THE CORNERSTONES OF EMBERJS

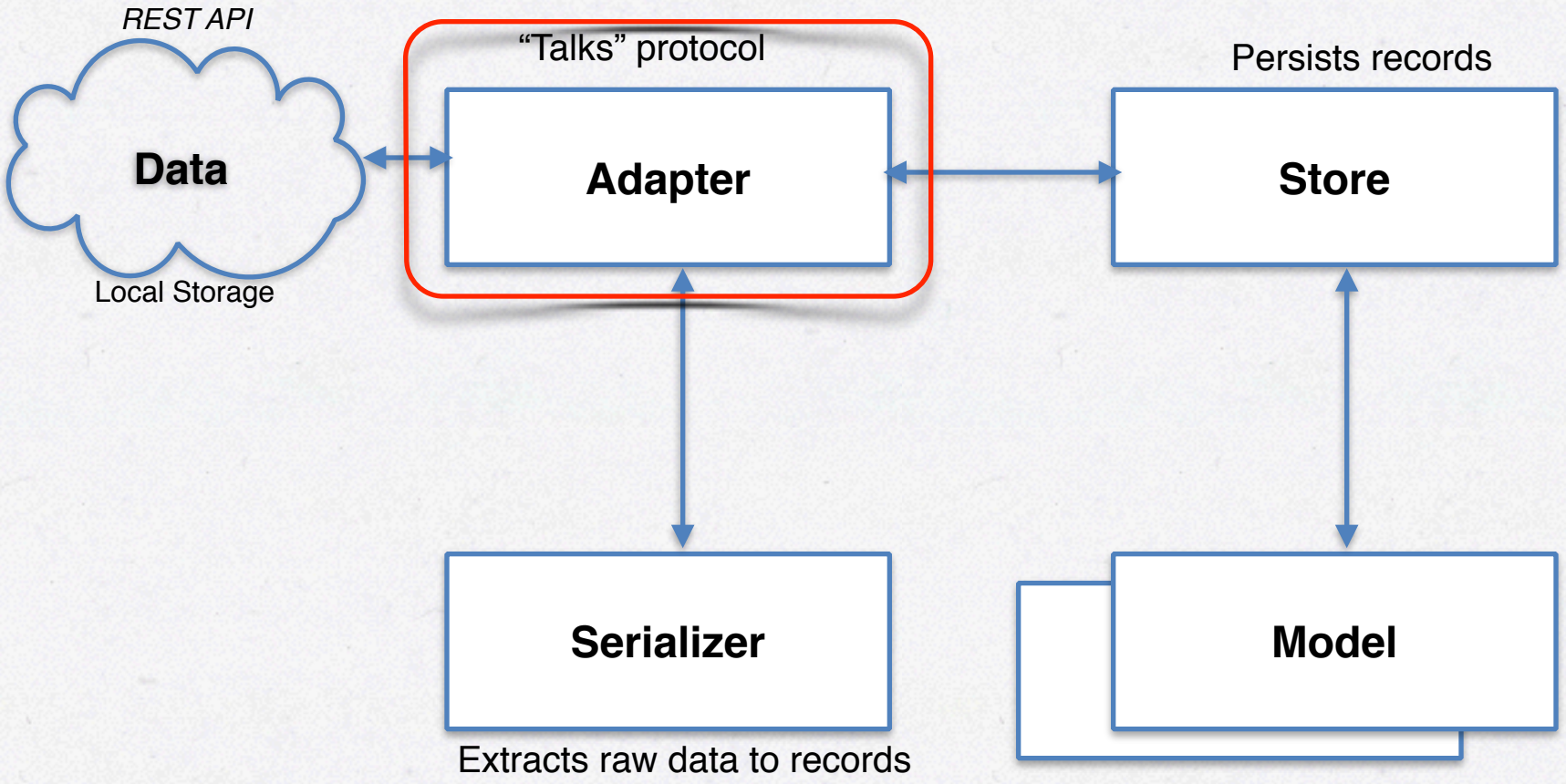
CADEC 2015

| CALLISTAENTERPRISE.SE

EMBER DATA

- Data persistence library
  - —> Only for Ember.js
- Separated code-source from Ember
- Assumes “sane” REST API defaults
- Manages models and their relationships
- Local cache

EMBER DATA - ARCHITECTURE



EMBER DATA - ADAPTER

- Receives requests from a store and translates them to appropriate actions against persistence layer
- Persistence layer examples:
  - HTTP API
  - browser local storage
- Provided adapters:
  - FixtureAdapter
  - RESTAdapter

EMBER DATA - ADAPTER - FIXTURE

- FixtureAdapter
  - records from memory
  - used for development and testing
  - provides all CRUD operations
  - possible to implement entire app with fixtures

- Docs : http://emberjs.com/api/data/classes/DS.FixtureAdapter.html

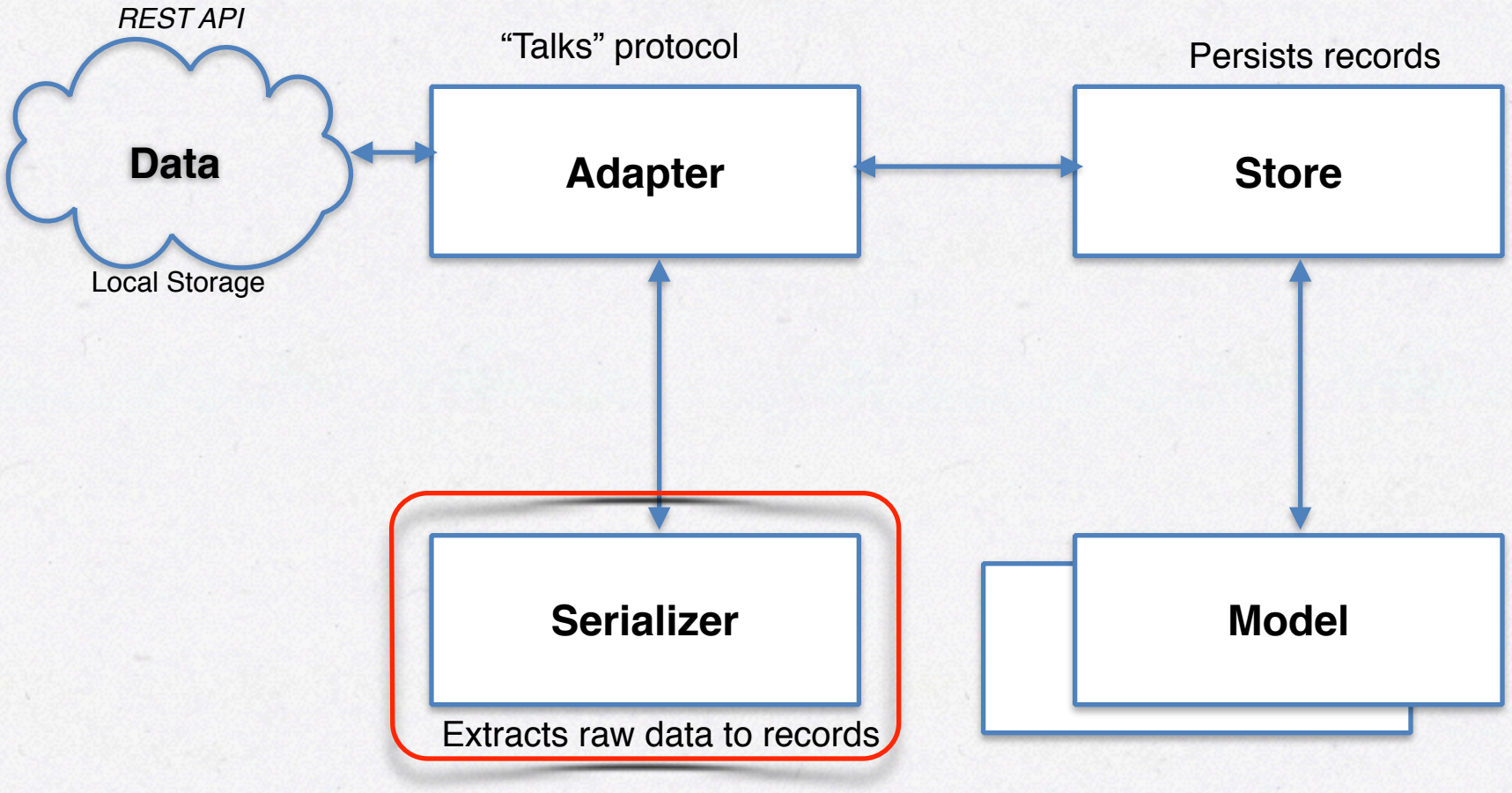
EMBER DATA - ADAPTER - REST

- RESTAdapter
  - allows store to communicate with HTTP server backend
  - expects conventional JSON structure
  - Example JSON for *GET* request *posts/1:*

```
{
  "post": {
    "id": 1,
    "title": “Ember Rocks",
    "body": “Ember is real MVC framework"
  }
}
```

- Docs: http://emberjs.com/api/data/classes/DS.RESTAdapter.html

EMBER DATA - ARCHITECTURE



EMBER DATA - SERIALIZER

- Turns raw JSON payload into record object
- Used by Adapter
- When sending to server **serialize**
- When receiving from server **normalize**
- Provided serializers:
  - RESTSerializer
    - http://emberjs.com/api/data/classes/DS.RESTSerializer.html

EMBER DATA - SERIALIZER

- Example *RESTSerializer*

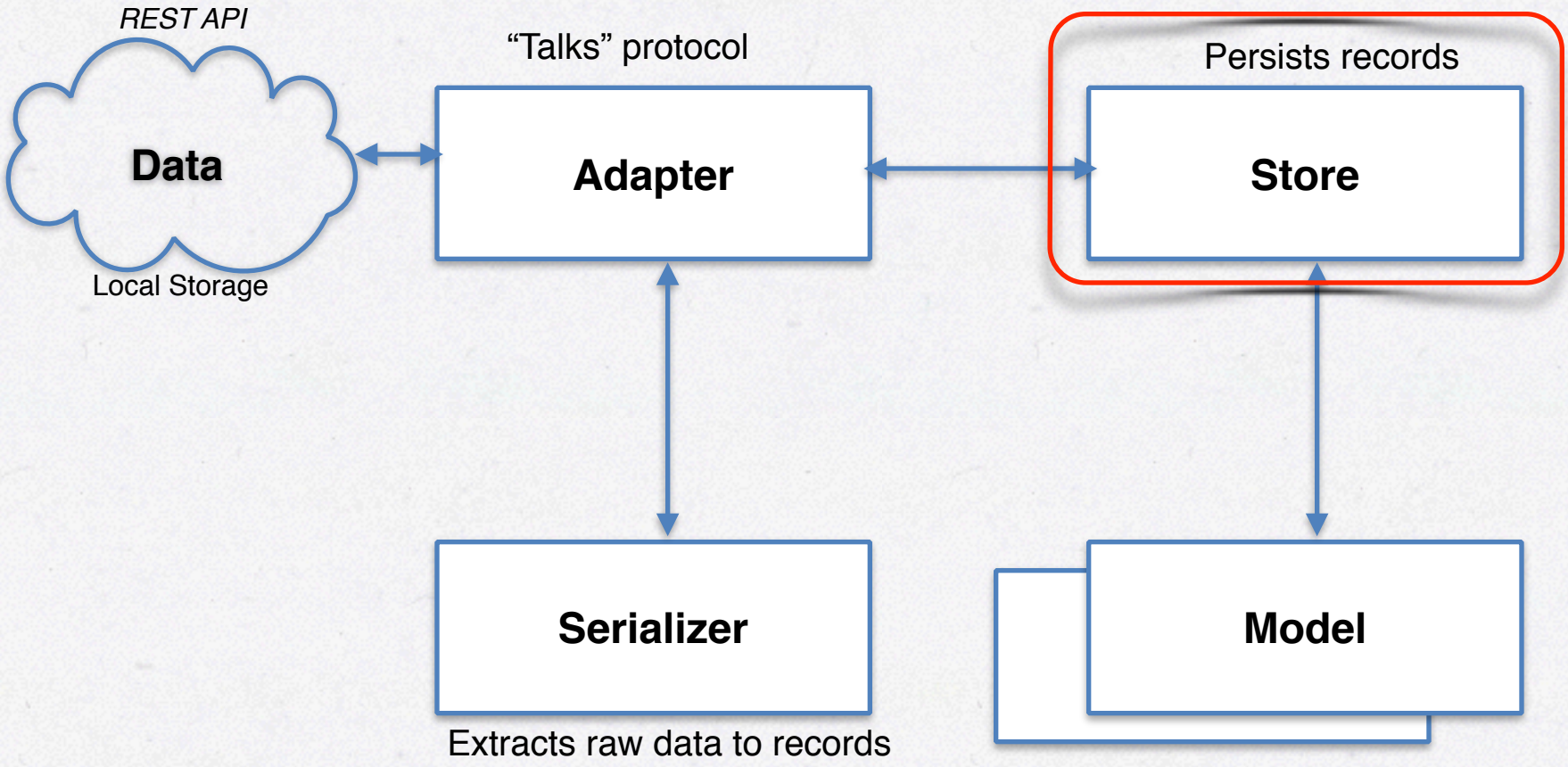
```
import DS from 'ember-data';

export default DS.RESTSerializer.extend({
  serializeHasMany: function(record, json, relationship) {
    var key = relationship.key;
    var payloadKey = this.keyForRelationship ? this.keyForRelationship(key, 'hasMany') : key;

    var relationshipType = record.constructor.determineRelationshipType(relationship);

    if (['manyToNone', 'manyToMany', 'manyToOne'].contains(relationshipType)) {
      json[payloadKey] = record.get(key).mapBy('id');
    }
  }
});
```

EMBER DATA - ARCHITECTURE



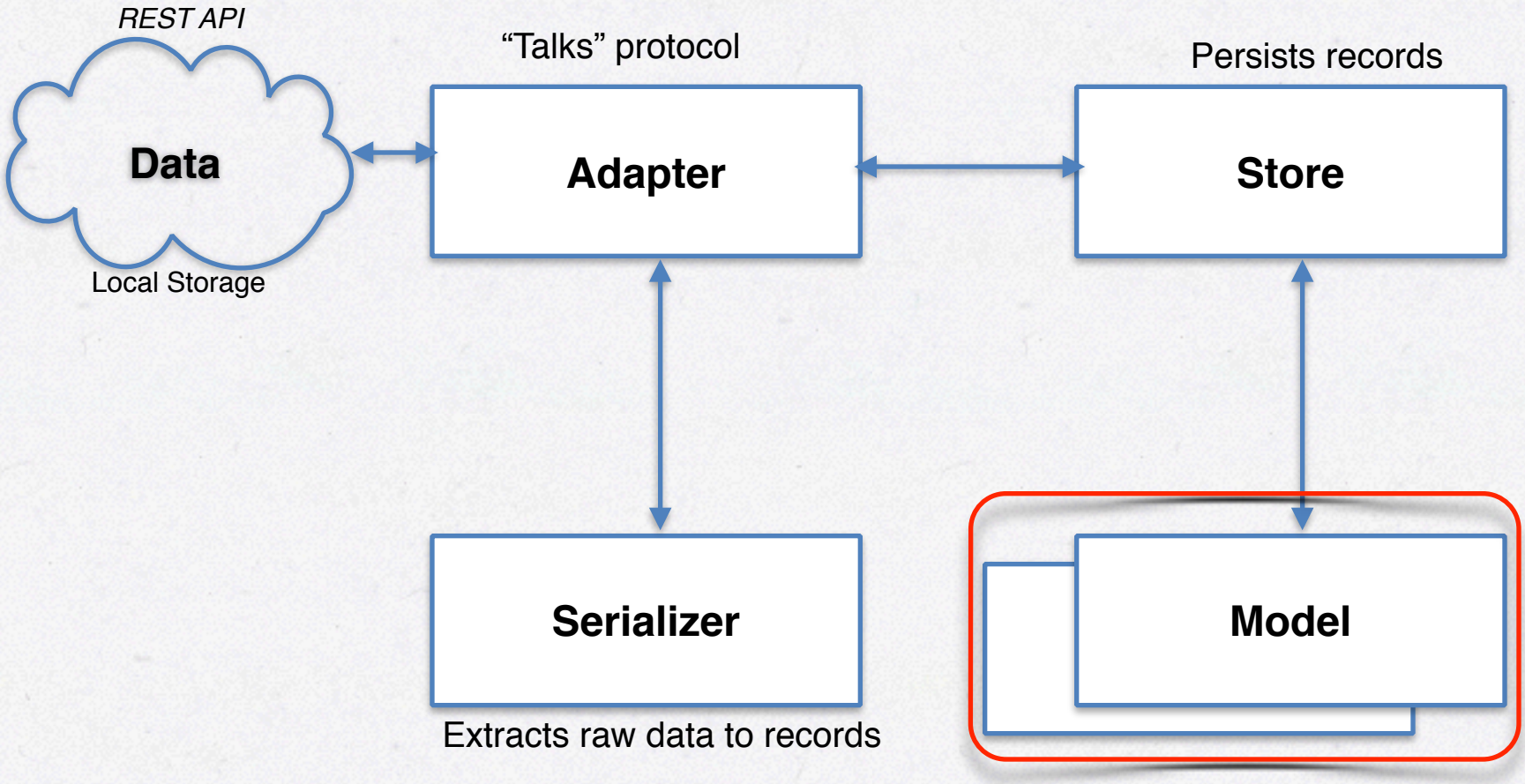
EMBER DATA - STORE

- Singelton instance
- Namespace === *DS*
- Central repository of records
- Functions as local cache
- Responsible for querying and saving of records
- Finders and save return promises
- Example finding a record *post* with id *1*:

```
this.store.find('post', 1).then(function(){
  // do something useful
});
```

- Docs: http://emberjs.com/api/data/classes/DS.Store.html

EMBER DATA - ARCHITECTURE



EMBER DATA - MODEL

- properties and behaviour of the data
- data types of the properties
- relationships with other objects

```
import DS from "ember-data";

export default DS.Model.extend({
  title: DS.attr('string'),
  body: DS.attr('string'),
  user: DS.belongsTo('user', {async:true}),
  comments : DS.hasMany('comment', {async:true})
});
```

- Docs: http://emberjs.com/guides/models/defining-models/

DS.belongsTo for **one-to-one**

```
User = DS.Model.extend({
  profile: DS.belongsTo('profile')
});

Profile = DS.Model.extend({
  user: DS.belongsTo('user')
});
```

EMBER DATA - MODEL - RELATIONSHIPS

DS.belongsTo in combination with ***DS.hasMany*** for **one-to-many**

```
Post = DS.Model.extend({
  comments: DS.hasMany('comment')
});

Comment = DS.Model.extend({
  post: DS.belongsTo('post')
});
```

EMBER DATA - MODEL - RELATIONSHIPS

DS.hasMany for **many-to-many**

```
Post = DS.Model.extend({
  tags: DS.hasMany('tag')
});

Tag = DS.Model.extend({
  posts: DS.hasMany('post')
});
```

EXERCISE 1

- ***GitHub link***

https://github.com/callistaenterprise/cadec-2015-ember/wiki/Models-Fixtures-and-Adapters

- ***Time 15 minutes***

ROUTER

- Manages and represents application state as a URL
- Initialises and updates the Controllers
- Injects Views in templates
- *map* method for definition of URL mappings
- Resources - Groups of routes working with a resource

- Docs: http://emberjs.com/guides/routing/

ROUTER

- Example of a router mapping:

```
import Ember from 'ember';
import config from './config/environment';

var Router = Ember.Router.extend({
  location: config.locationType
});

Router.map( function() {
  this.resource("posts", function() {
    this.resource("posts.post", {
      path: ":post_id"
    }, function() {
      this.resource("posts.post.comments", {
        path: "comments"
      }, function(){
        this.route('comment', { path: ':comment_id' });
      });
    });
    this.route("new");
  });
  this.route("login");
  this.route("logoff");
});
export default Router;
```

ROUTE

- One *route* per state
- Decides which model to be used
- Default routes:
  - *application* is the container for entire application
  - *index* is the route for the root '/'
- Transitioning
  - *beforeModel*
  - *afterModel*
- Path can be left out if same as template name

```
this.route('new');
```

URL	Route Name	Controller	Route	Template
`/`	`index`	`IndexController`	`IndexRoute`	`index`
N/A	`posts`	`PostsController`	`PostsRoute`	`posts`
`/posts`	`posts.index`	`PostsController` ↳ `PostsIndexController`	`PostsRoute` ↳ `PostsIndexRoute`	`posts` ↳ `posts/index`
`/posts/new`	`posts.new`	`PostsController` ↳ `PostsNewController`	`PostsRoute` ↳ `PostsNewRoute`	`posts` ↳ `posts/new`

- Docs: http://emberjs.com/guides/routing/

ROUTE

- Example *Post* route

```
import Ember from 'ember';

export default Ember.Route.extend({
  model: function(params) {
    return this.store.find('post', params.post_id);
  }
});
```

- Docs: http://emberjs.com/guides/routing/

CONTROLLER

- Can act as model decorator or as a proxy
- Template gets all it's properties from a controller
- Storage of application properties
- Controller types:
  - ObjectController
  - ArrayController
- Example dependency between *controllers*:

```
export default Ember.Controller.extend({
  needs: "posts/post"
});
```

- Docs: http://emberjs.com/guides/controllers/

CONTROLLER

- Example *PostController*

```
import Ember from 'ember';

export default Ember.ObjectController.extend({
  isEditing : false,
  actions : {
    edit : function(){
      this.set('isEditing', true);
    },
    done : function(post){
      this.set('isEditing', false);
      post.save();
    },
    cancel : function(post){
      post.rollback();
      this.set('isEditing', false);
      this.transitionToRoute('posts.post', post.get('id'));
    }
  }
});
```

- Docs: http://emberjs.com/guides/controllers/

TEMPLATE

- Handlebars templates
  - regular HTML with embedded expressions {{*someProperty*}}
- Default template is *application.hbs*
  - header, footer, and any other decorative content here
- *{{outlet}}*: a placeholder that the router will fill in with the appropriate template, based on the current URL
- Handlebars Helpers
  - {{*log*}} - to output variables to browser's console
  - {{*debugger*}} - to set breakpoints in template
- Navigation between *routes* using {{link-to}} Handlebars helper

```
<div>{{#link-to 'posts.new'}}New Post{{/link-to}}</div>
```

- Docs: *http://emberjs.com/guides/templates/handlebars-basics/*

TEMPLATE

- Example application.hbs:

```
<div id="wrap">
    {{partial 'p-header'}}

    <!-- Page content -->
    <div class="container">
      {{outlet}}
    </div>

   {{partial 'p-header'}}
</div>
```

- Docs: http://emberjs.com/guides/templates/handlebars-basics/

TEMPLATE - HELPER

- Example date-time helper:

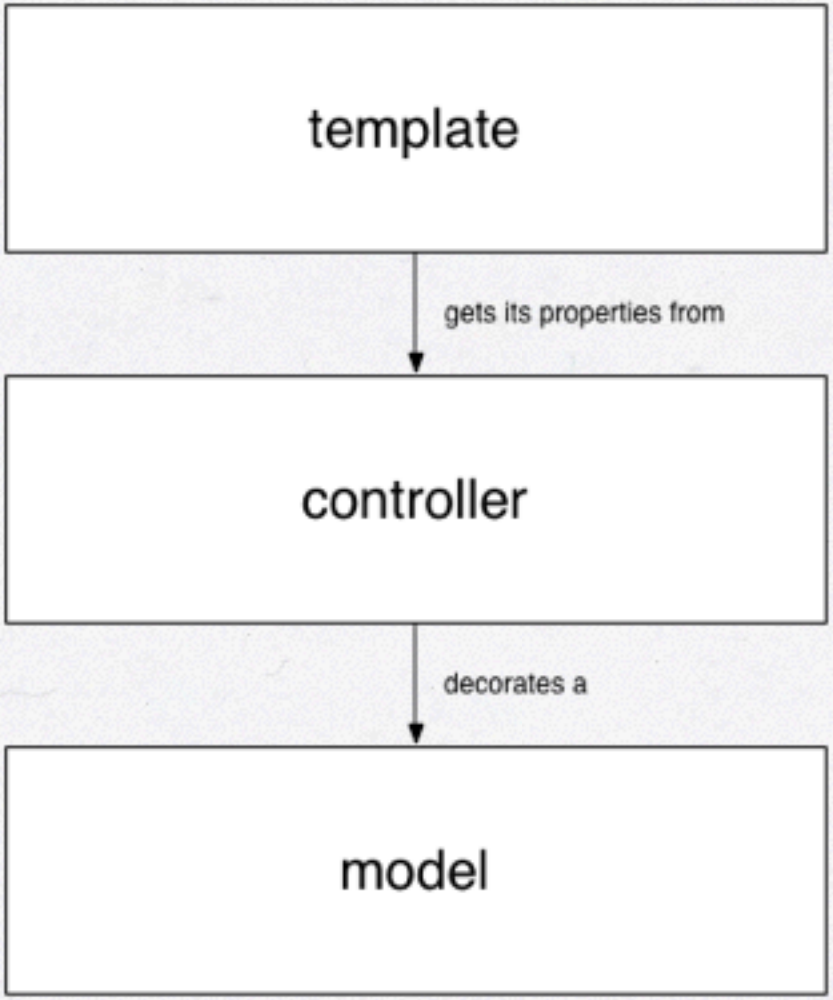
```
import Ember from 'ember';
/* global moment */

export function dateTime(date, format) {
  if (!date) {
    return "";
  }
  if(!format || !(typeof format === 'string' || format instanceof String)){
    return moment(date).format('YYYY-MM-DD');
  } else if(format === 'fromTo'){
    return moment(date).fromNow();
  } else {
    return moment(date).format(format);
  }
  return date;
}

export default Ember.Handlebars.makeBoundHelper(dateTime);
```

- Docs: http://emberjs.com/guides/templates/handlebars-basics/

COUPLING: TEMPLATE-CONTROLLER-MODEL



EXERCISE 2

- ***GitHub link***

https://github.com/callistaenterprise/cadec-2015-ember/wiki/Routes-Templates

- ***Time 15 minutes***

EXERCISE 3

- ***GitHub link***

https://github.com/callistaenterprise/cadec-2015-ember/wiki/Routes-Templates-Controllers

- ***Time 30 minutes***