In this lecture, we will discuss…

✧ Web Caching

✧ Client Caching

Web Caching

✧ Temporary storage of documents to reduce bandwidth usage and server load, and improve performance

✧ Improve perceived performance by doing less and not repeating ourselves

Client Caching

✧ Caching Headers

- ETag

- Last-Modified

- cache-control

```
> response=HTTParty.head("http://localhost:3000/movies/12345")
> pp ["cache-control","etag","last-modified"].map {|h| {h=>response.header[h]}}
[{"cache-control"=>"max-age=0, private, must-revalidate"},
 {"etag"=>"W/\"ea6bd9165ddcfb2be59b079aee9fcfca\""},
  {"last-modified"=>nil}]
```

Etag: Using `cache_key`

✧ Value derived from the database - `cache_key` – same as returned in the response

```ruby
def show
  headers["ETag"]=Digest::MD5.hexdigest(@movie.cache_key)
end
```

```ruby
> HTTParty.head("http://localhost:3000/movies/12345.json").headers["ETag"]
  => "428600c9adc835d6feaefbab903ab72e"
```

Etag: Using `cache_key`

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```
def show
  headers["ETag"]=Digest::MD5.hexdigest(@movie.cache_key)
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```
> HTTParty.head("http://localhost:3000/movies/12345.json").headers["ETag"]
  => "428600c9adc835d6feaefbab903ab72e"
```

Etag: Using `cache_key`

✧ Calculate an ETag manually using the Active Model `cache_key`

```
> Movie.find("12345").cache_key
 => "movies/12345-20160112171635666000000"


> Digest::MD5.hexdigest(Movie.find("12345").cache_key)
 => "428600c9adc835d6feaefbab903ab72e"
```

Last-Modified

✧ Control `Last-Modified` as well

```
> Movie.find("12345").updated_at.httpdate
 => "Tue, 12 Jan 2016 17:16:35 GMT"
```

```
def show
  headers["ETag"]=Digest::MD5.hexdigest(@movie.cache_key)
  headers["Last-Modified"]=>@movie.updated_at.httpdate
end
```

```
> HTTParty.head("http://localhost:3000/movies/12345.json").headers["Last-Modified"]
 => "Tue, 12 Jan 2016 17:16:35 GMT"
```

fresh_when

✧ Rails provides convenient methods that perform the roles discussed

- **fresh_when**

```
def show
#    headers["ETag"]=Digest::MD5.hexdigest(@movie.cache_key)
#    headers["Last-Modified"]=@movie.updated_at.httpdate
   fresh_when(@movie)
 end
```

fresh_when

✧ last-modified – updated (based on content)

```
> response=HTTParty.head("http://localhost:3000/movies/12345"); #...
[{"cache-control"=>"max-age=0, private, must-revalidate"},
 {"etag"=>"\"2ce808f07c5ff27a4698a87d73cf0d3b\""},
 {"last-modified"=>"Tue, 12 Jan 2016 17:16:35 GMT"}]
```

Summary

✧ Web caching is a technology that can significantly enhance your Web browsing experience and reduce bandwidth usage

What's Next?

✧ Cache Revalidation Headers