ASL Day 6

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Micro Frameworks

A micro framework is a simple, lightweight and extensible web framework that provides a common structure, but often by default does not include page templating, database abstraction, data input validation, scaffolding, file uploading or file manipulation, built-in authentication, and other common framework functionality. This additional functionality must be included through external libraries or through the base language itself.
Advantages: Lightweight, only load what you need when you need it. Scalability with more traffic (in theory, faster).
Disadvantages: Provides basic structure, but you have to everything you need.

Full Stack Frameworks

Full stack frameworks include the most common functionality (database abstraction, authentication, templating) without having to include or declare additional libraries or plugins.
Advantages: Most common items included, so you just call method, or use existing class. Easy to build quick applications.
Disadvantages: May consume more resources, loads a lot of extra things you might never use, or only use for one part of your application.

Some Full Stack Frameworks

(Not a comprehensive list, just a sample)

PHP - Laravel, Symfony2, FuelPHP, Zend Framework, CakePHP

Python - Django, Web2Py, TurboGears

Ruby - Ruby on Rails

Node.js - Sails.js, CompoundJS, geddy, Derby, Meteor, Mojito, Sleekjs

ASL Class

We will be exploring the FuelPHP (PHP) and Ruby on Rails (Ruby) frameworks.

Active Record

- Database abstraction to expose tables, columns and rows as objects
- Translates commands into underlying SQL statements
- Used in many different languages and frameworks
- Objective is common functionality across databases, languages, and frameworks

Active Record Example

```
part = new Part()
part.name = "Sample part"
part.price = 123.45
part.save()
```

SQL Equivalent

```
INSERT INTO parts (name, price) VALUES ('Sample part', 123.45);
```

Object-Relational Mapping (ORM)
- Maps database table rows to objects
- Establishes relationships between objects

Create Record Example

```php
$props = array('property' => 'something');
$new = new Model_Example($props);
$new->save();
```

Read Example

```php
// you know there's an article with ID=2
$entry = Model_Article::find(2);

// find all articles
$entry = Model_Article::find('all');

// find all articles from category 1 order descending by date
$entry = Model_Article::find('all', array(
    'where' => array(
        array('category_id', 1),
    ),
    'order_by' => array('date' => 'desc'),
));
```

Object-Relational Mapping (ORM)

Update Record Example

```
$entry = Model_Article::find(4);
$entry->title = 'My first edit';
$entry->author = 'Total n00b';
$entry->save();
```

Delete Example

```
$entry = Model_Article::find(4);
$entry->delete();
```

Database Migrations and Scaffolding

Migrations
- Alter database structure in organized method.
- Tracks database schema changes, so that as changes are made they can be replicated through version changes.

Scaffolding
- Framework generates skeleton code and database schema.
- Create database schema through framework structure instead of directly through DBMS.
- Code CRUD functionality is auto-generated for you to modify.
- Some frameworks create controllers, views, and page templates as well.
- Designed to facilitate rapid development, since framework does the repetitive work.

Most well-known: Ruby on Rails. Many other frameworks in different languages have "Rails-like" functionality.

FuelPHP

http://fuelphp.com/

Set root of Apache to "public" directory

Ruby on Rails

Easy Mac installer
http://bitnami.com/stack/ruby

Today's Lab (Lab 6)

Using either FuelPHP or Ruby on Rails:

Create a microblog site (Twittra) that allows anyone to make a post, edit a post, or delete a post.
You do not need to have users register - all users are anonymous.
Use MySQL as your data source.

You can *reference* tutorials or examples on the Internet - just do not cut/paste, use the examples to learn the concepts to make your own project.

SUBMIT: Upload single zip file with source code to FSO Lab 6.