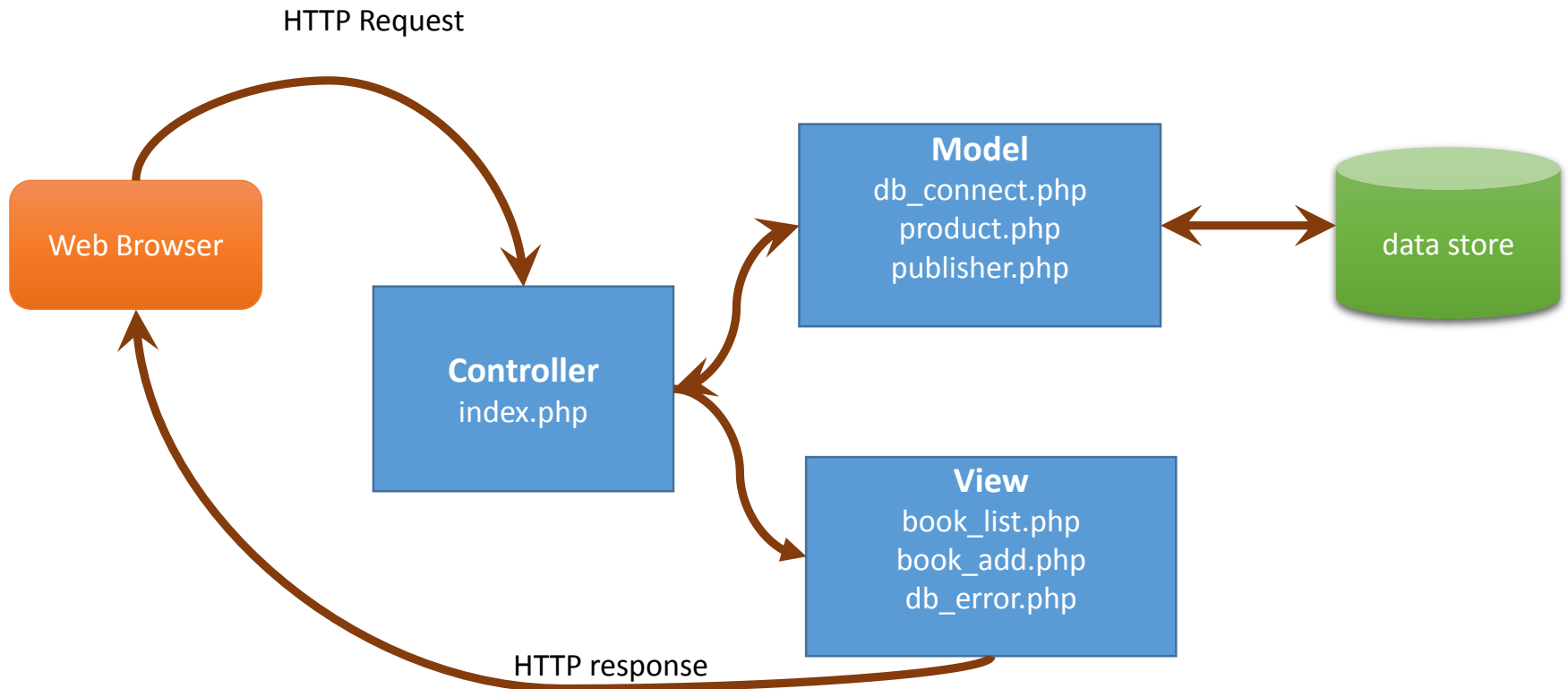# The MVC Pattern

The MVC Pattern

- The MVC (Model-View-Controller) pattern divides a given software application into three interconnected parts, so as to separate internal representations of information from the ways that information is presented to or accepted from the user.

- The model consists of the PHP files that represent the data of the application.

- The view consists of the HTML and PHP files that represent the user interface of the application.

- The controller consists of the PHP files that receive requests from users, get the appropriate data from the model, and return the appropriate views to the users.

MVC

Writing your own functions in PHP

- You can code a parameter list within parenthesis. A parameter list contains one or more parameters.

- To return data from a function, you code a return statement in the function body.

- A variable that is declared outside a function isn't available within the function. To make the variable available, you can use the global keyword to identify the variable.

- Syntax:

function functionName([parameterList]) {

}

Examples of Functions

```
function get_books() {
    global $db;
    $query = 'SELECT * FROM books OREDER BY bookID';
    $books = $db->query($query);
    return $books;
}

function add_product($publisher_id, $isbn, $title, $price) {
    global $db;
    $query = "INSERT INTO books
        (publisherID, isbn, bookTitle, bookPrice)
        VALUES
        ('$publisher_id', '$isbn', '$title', '$price')";
    $db->exec($query);
}
```

Redirect request and Server transfer

- You use the include function to forward a request from one PHP file to another. When you forward a request, all processing takes place on the server. It is called Server Transfer.

- You can use the header function to redirect a request to another URL. When you redirect a request, you return a response to the browser that has a Location header that specify a page. This header causes the browser to make a new request for the specified URL.

- Examples
  - Header('Location: .');   // the current directory
  - Header('Location: ..');   // the parent directory
  - Header('Location: error.php');
  - Header('Location: http://www.npu.edu');

Examples of Redirect Request and Server Transfer

To redirect a request that includes a parameter

```
if ($action == 'delete_book') {
    // Get the IDs
    $book_id = $_POST['book_id'];
    $publisher_id = $_POST['publisher_id'];

    // Delete the book
    delete_book($book_id);

    // Display the Book List page for the current publisher
    header("Location: .?publisher_id=$publisher_id");
}
```

To forward a request from the current PHP file to another on a server

```
if ($action == 'add_book_page') {
    $publishers = get_publishers();
    include('book_add.php');
```

Examples of Redirect Request and Server Transfer

- **To redirect a request that includes a parameter**
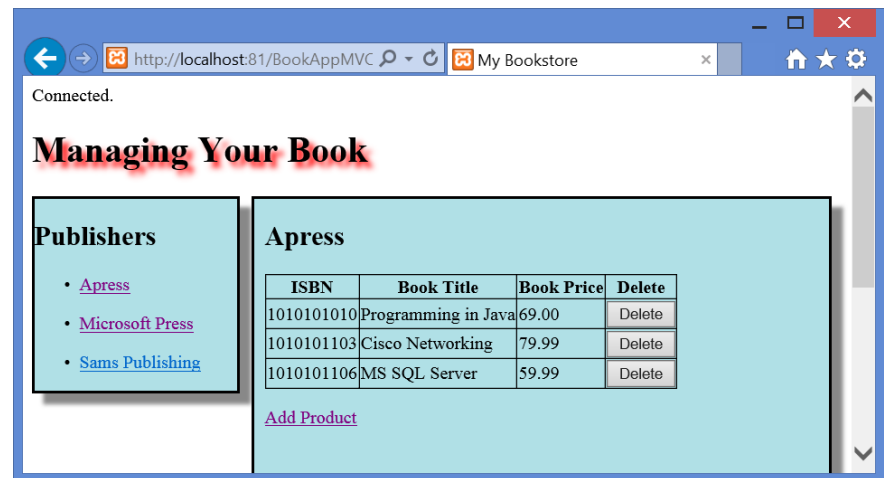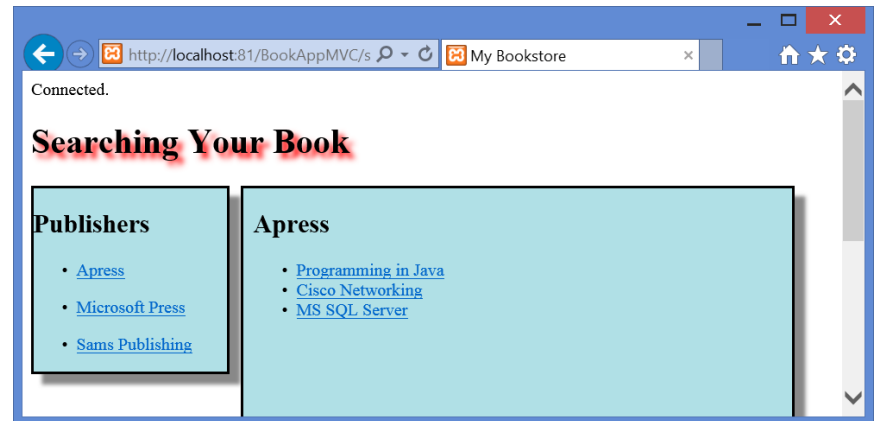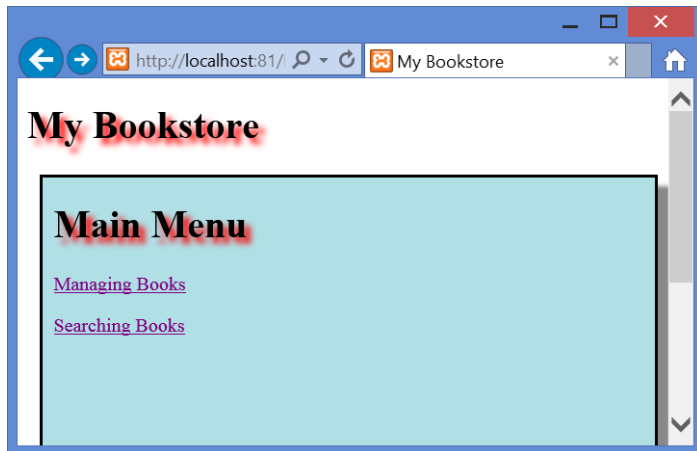
```
if ($action == 'delete_book') {
    // Get the IDs
    $book_id = $_POST['book_id'];
    $publisher_id = $_POST['publisher_id'];

    // Delete the book
    delete_book($book_id);

    // Display the Book List page for the current publisher
    header("Location: .?publisher_id=$publisher_id");
}
```

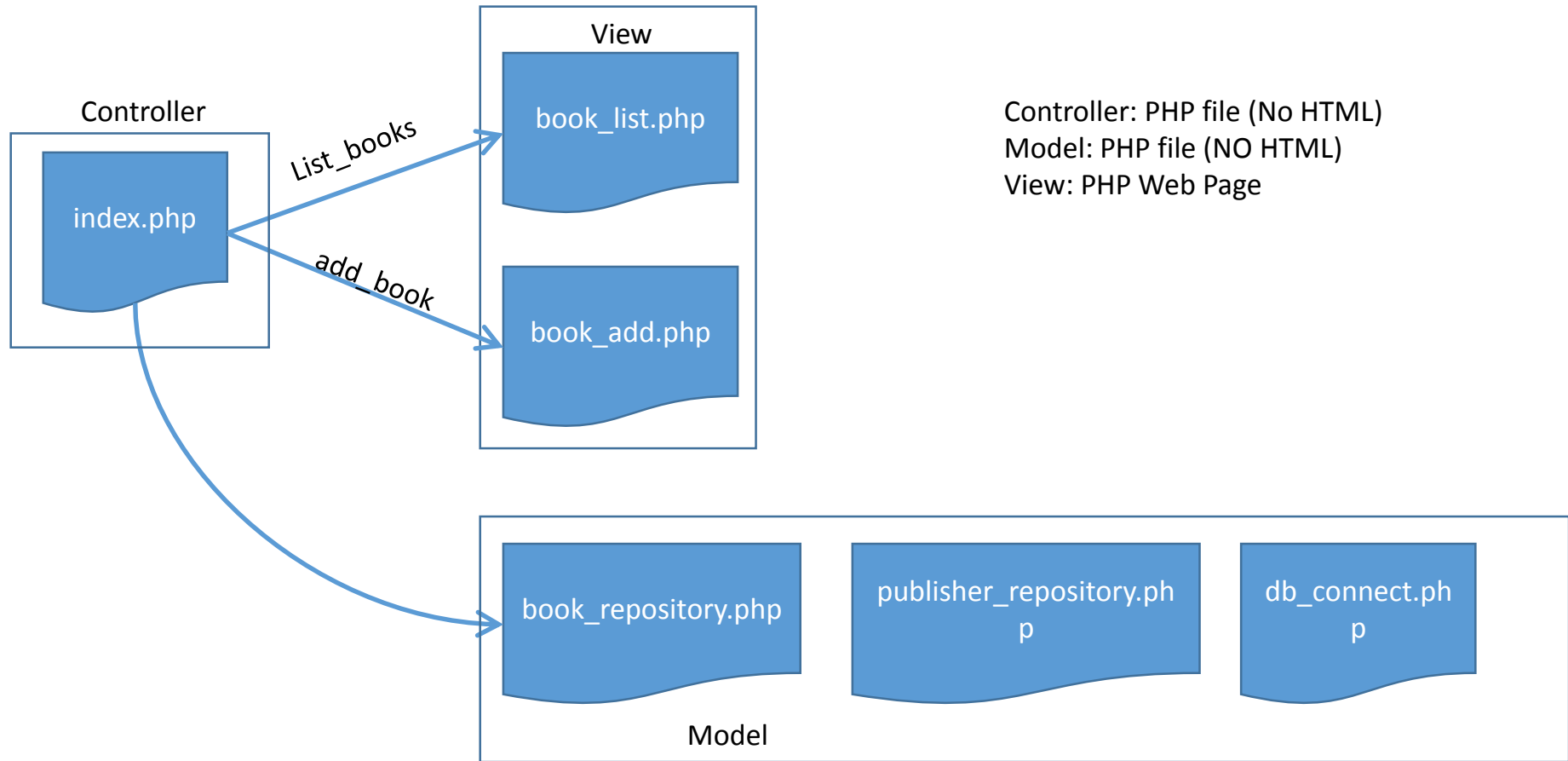- **To forward a request from the current PHP file to another on a server**

```
if ($action == 'add_book_page') {
    $publishers = get_publishers();
    include('book_add.php');
}
```

Case Study: BookAppMVC web application
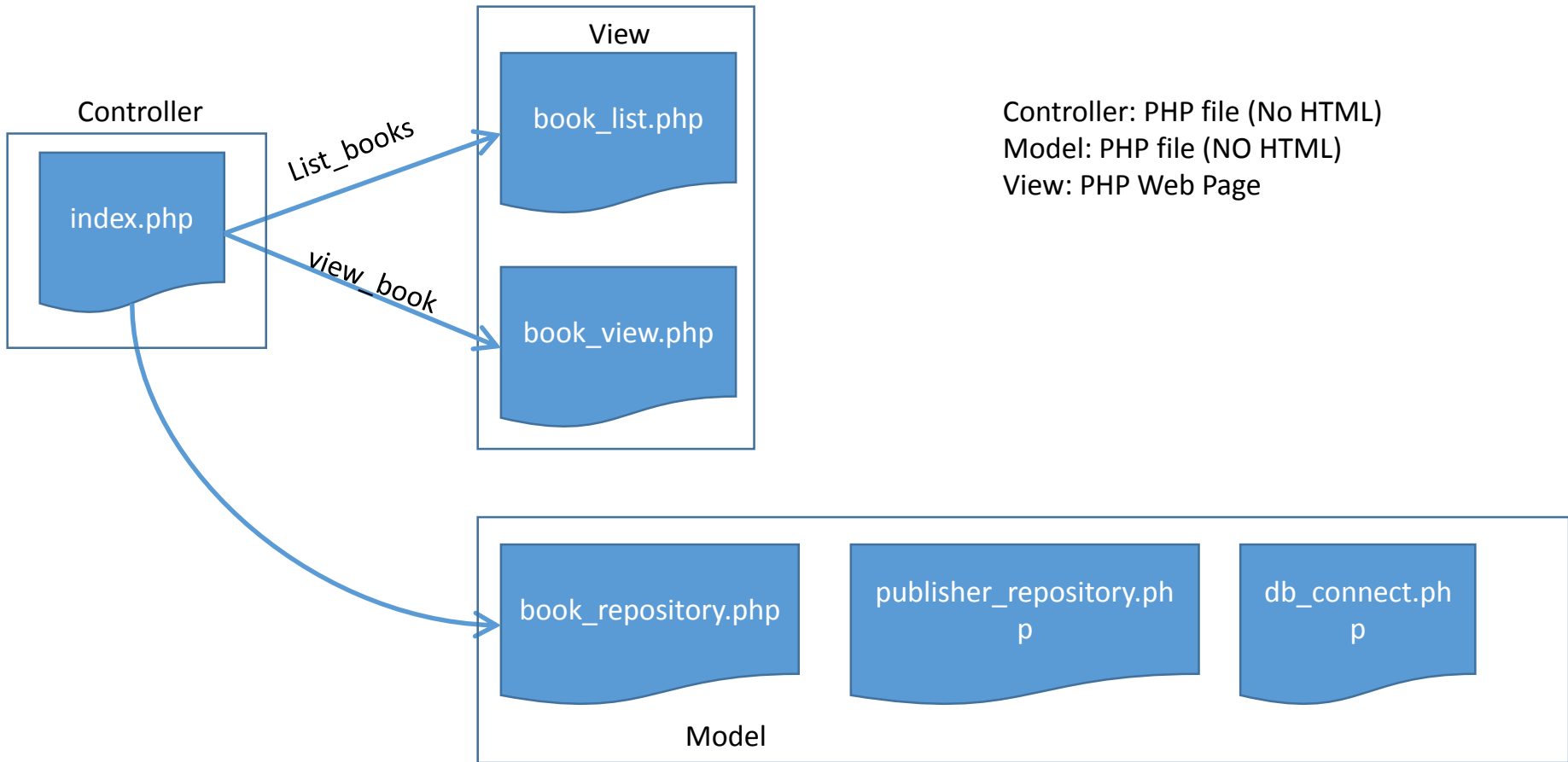
- This application that
  - Allows the user to search a book;
  - Allows the administrator to add and delete books

MVC for Managing Book Section

Controller

index.php

View

book_list.php

book_add.php

List_books

add_book

Controller: PHP file (No HTML)
Model: PHP file (NO HTML)
View: PHP Web Page

Model

book_repository.php

publisher_repository.php
p

db_connect.php
p

MVC for Searching Book Section

Controller

index.php

View

book_list.php

book_view.php

List_books

view_book

Controller: PHP file (No HTML)
Model: PHP file (NO HTML)
View: PHP Web Page

Model

book_repository.php

publisher_repository.php

db_connect.php

MVC Routing Rule

- Your MVC application needs a rule to say which code to run for a given URL. This rule is used to map a URL to a controller, controller's action along with appropriate parameters.

- Here is our URL format:

  http://hostname//controllerName//action=actionName&parameterName=parameterValue

  - Examples:

  http://localhost:81/BookAppMVC/manage_book/?action=list_books&publisher_id=3

  http://localhost:81/BookAppMVC/manage_book/index.php?action=add_book_page

  http://localhost:81/BookAppMVC/manage_book/

    - The above URL maps to a default action 'list_books' and default parameter 'publisher_id=1'

  http://localhost:81/BookAppMVC/search_book/?action=view_book&book_id=5