

# 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

---

```
students = Student.all()
student = Student.find(187)
student = Student.find_by(name: "Hernandez")
student = Student.find_by_name("Hernandez")
smarties = Student.where("gpa >= 3.0")
smarties = Student.order("gpa DESC").limit(10)
```

---

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

---

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

# Simple Example

---

```
app/controllers/students_controller.rb:
```

```
class StudentsController < ApplicationController
  ...
  def index
    @students = Student.all
  end
end
```

# Simple Example, cont'd

---

app/views/students/index.html.erb:

```
<%@title = "All Students"%>
<h1>Current Students</h1>
<table class="oddEven">
  <tr class="header">
    <td>Name</td>
    <td>Date of Birth</td>
    <td>GPA</td>
    <td>Graduation Year</td>
  </tr>
  <% for student in @students %>
    <tr class="<%= cycle('even', 'odd') %>">
      <td><%= link_to(student.name, action: :edit,
        id: student.id) %></td>
      <td><%= student.birth %></td>
      <td><%= student.gpa %></td>
      <td><%= student.grad %></td>
    </tr>
  <% end %>
</table>
```

# 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
```

Additional methods defined by Rails



# 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")
for course in student.courses do
  ...
end
```

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

Additional methods defined by Rails



# Migration: Create New Table

---

```
db/migrate/20090215220309_create_students.rb:
```

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

# Migration: Add Column

---

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

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

# Migration Utilities

---

```
rails generate migration create_students  
=> db/migrate/20131212210728_create_students.rb
```

```
rails generate model students
```

```
rake db:migrate
```

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

```
rake db:reset
```

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

