

The background of the image is a vibrant, abstract painting. It features swirling patterns of yellow, orange, red, blue, and green. A prominent feature is a large, dark circular hole in the upper right quadrant. In the lower left corner, there is a smaller, solid-colored circle. The overall texture appears rough and expressive.

MVC

Model-View-Controller

Framework

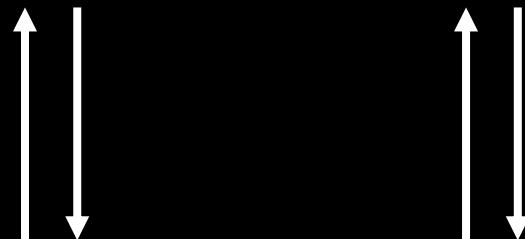
- A basic platform which provides **structure**
- Makes **collaboration** in a team easier
- There are **many** different frameworks to choose from
- You can even **create** your own
- Each having different **learning curves**

MVC

- An architectural pattern in programming
- Isolates business logic from the UI
- Model refers to data, view refers to the presentation layer, and controller to the application or business logic
- MVC breaks up the development process, so we can work on individual elements while others are unaffected

Controller
(PHP class)

Central component
Does all business processes

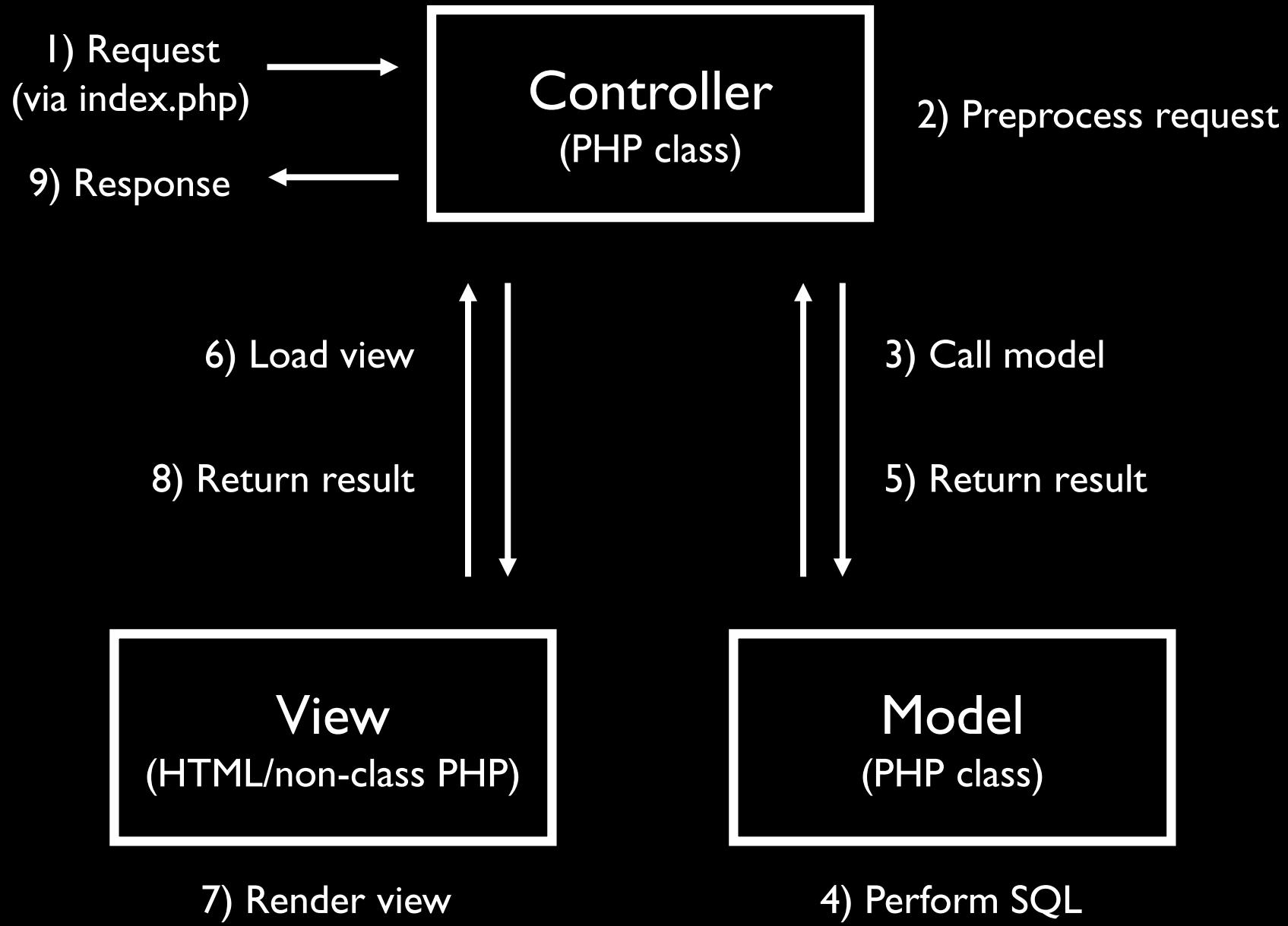


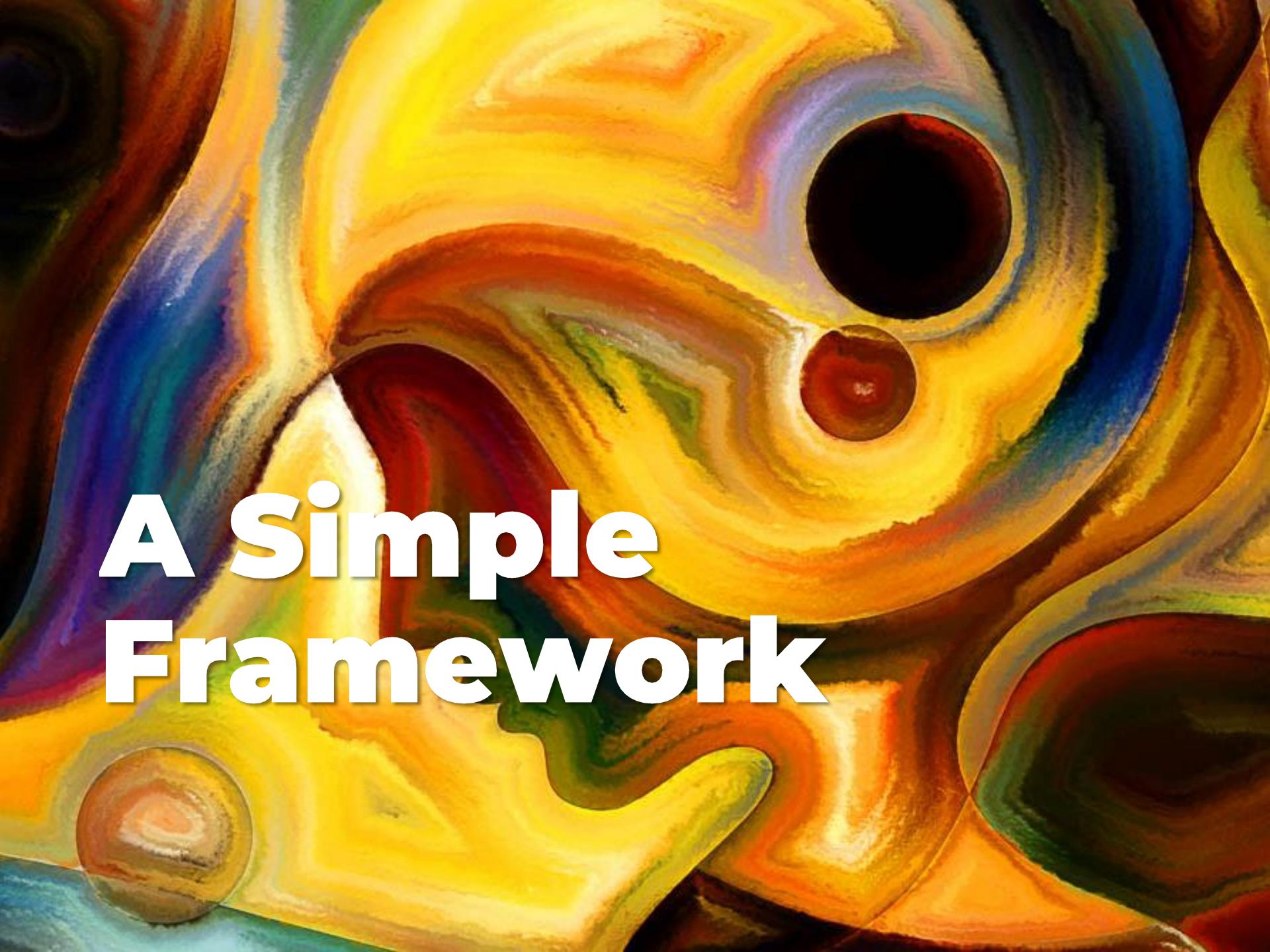
View
(HTML/non-class PHP)

Contains view

Model
(PHP class)

Manages data



The background of the image is a vibrant, abstract painting. It features swirling patterns of yellow, orange, red, blue, and green. Several circular holes of varying sizes are scattered across the surface, some appearing as bright highlights and others as dark, deep voids. The overall texture is rough and expressive.

A Simple Framework

Create Files and Directories

- controllers (containing file Controller.class.php)
- models (containing file Model.class.php)
- views
- index.php

Create Base Controller Class

(controllers/Controller.class.php)

```
<?php class Controller {  
  
    public function loadModel($modelName) {  
        include_once "models/Model.class.php";  
        include_once "models/$modelName.class.php";  
  
        return new $modelName;  
    }  
  
    // continued on the next slide
```

Create Base Controller Class (controllers/Controller.class.php)

```
public function loadView($viewName, $data = []) {  
    foreach ($data as $var => $value) {  
        $$var = $value;  
    }  
  
    include_once "views/$viewName.php";  
}  
}
```

Create Base Model Class

(models/Model.class.php)

```
<?php class Model {  
  
    protected $mysqli;  
  
    public function __construct() {  
        $dbhostname = 'localhost';  
        $dbusername = 'root';  
        $dbpassword = '';  
        $dbname = 'dbname';  
  
        $this->mysqli = new mysqli($dbhostname, $dbusername,  
        $dbpassword, $dbname);  
  
        if ($this->mysqli->connect_errno) {  
            die('Database connection error!');  
        }  
    }  
}
```

index.php – Get Controller & Function from URL

```
<?php  
  
error_reporting(~E_NOTICE);  
  
// 'Home' is the default controller  
$controller = isset($_GET['c']) ? $_GET['c'] : 'Home';  
  
// 'index' is the default method  
$method = isset($_GET['m']) ? $_GET['m'] : 'index';
```

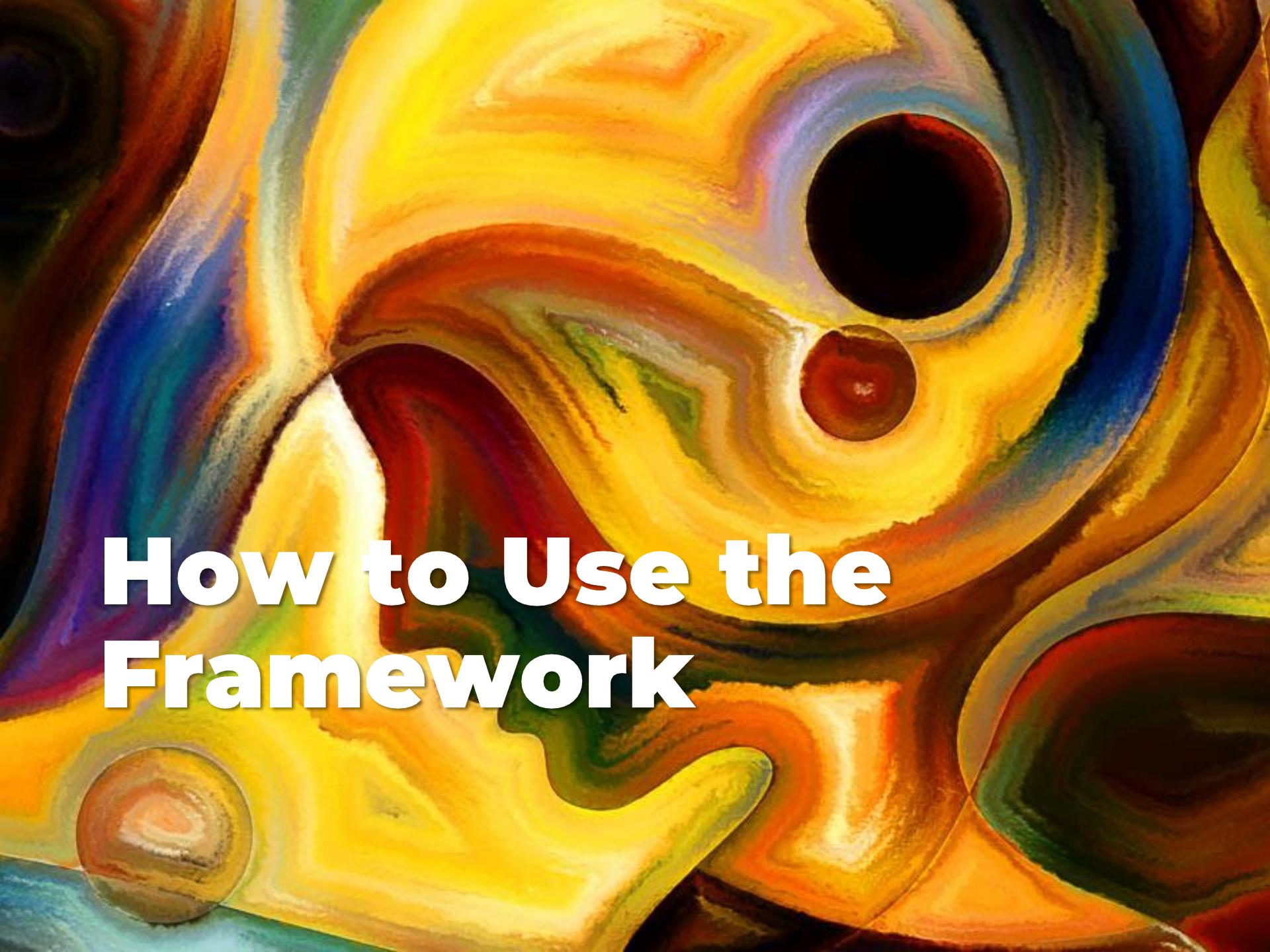
index.php – Call Controllers

```
include_once "controllers/Controller.class.php";
include_once "controllers/$controller.class.php";

// Go!
(new $controller)->$method();
```

URL Format

- Format:
`<domain>/?c=<controller>&m=<method>`
- `http://example.com/?c=User&m=login`
- `http://example.com/?c=User&m=register`
- `http://example.com/?c=Post&m=create`

The background of the image is a vibrant, abstract painting. It features swirling patterns of warm colors like yellow, orange, and red, interspersed with cooler tones of blue and green. Several large, dark circular shapes, resembling eyes or holes, are scattered across the composition, with one prominent one in the upper right and another smaller one in the lower left.

How to Use the Framework

Class Structure

- Post.class.php extends Controller.class.php
- PostModel.class.php extends Model.class.php

Model: Read

(models/PostModel.class.php)

```
<?php class PostModel extends Model {  
  
    public function getAll() {  
        $sql = 'SELECT * FROM post';  
  
        return $this->mysqli->query($sql);  
    }  
}
```

Controller: Read (controllers/Post.class.php)

```
<?php class Post extends Controller {  
  
    public function index() {  
        // Load model  
        $postModel = $this->loadModel('PostModel');  
  
        // Get data from the model  
        $posts = $postModel->getAll();  
  
        // Load the view  
        $this->loadView('posts', ['posts' => $posts]);  
    }  
}
```

View: Read (views/posts.php)

```
<a href="?c=Post&m=create">Create Post</a>
<?php

if (!$posts->num_rows) {
    echo 'No posts.';
} else {
    while ($post = $posts->fetch_object()) {
        echo "<h3>$post->title</h3>";
        echo "<a href=\"?c=Post&m=edit&id=$post->id\">Edit</a>";

        printf('<form action="?c=Post&m=delete" method="post"><input
type="hidden" name="id" value="%d"><input type="submit"
value="Delete"></form>', $post->id);

        echo "<p align=\"justify\">$post->content</p>";
    }
}
```

An abstract painting featuring swirling patterns of yellow, orange, red, green, blue, and purple. Three distinct circular areas are highlighted: a large dark circle in the upper right, a smaller reddish-orange circle below it, and a smaller circular area with concentric rings in the lower left.

<http://localhost/mvc/?c=Post>

Model: Create

(models/PostModel.class.php)

```
<?php class PostModel extends Model {  
    // ...  
  
    public function insert($title, $content) {  
        $sql = "INSERT INTO post (title, content)  
VALUES ('$title', '$content');  
  
        $this->mysqli->query($sql);  
    }  
}
```

Controller: Create (controllers/Post.class.php)

```
<?php class Post extends Controller {  
  
    // ...  
  
    public function create_form() {  
        $this->loadView('insert_post');  
    }  
  
    public function create_process() {  
        $postModel = $this->loadModel('PostModel');  
        $title = $_POST['title'];  
        $content = $_POST['content'];  
  
        $postModel->insert($title, $content);  
        header('Location: ?c=Post');  
    }  
}
```

View: Create (views/posts.php)

```
<form action="?c=Post&m=create_process" method="post">
    <input type="hidden" name="id" value=<?php echo $post->id;
?>">
    <label>
        Title:
        <input type="text" name="title" value=<?php echo $post-
>title; ?>" required autofocus>
    </label>
    <br>
    <label>
        Content:
        <textarea name="content" cols="30" rows="10" required><?php
echo $post->content; ?></textarea>
    </label>
    <br>
    <input type="submit" value="Post">
</form>
```

Model: Update

(models/PostModel.class.php)

```
<?php class PostModel extends Model {  
  
    // ...  
  
    public function getById($id) {  
        $sql = "SELECT * FROM post WHERE id = $id";  
  
        return $this->mysqli->query($sql);  
    }  
  
    public function insert($title, $content) {  
        $sql = "INSERT INTO post (title, content) VALUES  
('{$title}', '{$content}')";  
  
        $this->mysqli->query($sql);  
    }  
}
```

Controller: Update (controllers/Post.class.php)

```
<?php class Post extends Controller {  
  
    // ...  
  
    public function edit() {  
        $id = $_GET['id'];  
  
        if (!$id) header('Location: index.php?c=Post');  
  
        $postModel = $this->loadModel('PostModel');  
        $post = $postModel->getById($id);  
  
        if (!$post->num_rows) header('Location: index.php?c=Post');  
  
        $this->loadView('edit', [ 'post' => $post->fetch_object()]);  
    }  
}
```

Controller: Update (controllers/Post.class.php)

```
<?php class Post extends Controller {  
  
    // ...  
  
    public function edit_process() {  
        $postModel = $this->loadModel('PostModel');  
        $id = $_POST['id'];  
        $title = addslashes($_POST['title']);  
        $content = addslashes($_POST['content']);  
  
        $postModel->update($id, $title, $content);  
  
        header('Location: ?c=Post');  
    }  
}
```

View: Update (views/posts.php)

```
<form action="?c=Post&m=edit_process" method="post">
    <input type="hidden" name="id" value="<?php echo $post->id;
?>">
    <label>
        Title:
        <input type="text" name="title" value="<?php echo $post-
>title; ?>" required autofocus>
    </label>
    <br>
    <label>
        Content:
        <textarea name="content" cols="30" rows="10" required><?php
echo $post->content; ?></textarea>
    </label>
    <br>
    <input type="submit" value="Post">
</form>
```

Model: Delete

(models/PostModel.class.php)

```
<?php class PostModel extends Model {  
    // ...  
  
    public function delete($id) {  
        $sql = "DELETE FROM post WHERE id = $id";  
  
        $this->mysqli->query($sql);  
    }  
}
```

Controller: Delete

(controllers/Post.class.php)

```
<?php class Post extends Controller {  
  
    // ...  
  
    public function delete() {  
        $id = $_POST['id'];  
        $postModel = $this->loadModel('PostModel');  
  
        $postModel->delete($id);  
        header('Location: ?c=Post');  
    }  
}
```