REST Controllers and Routing

Controllers, Routes, Responses

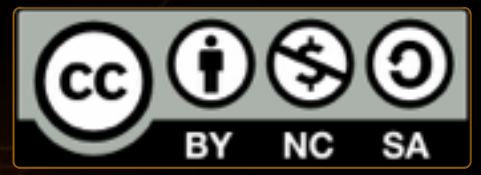

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Table of Contents

Symfony

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Controller

Control, Control, You Must Learn Control

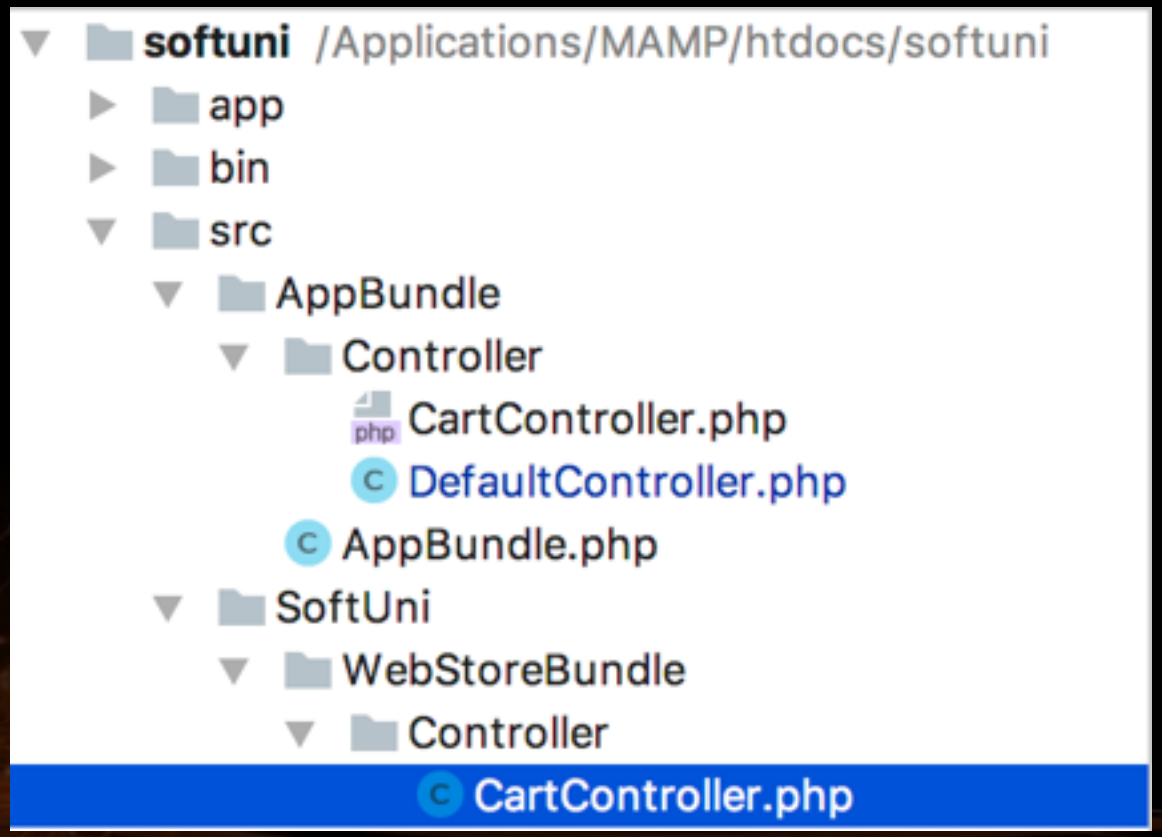
Controller

- Only concerned with *Controlling*
- Not responsible for the *doing*
- Takes care of web specific stuff

like authentication, cookies
request variables, query string

Controller

- Location: src/SomeNameBundle/Controller directory



Controller

- Controller names should end with "Controller"
- Controller action names should end with "Action"

```
class CartController extends Controller
{
    public function overviewAction(){}
    public function addAction(){}
    public function removeAction(){}
    public function emptyAction(){}
}
```

Controller

- Must always return Response:

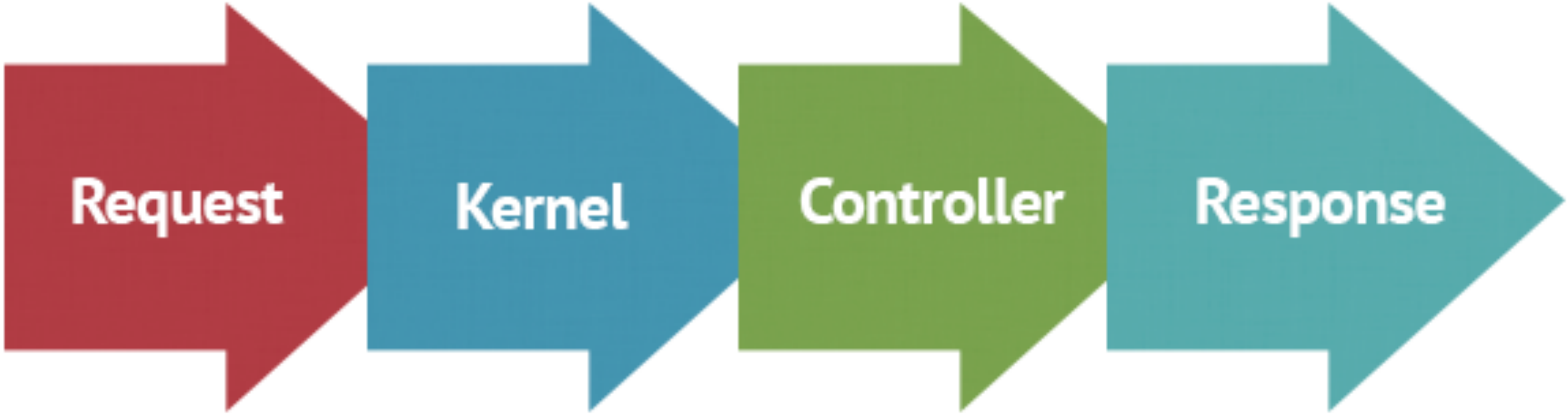
```
class CartController extends Controller
{
    public function overviewAction(){
        return $this->json(['num_items' => 2, 'total' => 10]);
    }
}
```

```
class CartController extends Controller
{
    public function overviewAction(){
        return new JsonResponse(['num_items' => 2, 'total' => 10]);
    }
}
```

- 5-10-20 rule:
  - 5 or less class variables
  - 10 or less actions
  - 20 or less lines of code for each action

Controller

Requests, Controller, Response Lifecycle



Controller

Symfony's Base Controller

- Provides access to helper methods and the service container
- Won't change your controller workflow

```
use Symfony\Bundle\FrameworkBundle\Controller\Controller;

class DefaultController extends Controller
{
```

Controller

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Symfony's Base Controller - helper methods example

```
public function helperMethodsAction()    {

    $this->generateUrl($route = 'homepage');
    $this->redirect($url = 'http://softuni.bg');
    $this->json($array = array());
    $this->render('AppBundle:Default:index.html.twig');
}
```

Symfony's Base Controller - services example

```
public function servicesAction()    {

    $templating = $this->get('templating');

    $router = $this->get('router');

    $mailer = $this->get('mailer');

    $doctrine = $this->get('doctrine');

}
```

Controller

Example

```php
<?php

namespace SoftUni\WebStoreBundle\Controller;

use Symfony\Bundle\FrameworkBundle\Controller\Controller;

class CartController extends Controller
{
    public function indexAction()
    {

        $items = $this->get('cart')->getItems();

        return $this->render('SoftUniWebStoreBundle:Cart:index.html.twig',
            array('items' => $items)
        );

    }
}
```

Problem 1: Create New Controller

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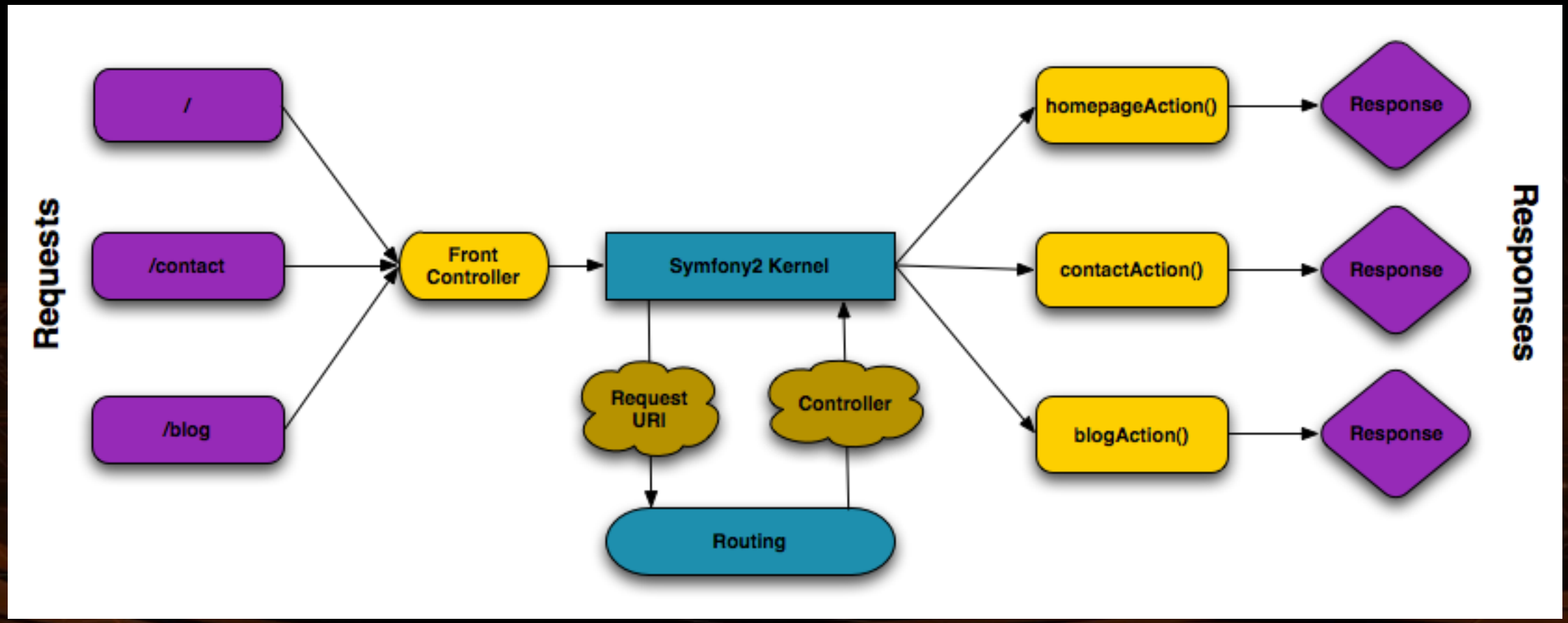
Routing

Routes and Mapping to Controller

Routing

Process of breaking the URL into components and deciding what script to call



Routing

Four ways to define routes:

- Annotations
- YAML
- XML
- PHP

No difference in execution time

Only one type of configuration is allowed

Routing

Annotation: @Route

```php
use Symfony\Bundle\FrameworkBundle\Controller\Controller;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Route;

class CartController extends Controller
{
    private $_items = [
        ['title' => "PHP MVC Fundamentals", 'price' => 10.00],
        ['title' => "Symfony Framework", 'price' => 15.00],
    ];
    /**
     * @Route("cart/overview", name="cart_overview")
     * @return \Symfony\Component\HttpFoundation\Response
     */
    public function indexAction()
    {
        return $this->json($this->_items);
    }
}
```

```yaml
#app/config/routing.yml
soft_uni_web_store:
    resource: "@SoftUniWebStoreBundle/Controller"
    type:     annotation
```

Routing

YAML

```php
class CartController extends Controller
{
    private $_items = [
        ['title' => "PHP MVC Fundamentals", 'price' => 10.00],
        ['title' => "Symfony Framework", 'price' => 15.00],
    ];

    public function indexAction()
    {
        return $this->json($this->_items);
    }
}
```

```yaml
#src/SoftUni/WebStoreBundle/Resources/config/routing.yml
soft_uni_web_store_cart_overview:
    path:     /cart/overview
    defaults: { _controller: SoftUniWebStoreBundle:Cart:index }
```

```yaml
#app/config/routing.yml
soft_uni_web_store:
    resource: "@SoftUniWebStoreBundle/Resources/config/routing.yml"
    prefix:   /
```

Routing

Configure different HTTP methods for the route

Annotation: @Method

```php
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Route;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Method;

class CartController extends Controller
{
    private $_items = [
        ['title' => "PHP MVC Fundamentals", 'price' => 10.00],
        ['title' => "Symfony Framework", 'price' => 15.00],
    ];
    /**
     * @Route("cart/overview", name="cart_overview")
     * @Method({"GET","POST"})
     * @return \Symfony\Component\HttpFoundation\JsonResponse
     */
    public function indexAction()
    {
        return $this->json($this->_items);
    }
}
```

Routing

Configure different HTTP methods for the route

YAML

```yaml
#src/SoftUni/WebStoreBundle/Resources/config/routing.yml
soft_uni_web_store_cart_overview:
    path:      /cart/overview
    defaults: { _controller: SoftUniWebStoreBundle:Cart:index }
    methods:  [GET, POST]
```

Routing

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Route Parameters Annotation

```
/**
 * @Route("cart/delete/{id}", name="cart_delete_item")
 */
public function deleteAction($id){
    $this->get('cart')->delete($id);
    //TODO
}
```

YAML

```
public function deleteAction($id){
    $this->get('cart')->delete($id);
    //TODO
}
```

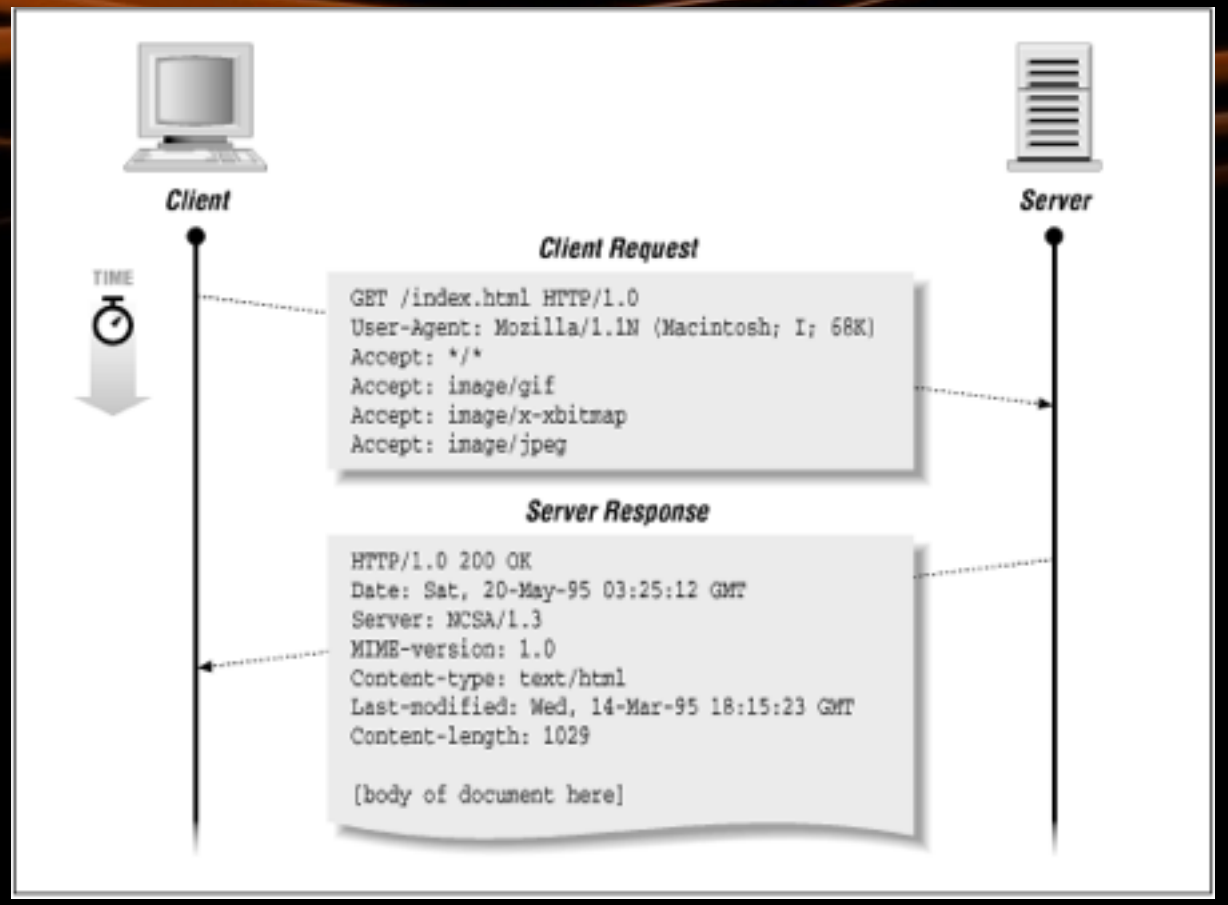
```
soft_uni_web_store_cart_delete_item:
    path:     /cart/delete/{id}
    defaults:     { _controller: SoftUniWebStoreBundle:Cart:delete }
```

Routing

Route Parameters

- Additional parameters are converted to query parameters
- Parameters names passed to the controller must match route parameters names
- Parameters and route parameters names must be the same

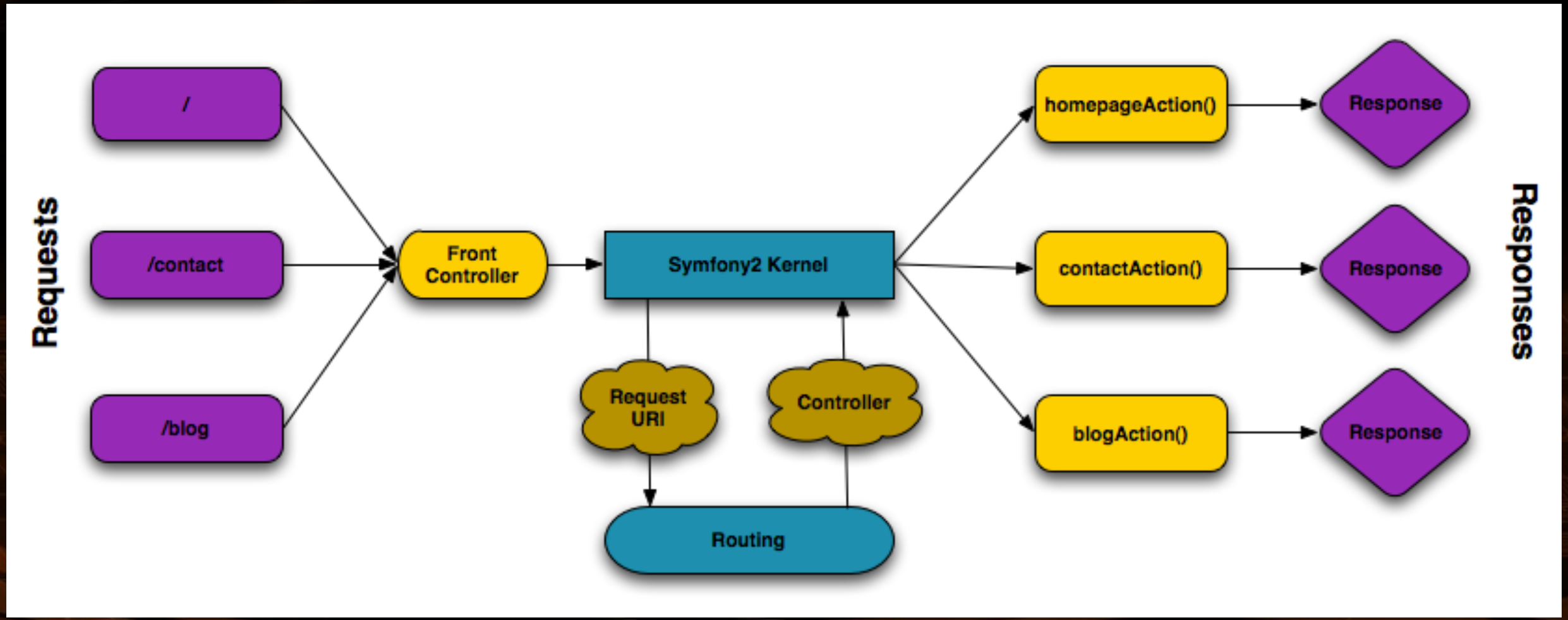
```
/**
 * @Route("cart/compare/{first_item}/{second_item}", name="cart_compare_items")
 */
public function compareAction($first_item, $second_item)  {}
```



Request & Response

Request & Response

Symfony Application Lifecycle



Request & Response

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Symfony Application Lifecycle

- Client sends an HTTP Request
- For each request the front controller is executed: app.php or app_dev.php
- Router component matches the request and execute controller
- Response object is returned

Request & Response

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Request

- Import the Request Object in controller class

```
use Symfony\Component\HttpFoundation\Request;
```

- To use it in your controller type-hint it with the Request class

```
/**
 * @Route("cart/overview", name="cart_overview")
 * @Method({"GET","POST"})
 */
public function indexAction(Request $request)
{
    $ref = $request->query->get('_ref');
    $session = $request->getSession();
}
```

Request & Response

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Request Examples:

```php
public function indexAction(Request $request)
{
    //get $_POST parameters
    $httpPostParam = $request->request->get('post_param');
    //get $_GET parameters
    $httpGetParam = $request->query->get('get_param');
    //get session
    $session = $request->getSession();
    //get cookies
    $cookies = $request->cookies->get('cookie_name');
    //get uploaded files
    $files = $request->files;
    //get request method
    $method = $request->getMethod();
```

Request & Response

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Response

- Import the Response Object in controller class

```
use Symfony\Component\HttpFoundation\Response;
```

```
public function helloAction(Request $request, $name) {
    $content = "Hello, $name";
    return new Response($content);
}
```

```
public function helloAction(Request $request, $name) {
    $content = "Hello, $name";
    return new Response($content,
                Response::HTTP_OK,
                array('content-type' => 'text/html'));
}
```

Request & Response

JsonResponse

```
use Symfony\Component\HttpFoundation\JsonResponse;
```

```
class CartController extends Controller
{
    private $_items = [
        ['title' => "PHP MVC Fundamentals", 'price' => 10.00],
        ['title' => "Symfony Framework", 'price' => 15.00],
    ];

    /**
     * @Route("cart/summary", name="cart_summary")
     */
    public function cartSummaryAction()    {
        return new JsonResponse($this->_items);
    }
```

Request & Response

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Response Content-Types

- json - application/json
- xml - application/xml
- png image - image/png
- html - text/html
- full list of content types: developer.mozilla.org

Request & Response

Set Conten-type Examples

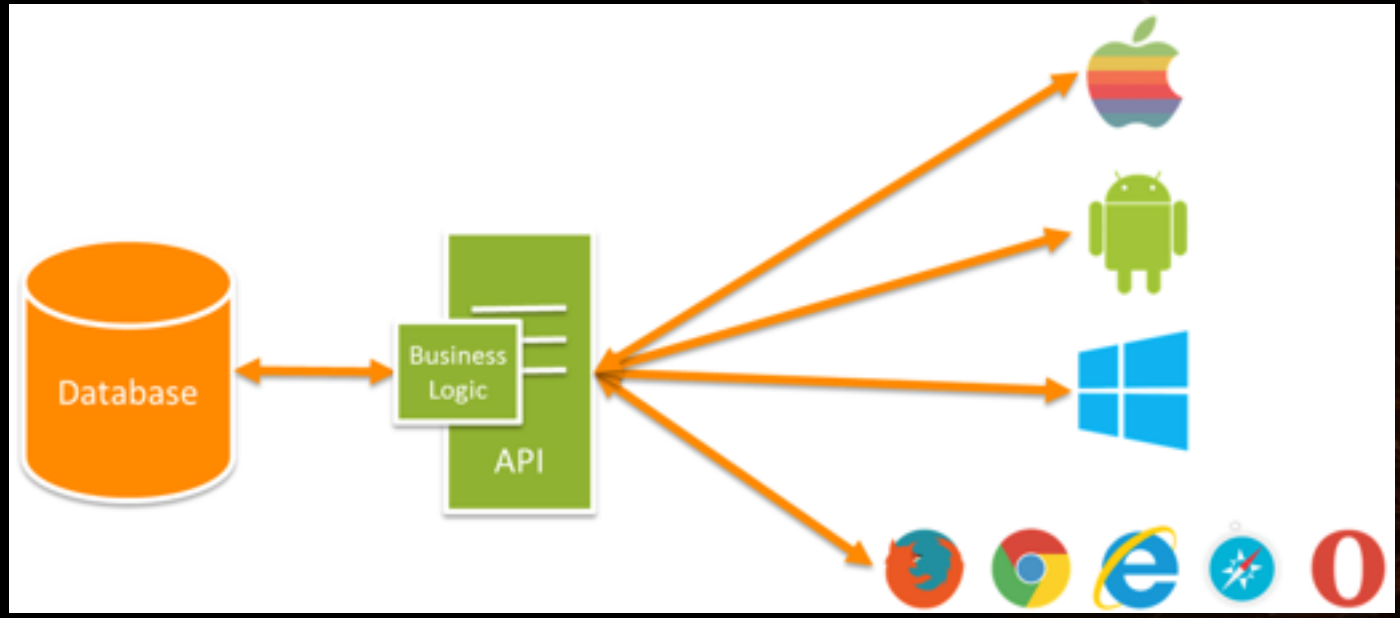
```
public function jsonResponseAction()    {
    return new Response(
        json_encode($this->_items),
        Response::HTTP_OK,
        array('application/json')
    );
}
```

```
public function jsonResponseAction()    {
    $response = new Response();
    $response->setContent('<strong>Hello World</strong>');
    // the headers public attribute
    // is a Symfony\Component\HttpFoundation\ResponseHeaderBag
    $response->headers->set('Content-Type', 'text/html');
    $response->setStatusCode(Response::HTTP_NOT_FOUND);
    return $response;
}
```

REST

What is REST?

- REpresentational State Transfer
- Interface from one program to another
- REST is stateless
- REST is resource based



REST

REST & HTTP

- Request methods:
  - GET - Get resource
  - POST - Create resource
  - PUT - Update resource
  - PATCH - Partly update resource
  - DELETE - Delete resource
  - HEAD - Get headers for resource
- Response: json, xml

REST

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REST URLs

- GET - HTTP://MYSITE.COM/API/USERS
- GET - HTTP://MYSITE.COM/API/USERS/1
- POST - HTTP://MYSITE.COM/API/USERS
- PUT - HTTP://MYSITE.COM/API/USERS/1
- DELETE - HTTP://MYSITE.COM/API/USERS/1

REST

REST Controllers

A Symfony controller configured for specific http method

```
class ItemController extends Controller
{
    /**
     * http://domain.com/item/1
     * @Route("item/{id}", name="api_get_item")
     * @Method({"GET"})
     */
    public function getItemAction($id)    {
        return new JsonResponse($this->_items[$id]);
    }
```

REST

REST Controllers

Add prefix to your controller using the @Route annotation

```
/**
 * @Route("/api/v1/")
 */
class ItemController extends Controller
{
    /**
     * http://domain.com/api/v1/item/1
     * @Route("item/{id}", name="api_get_item")
     * @Method({"GET"})
     */
    public function getItemAction($id)    {
        return new JsonResponse($this->_items[$id]);
    }
```

REST

REST Controllers

Prefix with YAML

```
#app/config/routing.yml
soft_uni_web_store:
    resource: "@SoftUniWebStoreBundle/Resources/config/routing.yml"
    prefix:   /api/v1/
```

Summary

- Controllers - Create controllers, actions, 5-10-20 rule
- Routing - Define routes, configuration, route parameters
- Request & Response - Request methods, Response types
- REST - Rest concepts, REST URIs, Responses

REST Controllers and Routing

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