

Model for Student Table

```
SELECT * FROM students;
```

```
+-----+-----+-----+-----+-----+
| id | name       | birth       | gpa  | grad  |
+-----+-----+-----+-----+-----+
|  1 | Anderson   | 1987-10-22 | 3.9  | 2009  |
|  2 | Jones      | 1990-04-16 | 2.4  | 2012  |
|  3 | Hernandez  | 1989-08-12 | 3.1  | 2011  |
|  4 | Chen       | 1990-02-04 | 3.2  | 2011  |
+-----+-----+-----+-----+-----+
```

Rails model class (app/models/student.rb):

```
class Student < ActiveRecord::Base
End
```

Command to create this class:

```
rails generate model student
```

Create New Record

```
student = Student.new  
student.name = "Williams"  
student.birth = "1989-11-16"  
student.gpa = 2.8  
student.grad = 2012  
student.save()
```

Read, Update, Delete

```
student = Student.find(187)
student = Student.find_by_name("Hernandez")
smarties = Student.find(:all,
                        :conditions => "gpa >= 3.0");
smarties = Student.find(:all, :limit => 10,
                        :order => "gpa DESC");
```

```
student = Student.find(187)
student.gpa = 4.0
student.save()
```

```
Student.find(187).destroy()
```

Many-to-One Relationships

```
SELECT * FROM students;
```

id	name	birth	gpa	grad	advisor_id
1	Anderson	1987-10-22	3.9	2009	2
2	Jones	1990-04-16	2.4	2012	1
3	Hernandez	1989-08-12	3.1	2011	1
4	Chen	1990-02-04	3.2	2011	1

```
SELECT * FROM advisors;
```

id	name	title
1	Fujimura	assocprof
2	Bolosky	prof

```
class Student < ActiveRecord::Base
  belongs_to :advisor
end
class Advisor < ActiveRecord::Base
  has_many :students
end
```

Many-To-One Examples

```
advisor = Advisor.find_by_name("Fujimura")
for student in advisor.students do
  ...
end
```

```
student = Student.find_by_name("Chen")
student.advisor = Advisor.find_by_name("Bolosky")
student.save
```

Many-to-Many Relationships

```
SELECT * FROM students;
```

id	name	birth	gpa	grad
1	Anderson	1987-10-22	3.9	2009
2	Jones	1990-04-16	2.4	2012
3	Hernandez	1989-08-12	3.1	2011
4	Chen	1990-02-04	3.2	2011

```
SELECT * FROM courses;
```

id	number	name	quarter
1	CS142	Web stuff	Winter 2009
2	ART101	Finger painting	Fall 2008
3	ART101	Finger painting	Fall 2008
4	PE204	Mud wrestling	Fall 2008

```
SELECT * FROM courses_students;
```

course_id	student_id
1	1
3	1
4	1
1	2
2	2
1	3
2	4
4	4

```
class Student < ActiveRecord::Base
  has_and_belongs_to_many :courses
end
class Course < ActiveRecord::Base
  has_and_belongs_to_many :students
end
```

Many-To-Many Examples

```
student = Student.find_by_name("Anderson")
cs142 = Course.find_by_number("CS142")
student.courses << cs142
```

Migration: Create New Table

db/migrate/20090215220309_create_students.rb:

```
class CreateStudents < ActiveRecord::Migration
  def up
    create_table :students do |t|
      t.column :name,      :string
      t.column :birth,     :date
      t.column :gpa,       :float
      t.column :grad,      :integer
    end
  end

  def down
    drop_table :students
  end
end
```


Migration: Add Column

```
db/migrate/20101013224357_add_advisor.rb:
```

```
class AddAdvisor < ActiveRecord::Migration
  def up
    add_column :students, :advisor_id, :integer
  end

  def down
    remove_column :students, :advisor_id
  end
end
```

Migration Utilities

```
rails generate migration create_students
```

```
rails generate model students
```

```
rake db:migrate
```

```
rake db:migrate VERSION=20090130180755
```

```
rake db:migrate VERSION=0
```

```
rake db:migrate:reset
```

