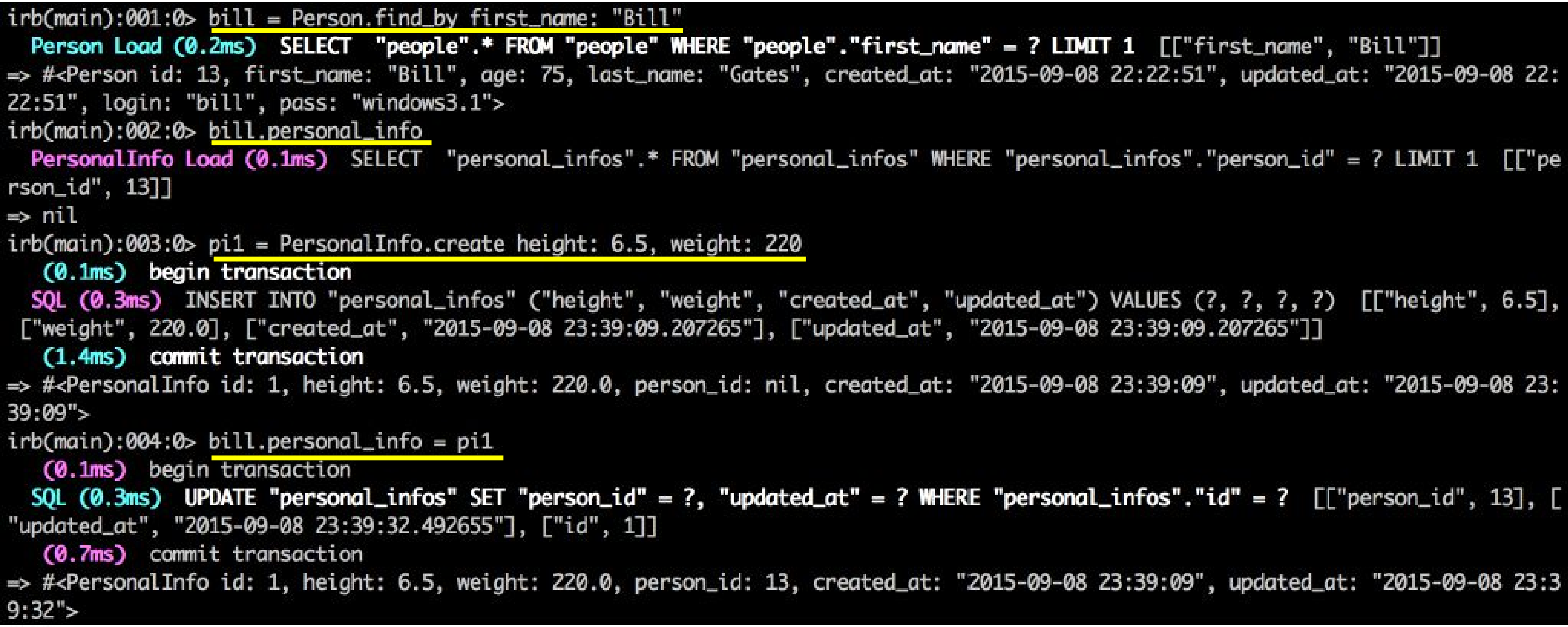
person.rb

```
class Person < ActiveRecord::Base
    has_one :personal_info
end
```

personal_info.rb

```
class PersonalInfo < ActiveRecord::Base
  belongs_to :person
end
```

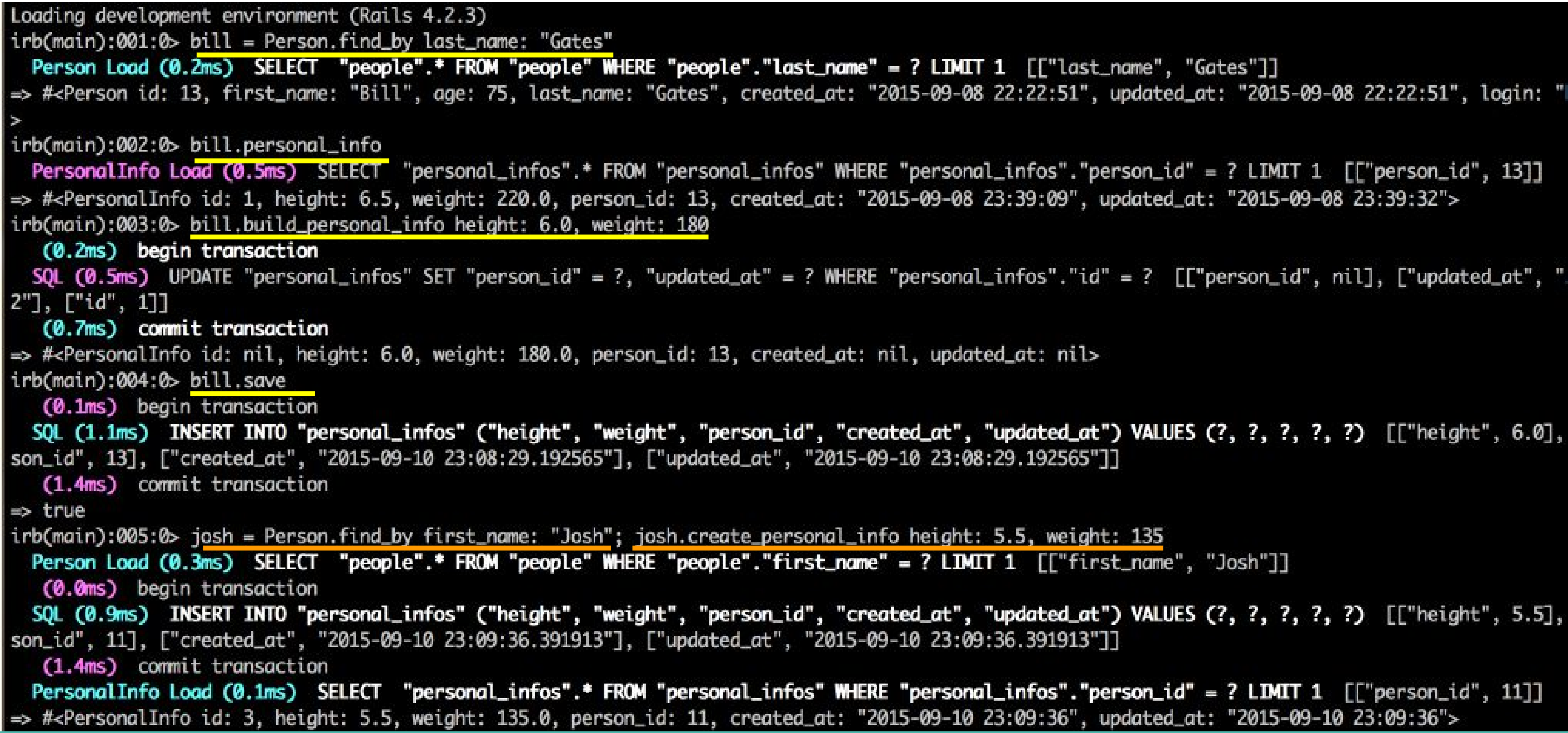
One-to-One



```
irb(main):001:0> bill = Person.find_by first_name: "Bill"
  Person Load (0.2ms)  SELECT  "people".* FROM "people" WHERE "people"."first_name" = ? LIMIT 1  [["first_name", "Bill"]]
=> #<Person id: 13, first_name: "Bill", age: 75, last_name: "Gates", created_at: "2015-09-08 22:22:51", updated_at: "2015-09-08 22:
22:51", login: "bill", pass: "windows3.1">
irb(main):002:0> bill.personal_info
  PersonalInfo Load (0.1ms)  SELECT  "personal_infos".* FROM "personal_infos" WHERE "personal_infos"."person_id" = ? LIMIT 1  [["pe
rson_id", 13]]
=> nil
irb(main):003:0> pi1 = PersonalInfo.create height: 6.5, weight: 220
   (0.1ms)  begin transaction
  SQL (0.3ms)  INSERT INTO "personal_infos" ("height", "weight", "created_at", "updated_at") VALUES (?, ?, ?, ?)  [["height", 6.5],
 ["weight", 220.0], ["created_at", "2015-09-08 23:39:09.207265"], ["updated_at", "2015-09-08 23:39:09.207265"]]
   (1.4ms)  commit transaction
=> #<PersonalInfo id: 1, height: 6.5, weight: 220.0, person_id: nil, created_at: "2015-09-08 23:39:09", updated_at: "2015-09-08 23:
39:09">
irb(main):004:0> bill.personal_info = pi1
   (0.1ms)  begin transaction
  SQL (0.3ms)  UPDATE "personal_infos" SET "person_id" = ?, "updated_at" = ? WHERE "personal_infos"."id" = ?  [["person_id", 13], [
"updated_at", "2015-09-08 23:39:32.492655"], ["id", 1]]
   (0.7ms)  commit transaction
=> #<PersonalInfo id: 1, height: 6.5, weight: 220.0, person_id: 13, created_at: "2015-09-08 23:39:09", updated_at: "2015-09-08 23:3
9:32">
```

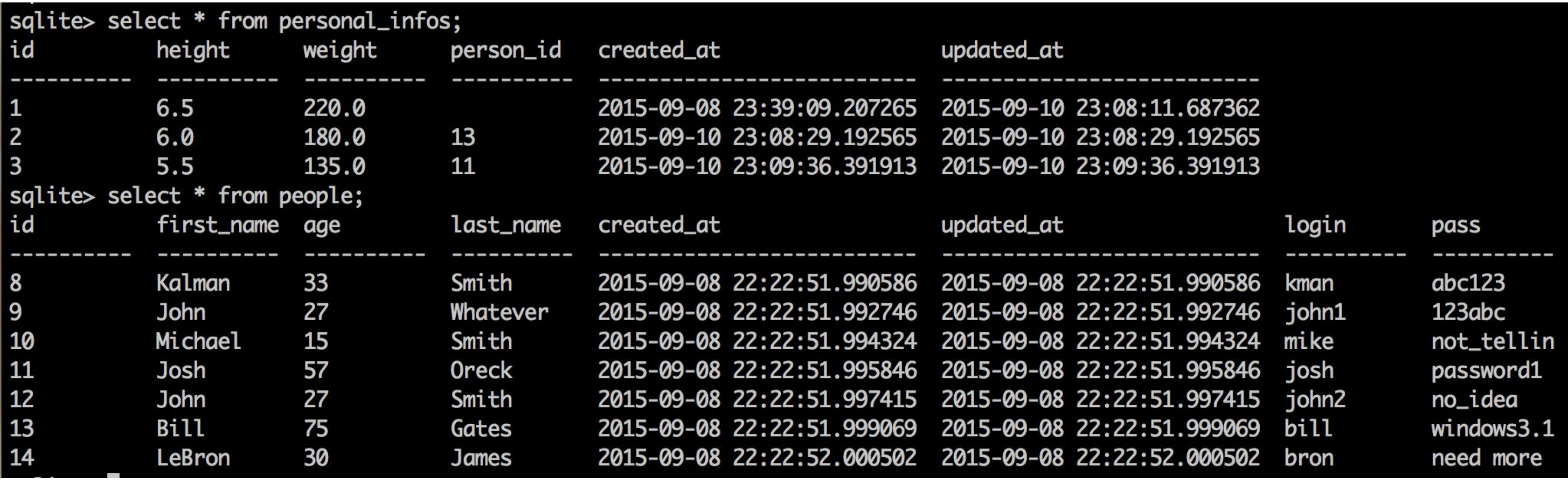
Person and PersonalInfo

- Al generar la relación se tienen disponibles en una instancia de Person los métodos:
    - build_personal_info(hash): no crea un registro en la base de datos, solo construye la instancia.
    - create_personal_info(hash): crea un registro en la base de datos
- Ambos eliminan la referencia previa existente en la base de datos.



```
Loading development environment (Rails 4.2.3)
irb(main):001:0> bill = Person.find_by last_name: "Gates"
  Person Load (0.2ms)  SELECT  "people".* FROM "people" WHERE "people"."last_name" = ? LIMIT 1  [["last_name", "Gates"]]
=> #<Person id: 13, first_name: "Bill", age: 75, last_name: "Gates", created_at: "2015-09-08 22:22:51", updated_at: "2015-09-08 22:22:51", login: "
>
irb(main):002:0> bill.personal_info
  PersonalInfo Load (0.5ms)  SELECT  "personal_infos".* FROM "personal_infos" WHERE "personal_infos"."person_id" = ? LIMIT 1  [["person_id", 13]]
=> #<PersonalInfo id: 1, height: 6.5, weight: 220.0, person_id: 13, created_at: "2015-09-08 23:39:09", updated_at: "2015-09-08 23:39:32">
irb(main):003:0> bill.build_personal_info height: 6.0, weight: 180
   (0.2ms)  begin transaction
  SQL (0.5ms)  UPDATE "personal_infos" SET "person_id" = ?, "updated_at" = ? WHERE "personal_infos"."id" = ?  [["person_id", nil], ["updated_at", "
2"], ["id", 1]]
   (0.7ms)  commit transaction
=> #<PersonalInfo id: nil, height: 6.0, weight: 180.0, person_id: 13, created_at: nil, updated_at: nil>
irb(main):004:0> bill.save
   (0.1ms)  begin transaction
  SQL (1.1ms)  INSERT INTO "personal_infos" ("height", "weight", "person_id", "created_at", "updated_at") VALUES (?, ?, ?, ?, ?)  [["height", 6.0],
son_id", 13], ["created_at", "2015-09-10 23:08:29.192565"], ["updated_at", "2015-09-10 23:08:29.192565"]]
   (1.4ms)  commit transaction
=> true
irb(main):005:0> josh = Person.find_by first_name: "Josh"; josh.create_personal_info height: 5.5, weight: 135
  Person Load (0.3ms)  SELECT  "people".* FROM "people" WHERE "people"."first_name" = ? LIMIT 1  [["first_name", "Josh"]]
   (0.0ms)  begin transaction
  SQL (0.9ms)  INSERT INTO "personal_infos" ("height", "weight", "person_id", "created_at", "updated_at") VALUES (?, ?, ?, ?, ?)  [["height", 5.5],
son_id", 11], ["created_at", "2015-09-10 23:09:36.391913"], ["updated_at", "2015-09-10 23:09:36.391913"]]
   (1.4ms)  commit transaction
  PersonalInfo Load (0.1ms)  SELECT  "personal_infos".* FROM "personal_infos" WHERE "personal_infos"."person_id" = ? LIMIT 1  [["person_id", 11]]
=> #<PersonalInfo id: 3, height: 5.5, weight: 135.0, person_id: 11, created_at: "2015-09-10 23:09:36", updated_at: "2015-09-10 23:09:36">
```

Cómo quedaron los datos en la BD?



```
sqlite> select * from personal_infos;
id          height      weight      person_id   created_at                  updated_at
----------  ----------  ----------  ----------  --------------------------  --------------------------
1           6.5         220.0                   2015-09-08 23:39:09.207265  2015-09-10 23:08:11.687362
2           6.0         180.0       13          2015-09-10 23:08:29.192565  2015-09-10 23:08:29.192565
3           5.5         135.0       11          2015-09-10 23:09:36.391913  2015-09-10 23:09:36.391913
sqlite> select * from people;
id          first_name  age         last_name   created_at                  updated_at                  login       pass
----------  ----------  ----------  ----------  --------------------------  --------------------------  ----------  ----------
8           Kalman      33          Smith       2015-09-08 22:22:51.990586  2015-09-08 22:22:51.990586  kman        abc123
9           John        27          Whatever    2015-09-08 22:22:51.992746  2015-09-08 22:22:51.992746  john1       123abc
10          Michael     15          Smith       2015-09-08 22:22:51.994324  2015-09-08 22:22:51.994324  mike        not_tellin
11          Josh        57          Oreck       2015-09-08 22:22:51.995846  2015-09-08 22:22:51.995846  josh        password1
12          John        27          Smith       2015-09-08 22:22:51.997415  2015-09-08 22:22:51.997415  john2       no_idea
13          Bill        75          Gates       2015-09-08 22:22:51.999069  2015-09-08 22:22:51.999069  bill        windows3.1
14          LeBron      30          James       2015-09-08 22:22:52.000502  2015-09-08 22:22:52.000502  bron        need more
```

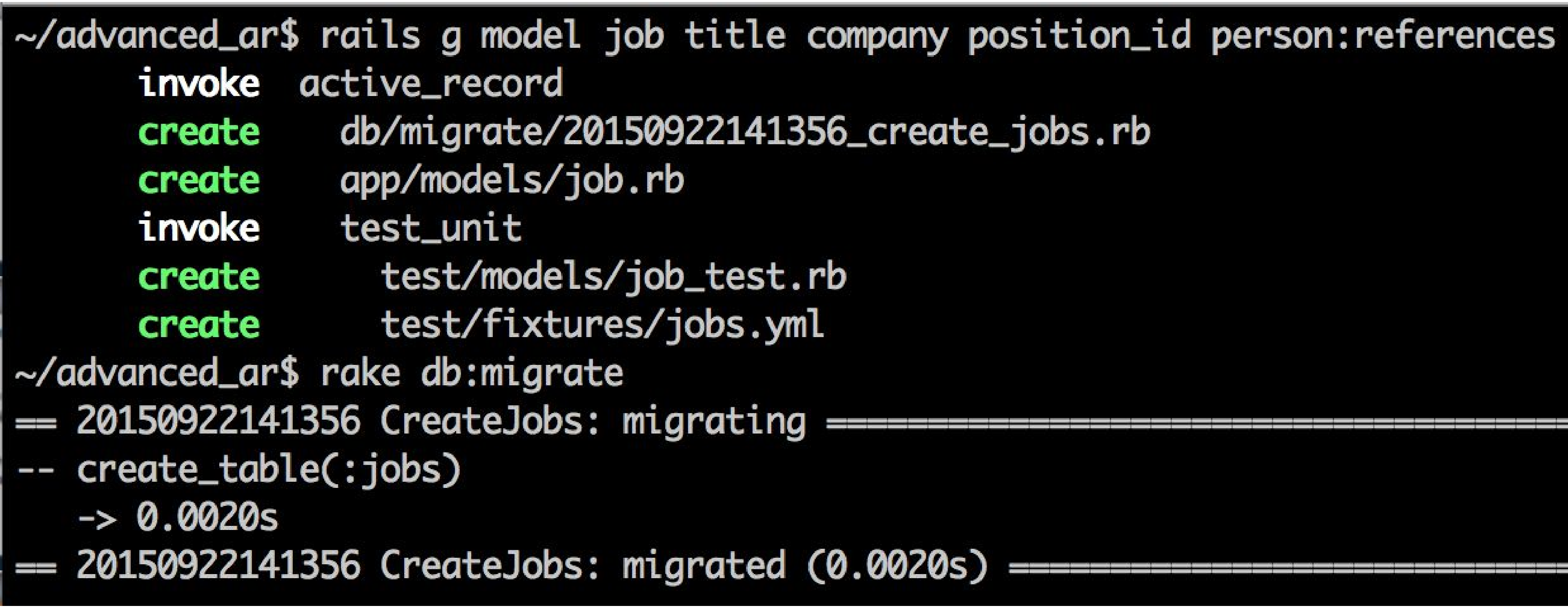
Asociación one-to-many

One-to-many

- Una `persona` tiene uno o varios trabajos (`job`)
- Un registro de job `pertenece` exactamente a una persona.
- El lado "`belongs to`" (pertenece) es el que tiene la `clave foránea`.

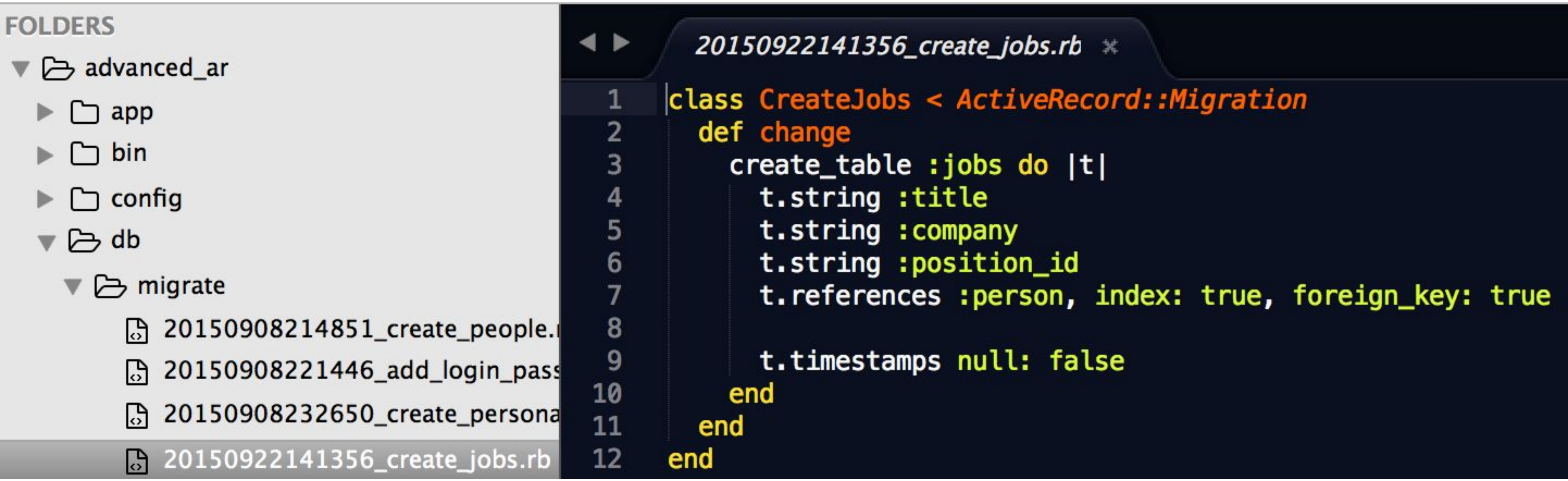
Convención: El nombre por defecto de la clave foránea es {master_table_singular}_id, ejemplo: person_id

Crear el model Job con su migration



```
~/advanced_ar$ rails g model job title company position_id person:references
      invoke  active_record
      create    db/migrate/20150922141356_create_jobs.rb
      create    app/models/job.rb
      invoke    test_unit
      create      test/models/job_test.rb
      create      test/fixtures/jobs.yml
~/advanced_ar$ rake db:migrate
== 20150922141356 CreateJobs: migrating ====================================
-- create_table(:jobs)
   -> 0.0020s
== 20150922141356 CreateJobs: migrated (0.0020s) ===========================
```

Crear el model Job con su migration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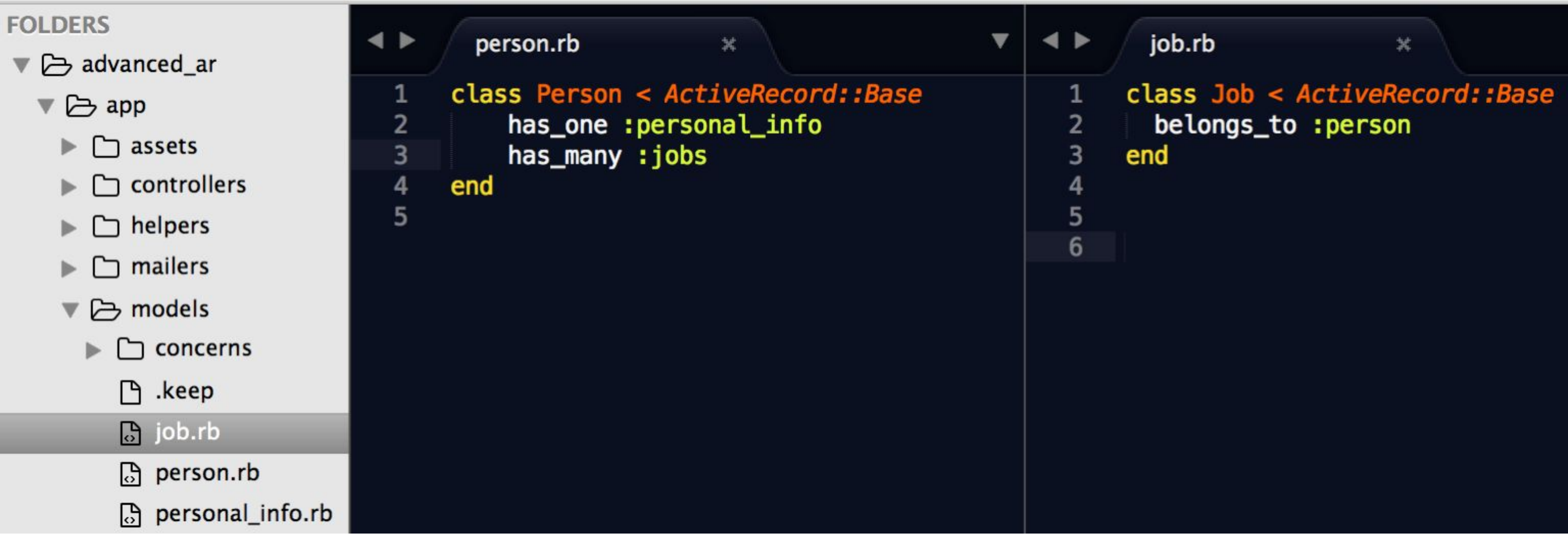
20150908221446_add_login_pass
20150908232650_create_persona
20150922141356_create_jobs.rb
20150922141356_create_jobs.rb

```ruby
class CreateJobs < ActiveRecord::Migration
  def change
    create_table :jobs do |t|
      t.string :title
      t.string :company
      t.string :position_id
      t.references :person, index: true, foreign_key: true

      t.timestamps null: false
    end
  end
end
```

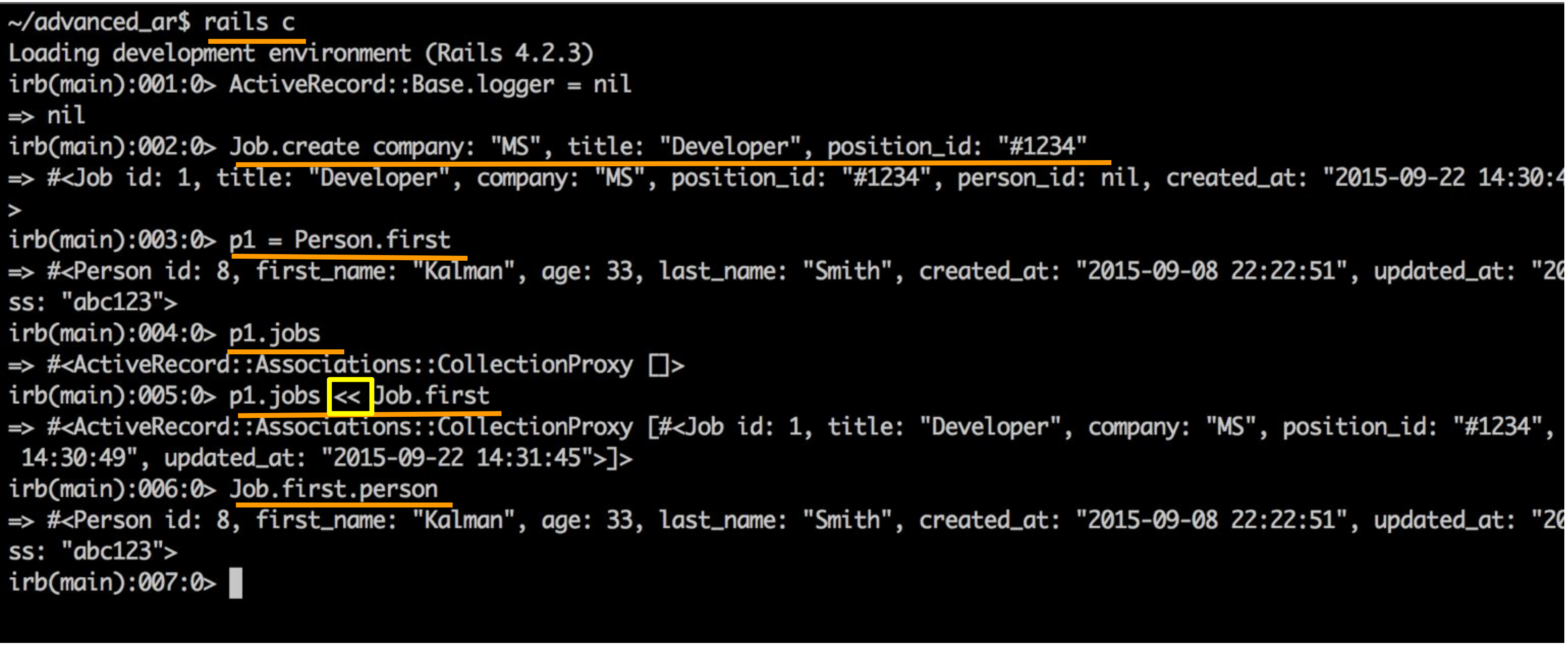
Modificando los modelos de Person y Job



```ruby
class Person < ActiveRecord::Base
    has_one :personal_info
    has_many :jobs
end
```

```ruby
class Job < ActiveRecord::Base
  belongs_to :person
end
```

Person y Job

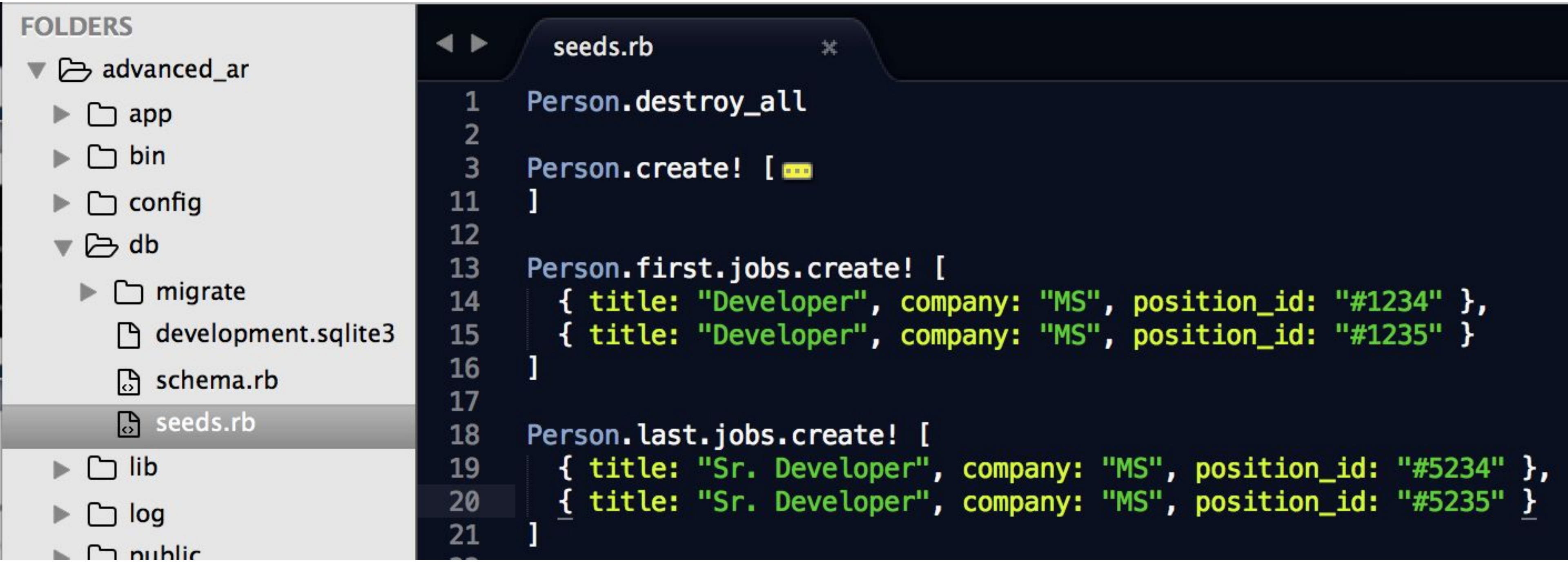


```
~/advanced_ar$ rails c
Loading development environment (Rails 4.2.3)
irb(main):001:0> ActiveRecord::Base.logger = nil
=> nil
irb(main):002:0> Job.create company: "MS", title: "Developer", position_id: "#1234"
=> #<Job id: 1, title: "Developer", company: "MS", position_id: "#1234", person_id: nil, created_at: "2015-09-22 14:30:4
>
irb(main):003:0> p1 = Person.first
=> #<Person id: 8, first_name: "Kalman", age: 33, last_name: "Smith", created_at: "2015-09-08 22:22:51", updated_at: "20
ss: "abc123">
irb(main):004:0> p1.jobs
=> #<ActiveRecord::Associations::CollectionProxy []>
irb(main):005:0> p1.jobs << Job.first
=> #<ActiveRecord::Associations::CollectionProxy [#<Job id: 1, title: "Developer", company: "MS", position_id: "#1234",
 14:30:49", updated_at: "2015-09-22 14:31:45">]>
irb(main):006:0> Job.first.person
=> #<Person id: 8, first_name: "Kalman", age: 33, last_name: "Smith", created_at: "2015-09-08 22:22:51", updated_at: "20
ss: "abc123">
irb(main):007:0>
```

Mas métodos

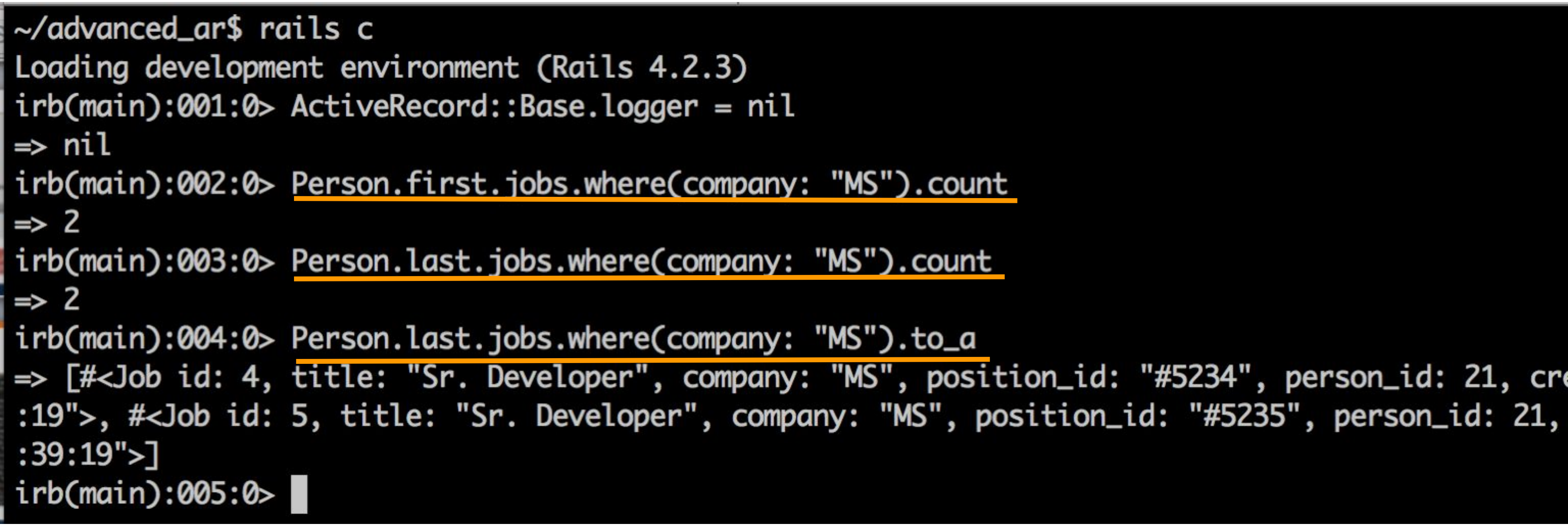
- `person.jobs = jobs`
  - Remplaza los jobs existentes con un nuevo array
  - A diferencia de person.jobs << job(s) donde los jobs son agregados
- `person.jobs.clear`
  - Desasocia los jobs del registro de person seteando el foreign key a null
- Los métodos `create` y `where` para jobs son un `scope` de person.

Scoped Jobs (rake db:seed)



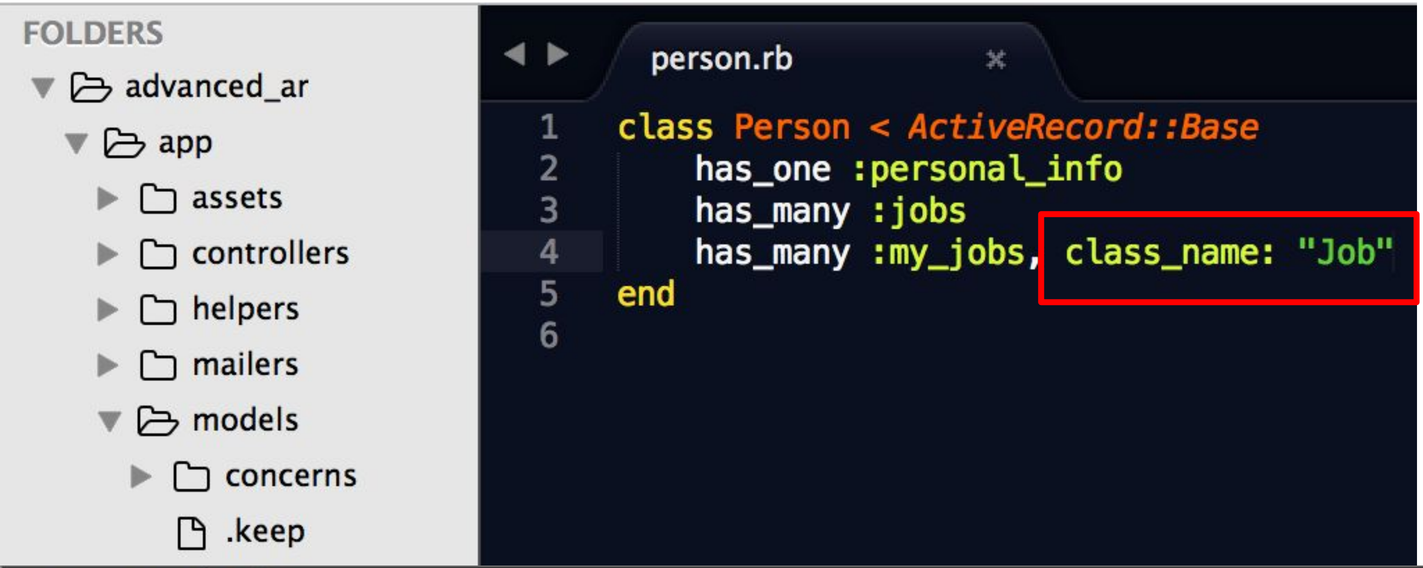
```
Person.destroy_all

Person.create! [
]

Person.first.jobs.create! [
  { title: "Developer", company: "MS", position_id: "#1234" },
  { title: "Developer", company: "MS", position_id: "#1235" }
]

Person.last.jobs.create! [
  { title: "Sr. Developer", company: "MS", position_id: "#5234" },
  { title: "Sr. Developer", company: "MS", position_id: "#5235" }
]
```

Scoped Jobs: Where

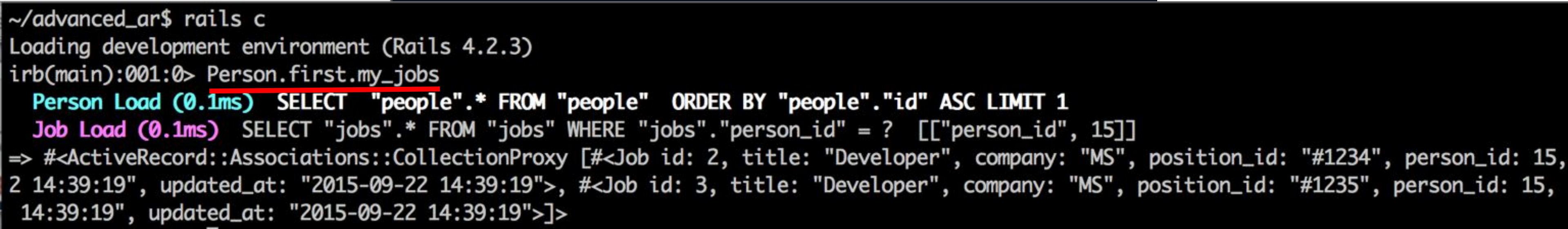


```
~/advanced_ar$ rails c
Loading development environment (Rails 4.2.3)
irb(main):001:0> ActiveRecord::Base.logger = nil
=> nil
irb(main):002:0> Person.first.jobs.where(company: "MS").count
=> 2
irb(main):003:0> Person.last.jobs.where(company: "MS").count
=> 2
irb(main):004:0> Person.last.jobs.where(company: "MS").to_a
=> [#<Job id: 4, title: "Sr. Developer", company: "MS", position_id: "#5234", person_id: 21, cre
:19">, #<Job id: 5, title: "Sr. Developer", company: "MS", position_id: "#5235", person_id: 21,
:39:19">]
irb(main):005:0> █
```

Cambio de nombre del campo



```ruby
class Person < ActiveRecord::Base
    has_one :personal_info
    has_many :jobs
    has_many :my_jobs, class_name: "Job"
end

```

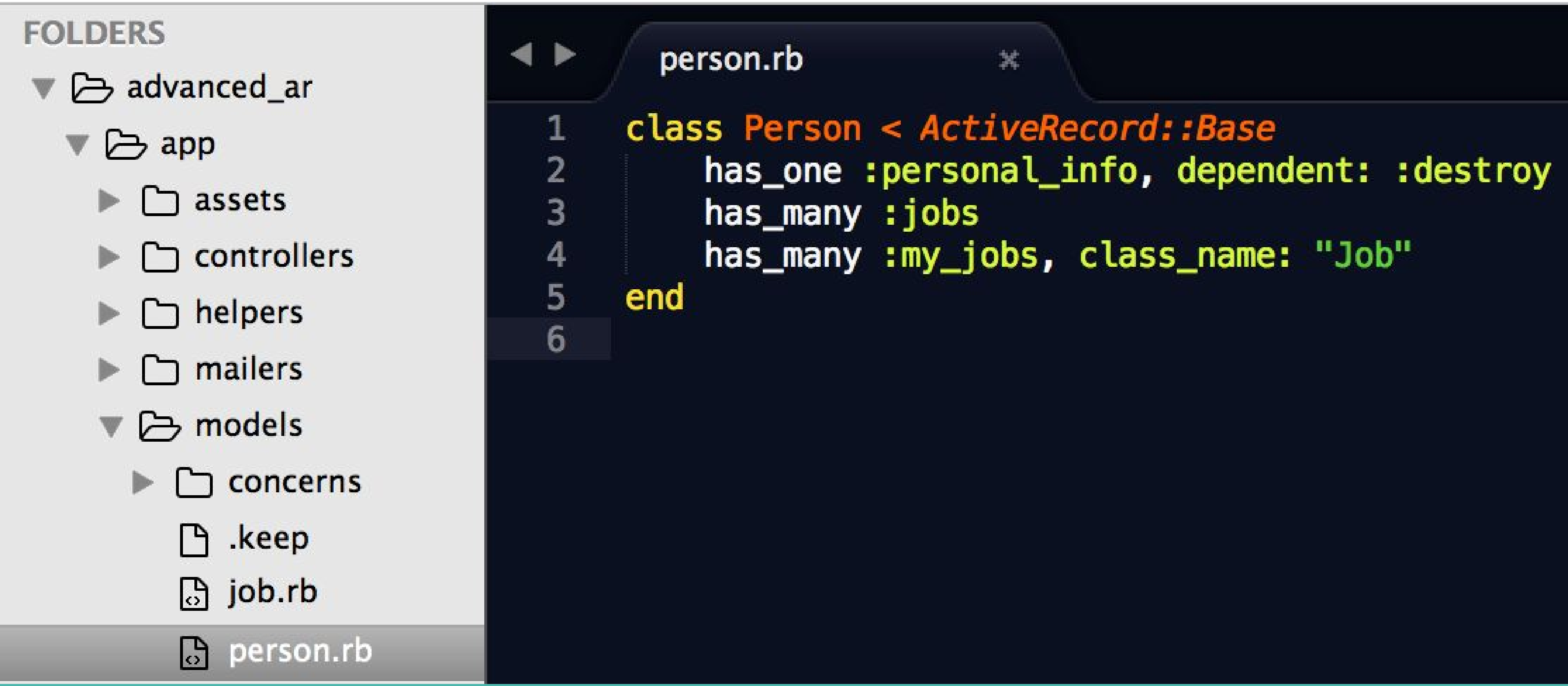


```
~/advanced_ar$ rails c
Loading development environment (Rails 4.2.3)
irb(main):001:0> Person.first.my_jobs
  Person Load (0.1ms)  SELECT  "people".* FROM "people"  ORDER BY "people"."id" ASC LIMIT 1
  Job Load (0.1ms)  SELECT "jobs".* FROM "jobs" WHERE "jobs"."person_id" = ?  [["person_id", 15]]
=> #<ActiveRecord::Associations::CollectionProxy [#<Job id: 2, title: "Developer", company: "MS", position_id: "#1234", person_id: 15,
2 14:39:19", updated_at: "2015-09-22 14:39:19">, #<Job id: 3, title: "Developer", company: "MS", position_id: "#1235", person_id: 15,
 14:39:19", updated_at: "2015-09-22 14:39:19">]>
```

:dependent / Cascade

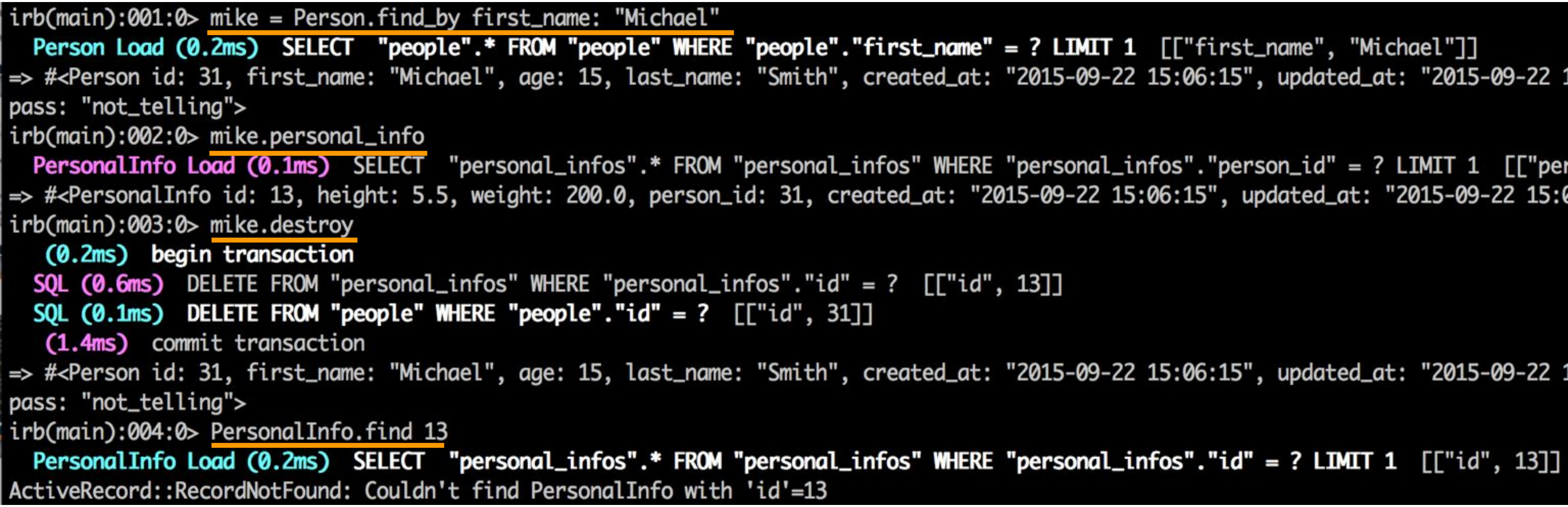
- **`has_many`**, **`has_one`** y **`belongs_to`** soportan la opción :dependent que permite especificar el destino de la asociación cuando se destruye el padre.
- :**`delete`** – eliminar los objetos asociados
- :**`destroy`** – lo mismo que el anterior, pero elimina la asociación llamando al método destroy.
- :**`nullify`** – setea el FK a NULL

:dependent - Ejemplo



```ruby
class Person < ActiveRecord::Base
    has_one :personal_info, dependent: :destroy
    has_many :jobs
    has_many :my_jobs, class_name: "Job"
end
```

:dependent - Ejemplo



```
irb(main):001:0> mike = Person.find_by first_name: "Michael"
  Person Load (0.2ms)  SELECT  "people".* FROM "people" WHERE "people"."first_name" = ? LIMIT 1  [["first_name", "Michael"]]
=> #<Person id: 31, first_name: "Michael", age: 15, last_name: "Smith", created_at: "2015-09-22 15:06:15", updated_at: "2015-09-22 1
pass: "not_telling">
irb(main):002:0> mike.personal_info
  PersonalInfo Load (0.1ms)  SELECT  "personal_infos".* FROM "personal_infos" WHERE "personal_infos"."person_id" = ? LIMIT 1  [["pe
=> #<PersonalInfo id: 13, height: 5.5, weight: 200.0, person_id: 31, created_at: "2015-09-22 15:06:15", updated_at: "2015-09-22 15:0
irb(main):003:0> mike.destroy
   (0.2ms)  begin transaction
  SQL (0.6ms)  DELETE FROM "personal_infos" WHERE "personal_infos"."id" = ?  [["id", 13]]
  SQL (0.1ms)  DELETE FROM "people" WHERE "people"."id" = ?  [["id", 31]]
   (1.4ms)  commit transaction
=> #<Person id: 31, first_name: "Michael", age: 15, last_name: "Smith", created_at: "2015-09-22 15:06:15", updated_at: "2015-09-22 1
pass: "not_telling">
irb(main):004:0> PersonalInfo.find 13
  PersonalInfo Load (0.2ms)  SELECT  "personal_infos".* FROM "personal_infos" WHERE "personal_infos"."id" = ? LIMIT 1  [["id", 13]]
ActiveRecord::RecordNotFound: Couldn't find PersonalInfo with 'id'=13
```

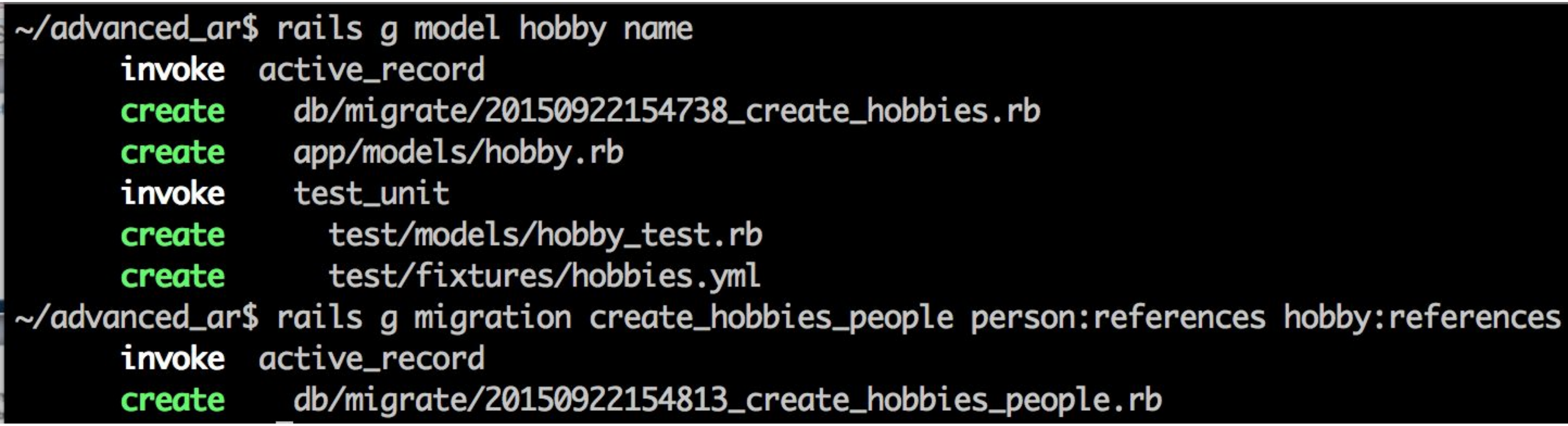
Asociaciones Many-to-Many

Many-to-Many

- Una persona puede tener **muchos** hobbies
- Un hobby puede ser compartido por **muchas** personas
- Para definir este tipo de asociaciones se utiliza: habtm (**has_and_belongs_to_many**).
- Se necesita una tabla extra para el join (**sin un modelo**, solo un migration)

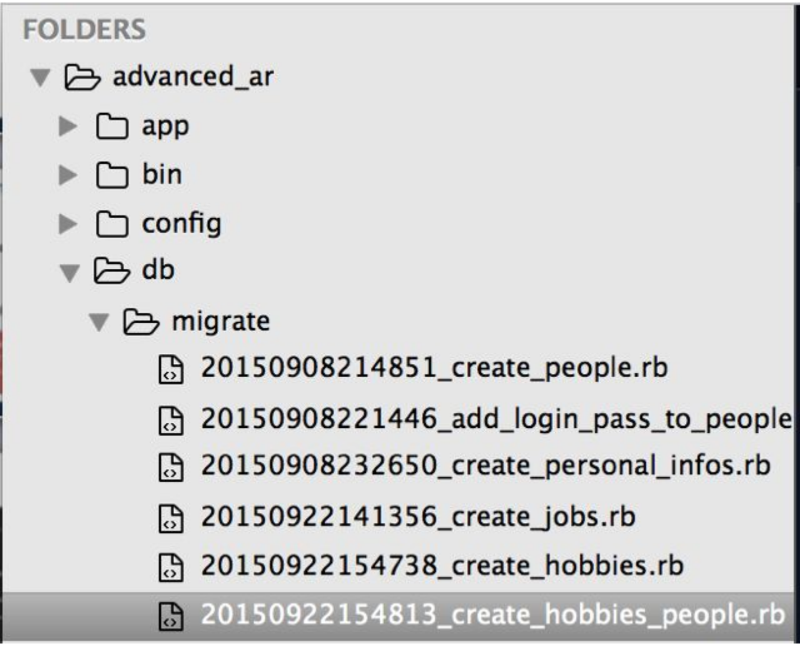
Convención: los nombres de los modelos en plural separados por un guión bajo en orden alfabético

Hobbies y Hobbies_People



```
~/advanced_ar$ rails g model hobby name
      invoke  active_record
      create    db/migrate/20150922154738_create_hobbies.rb
      create    app/models/hobby.rb
      invoke    test_unit
      create      test/models/hobby_test.rb
      create      test/fixtures/hobbies.yml
~/advanced_ar$ rails g migration create_hobbies_people person:references hobby:references
      invoke  active_record
      create    db/migrate/20150922154813_create_hobbies_people.rb
```

Hobbies_People Migration



FOLDERS
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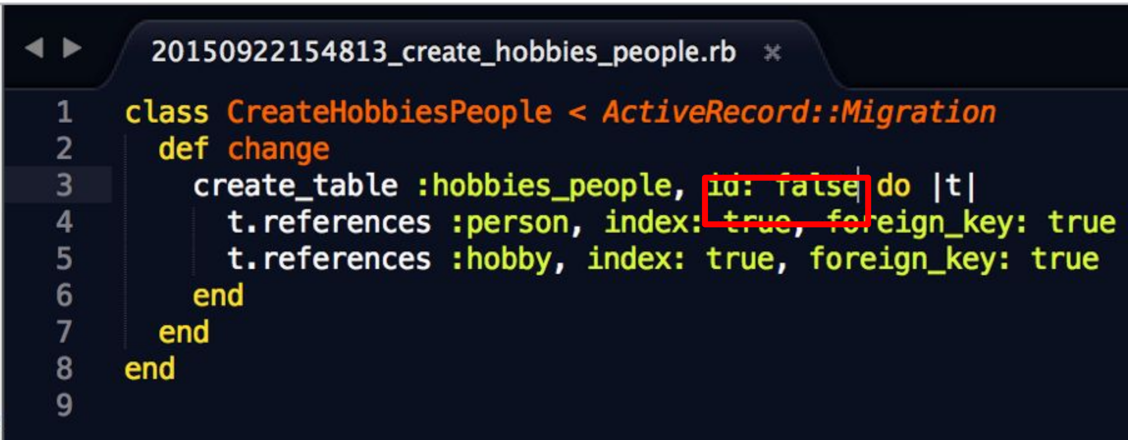
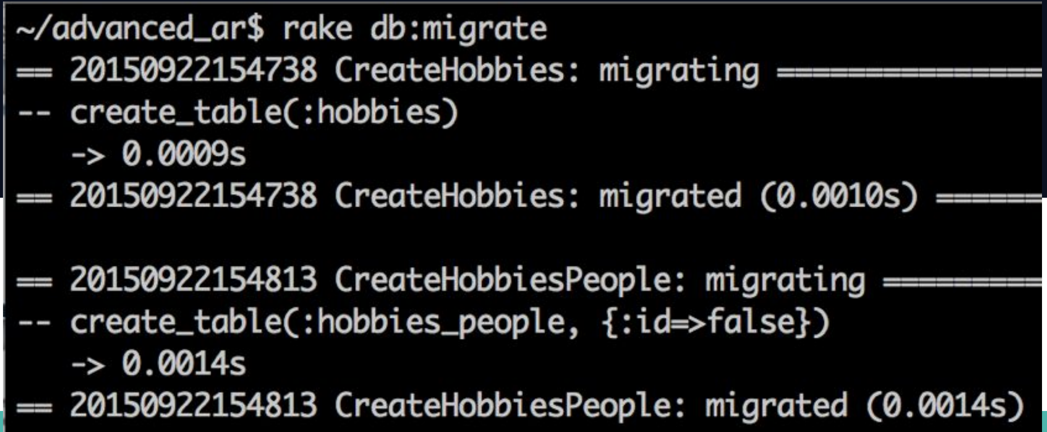
20150908221446_add_login_pass_to_people
20150908232650_create_personal_infos.rb
20150922141356_create_jobs.rb
20150922154738_create_hobbies.rb
20150922154813_create_hobbies_people.rb

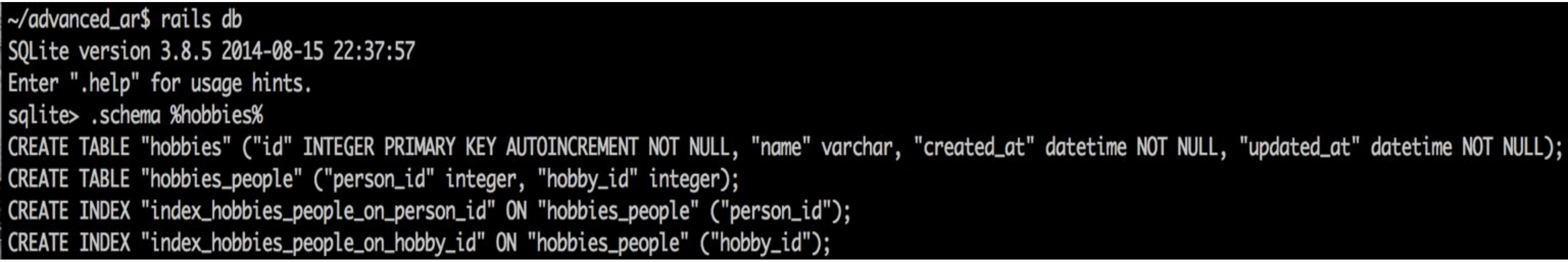


```
class CreateHobbiesPeople < ActiveRecord::Migration
  def change
    create_table :hobbies_people, id: false do |t|
      t.references :person, index: true, foreign_key: true
      t.references :hobby, index: true, foreign_key: true
    end
  end
end

```



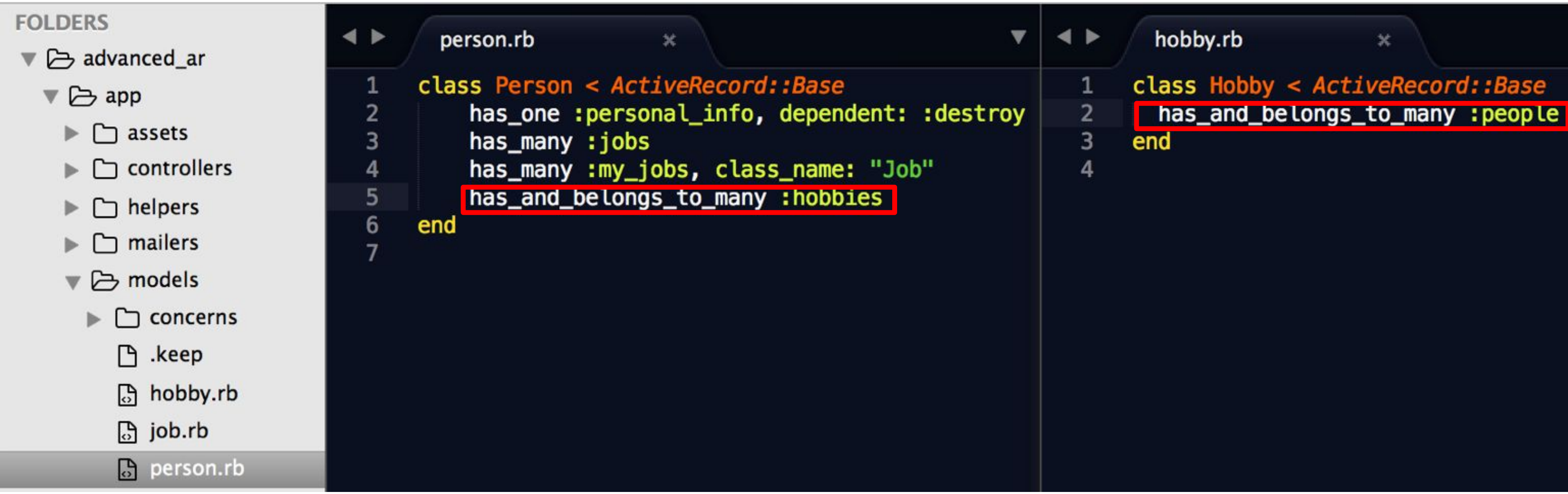
```
~/advanced_ar$ rake db:migrate
== 20150922154738 CreateHobbies: migrating ==================
-- create_table(:hobbies)
   -> 0.0009s
== 20150922154738 CreateHobbies: migrated (0.0010s) ========

== 20150922154813 CreateHobbiesPeople: migrating ===========
-- create_table(:hobbies_people, {:id=>false})
   -> 0.0014s
== 20150922154813 CreateHobbiesPeople: migrated (0.0014s)
```

Many-to-Many en la DB



```
~/advanced_ar$ rails db
SQLite version 3.8.5 2014-08-15 22:37:57
Enter ".help" for usage hints.
sqlite> .schema %hobbies%
CREATE TABLE "hobbies" ("id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL, "name" varchar, "created_at" datetime NOT NULL, "updated_at" datetime NOT NULL);
CREATE TABLE "hobbies_people" ("person_id" integer, "hobby_id" integer);
CREATE INDEX "index_hobbies_people_on_person_id" ON "hobbies_people" ("person_id");
CREATE INDEX "index_hobbies_people_on_hobby_id" ON "hobbies_people" ("hobby_id");
```

Person and Hobby Models



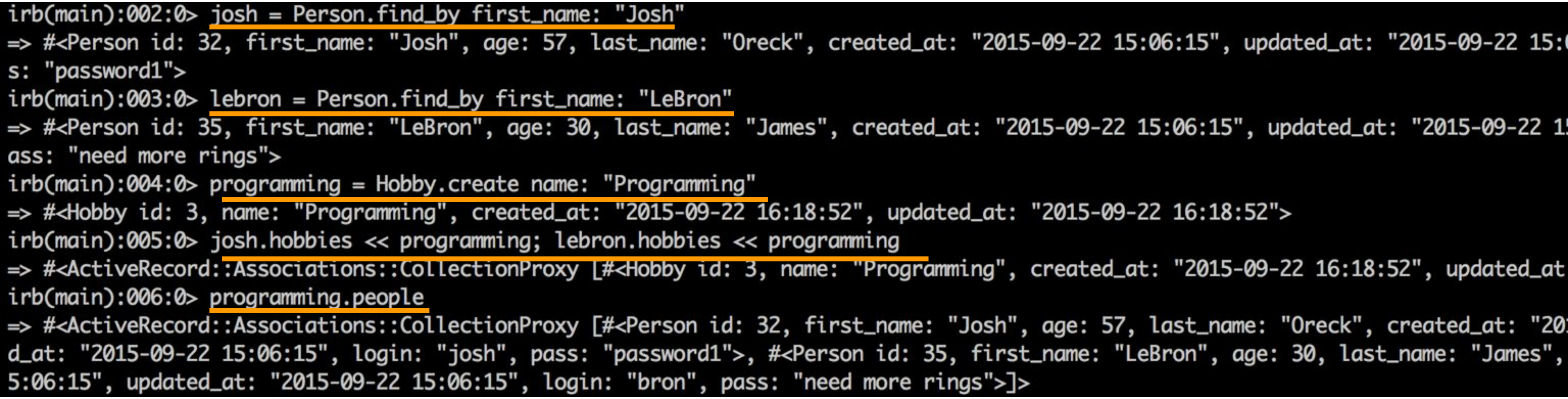
person.rb

```ruby
class Person < ActiveRecord::Base
    has_one :personal_info, dependent: :destroy
    has_many :jobs
    has_many :my_jobs, class_name: "Job"
    has_and_belongs_to_many :hobbies
end
```

hobby.rb

```ruby
class Hobby < ActiveRecord::Base
  has_and_belongs_to_many :people
end
```

How-to Queries



```
irb(main):002:0> josh = Person.find_by first_name: "Josh"
=> #<Person id: 32, first_name: "Josh", age: 57, last_name: "Oreck", created_at: "2015-09-22 15:06:15", updated_at: "2015-09-22 15:0
s: "password1">
irb(main):003:0> lebron = Person.find_by first_name: "LeBron"
=> #<Person id: 35, first_name: "LeBron", age: 30, last_name: "James", created_at: "2015-09-22 15:06:15", updated_at: "2015-09-22 15
ass: "need more rings">
irb(main):004:0> programming = Hobby.create name: "Programming"
=> #<Hobby id: 3, name: "Programming", created_at: "2015-09-22 16:18:52", updated_at: "2015-09-22 16:18:52">
irb(main):005:0> josh.hobbies << programming; lebron.hobbies << programming
=> #<ActiveRecord::Associations::CollectionProxy [#<Hobby id: 3, name: "Programming", created_at: "2015-09-22 16:18:52", updated_at
irb(main):006:0> programming.people
=> #<ActiveRecord::Associations::CollectionProxy [#<Person id: 32, first_name: "Josh", age: 57, last_name: "Oreck", created_at: "20
d_at: "2015-09-22 15:06:15", login: "josh", pass: "password1">, #<Person id: 35, first_name: "LeBron", age: 30, last_name: "James",
5:06:15", updated_at: "2015-09-22 15:06:15", login: "bron", pass: "need more rings">]>
```

Entonces

- **ONE-TO-ONE:** `has_one` / `belongs_to` (y una `columna integer` en la BD) es todo lo que se necesita para establecer una asociación one-to-one.
- **ONE-TO-MANY:** utiliza has_many y belongs_to.
  - Gestiona las relaciones "huérfanas" especificando la opción :dependent en la asociación principal
- **MANY-TO-MANY:** cuenta con 2 modelos y 3 migrations
  - La tabla join debe existir en la base de datos, pero no en código ruby (modelo)