UNIVERSITY OF TECHNOLOGY, MAURITIUS

SCHOOL OF INNOVATIVE TECHNOLOGIES AND ENGINEERING

DEPARTMENT OF INDUSTRIAL SYSTEM ENGINEERING

Module Name:	**Web Services**
Module Code:	**WAT2124C**
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Chapter 1: Introduction

To have some functionalities on the same page, a website is built to query a server and receive the JavaScript Object Notation (JSON) or extensible markup language (XML) file and display the required data. There will be a rest web service application program interface (API) using Hypertext Preprocessor (PHP).

Chapter 2: Design and implementation

2.1: Core functionalities

2.1.1: Functionalities implemented

The core functionalities developed on the API are also implemented in the client's website. They are as follows:

- Get books information by title
- Get books information by author
- Get books information by publication year
- Get books information by author and category
- Get books information by author and publication year

Rather than the traditional approach (SELECT * FROM bookstore.books WHERE title='harry potter' ;), another type of approach has been used which will make the API more scalable and work better with multiple query strings. This will be explained further in section 2.2.3: Scalable API.

2.1.2: Structure of files on servers

- API Server
  - Credentials.php
  - Database.php
- Client's Server
  - Index.php
  - Detail.php
  - Display.php
  - queryAPI.php

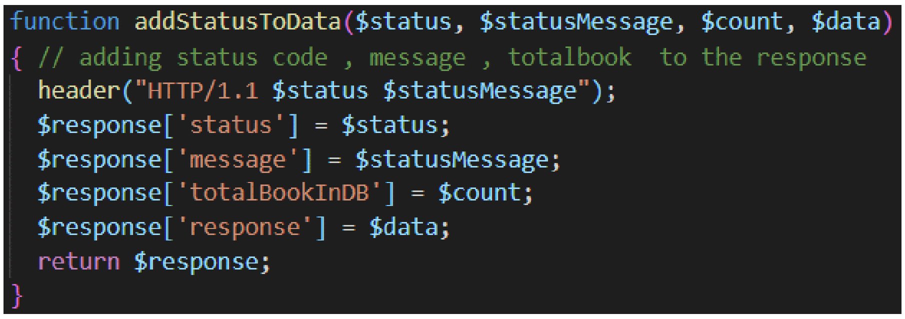
2.2: Additional functionalities

2.2.1: Headers

In the case of the bookstore, either the books are found or not. But there is another one that can arise; bad request. To help programmability, status code, message, and total book in the database are prepended to the response. A function addStatusToData ($status, $statusMessage, $count, $data) was created (as shown in Figure 2.1) to add the above before the data/response.

The status code and messages are as follow:

- 200 – Successful (represent book found in the bookstore)
- 400 – Bad Request (represent wrong URL query)
- 404 – Not found (represent book not found in the bookstore)

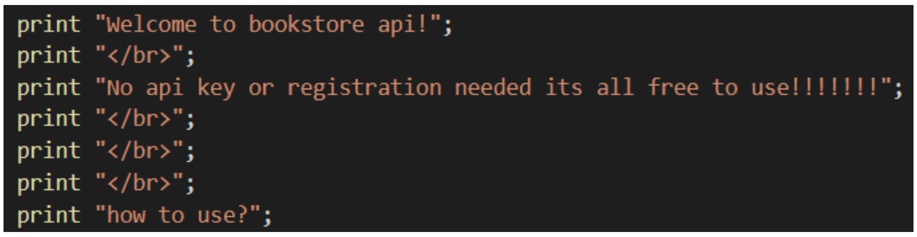


```php
function addStatusToData($status, $statusMessage, $count, $data)
{ // adding status code , message , totalbook  to the response
  header("HTTP/1.1 $status $statusMessage");
  $response['status'] = $status;
  $response['message'] = $statusMessage;
  $response['totalBookInDB'] = $count;
  $response['response'] = $data;
  return $response;
}
```

Figure 2.1: Function to add headers.

2.2.2: How to use

If there is no query in the URL, it is assumed that the client doesn't know how to use the API. Figure 2.2 shows part of the code to display the how to use page to the user. This will be further explained in Chapter 3: Testing.



```php
print "Welcome to bookstore api!";
print "</br>";
print "No api key or registration needed its all free to use!!!!!!!";
print "</br>";
print "</br>";
print "</br>";
print "how to use?";
```

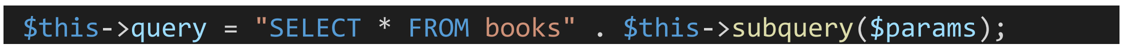
Figure 2.2: Code for how to use.

2.2.3: Scalable API

As mentioned before, this will make the API more dynamic. The API will be programmed to allow any of its users to use it without any restriction in the number of queries passed as requests. Annex F: myapi.php has the full code for any reference.

The approach is as follows:

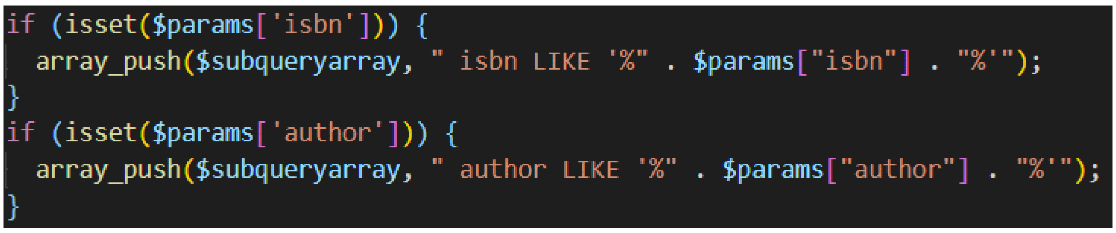
1. Get the main query – “SELECT * FROM books”
2. Combine/concatenate it with the subquery (if any). A function was built to perform this task. It requires all the parameters of the Uniform Resource Locator (URL) to perform its task and return the subquery.



```php
$this->query = "SELECT * FROM books" . $this->subquery($params);
```

Exploring subquery ($params) method/function.

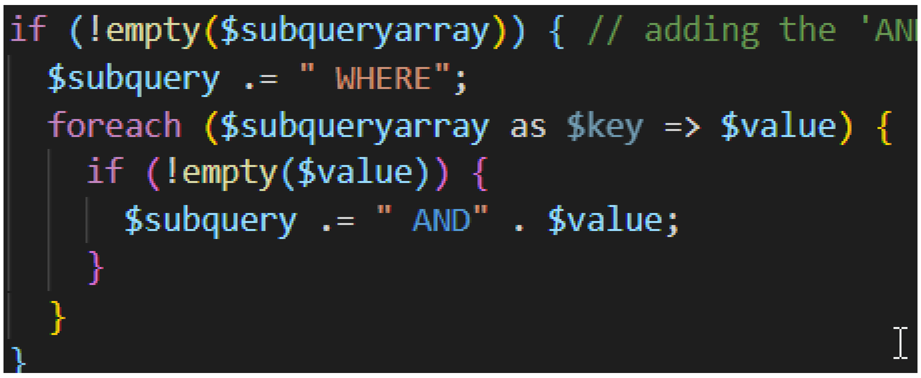
The principle is that every query parameter should be prepended with the word “AND”. To achieve this, an array is created. All the queries that required the keyword will be pushed to that array. Figure 2.3 shows two examples of parameters that should be prepended.



```php
if (isset($params['isbn'])) {
  array_push($subqueryarray, " isbn LIKE '%" . $params["isbn"] . "%'");
}
if (isset($params['author'])) {
  array_push($subqueryarray, " author LIKE '%" . $params["author"] . "%'");
}
```

Figure 2.3: Push to array.

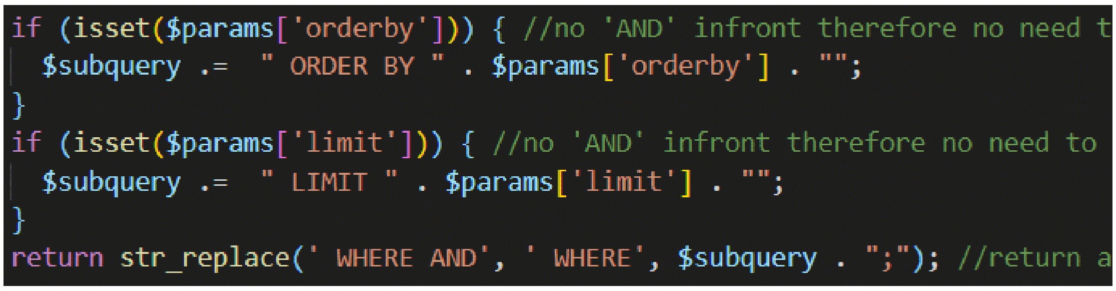
Then the next step is to add the “WHERE” keyword. This will be done only if there is something in the array. After that, a Foreach loop will do the job of adding the “AND” in front of each string in the array. The result of $subquery in Figure 2.4 with input author=harry&isbn=001 will be “ WHERE AND author LIKE '%harry%' AND isbn LIKE %001%”. The keyword LIKE will allow the user to insert part of the word to query.



```
if (!empty($subqueryarray)) { // adding the 'ANI
  $subquery .= " WHERE";
  foreach ($subqueryarray as $key => $value) {
    if (!empty($value)) {
      $subquery .= " AND" . $value;
    }
  }
}
```

Figure 2.4: WHERE and AND added to subquery string.

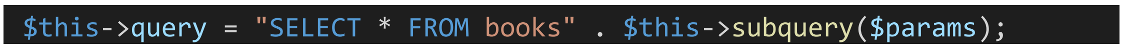
As the MYSQL syntax does not require any “AND” in front of “ORDER BY” and “LIMIT”, they (order by and limit) were not pushed to the array. For example, author=harry&isbn=001&orderby=rating&limit=5 will output structured query language (SQL) $subquery = “ WHERE AND author LIKE ‘%harry%’ AND isbn LIKE %001% ORDER BY rating LIMIT 5”. The last line of that function will solve the problem of the “WHERE AND” in front of the subquery by replacing it with “WHERE” and add the ending of the SQL query as shown in Figure 2.5. This will lead to output “ WHERE author LIKE ‘%harry%’ AND isbn LIKE %001% ORDER BY rating LIMIT 5;”



```
if (isset($params['orderby'])) { //no 'AND' infront therefore no need t
  $subquery .= " ORDER BY " . $params['orderby'] . "";
}
if (isset($params['limit'])) { //no 'AND' infront therefore no need to
  $subquery .= " LIMIT " . $params['limit'] . "";
}
return str_replace(' WHERE AND', ' WHERE', $subquery . ";"); //return a
```

Figure 2.5: Full substring output.

Therefore,



```
$this->query = "SELECT * FROM books" . $this->subquery($params);
```

Will contain “SELECT * FROM books WHERE author LIKE ‘%harry%’ AND isbn LIKE %001% ORDER BY rating LIMIT 5;”

Using this type of approach, the following can be accomplished:

- Search for a word that contains some characters in the title, author, International Standard Book Number (ISBN), category, language, and year published.
- Order the result by author, category, etc.
- Limit the result of the search to x number. Where x is a number defined by the user.
- Above all, the user is now unlimited with the column to query. He/she can query more than one for example author and category and much more.

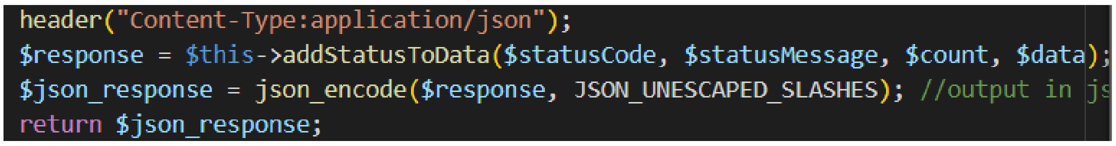
The query is then executed and return in a form of an array. This array will be converted to either XML or JSON and outputted to the user.

2.2.4: XML and JSON format

By using Object-oriented programming (OOP) and some functions/methods, both XML and JSON can be outputted from the API.

2.2.4.1: JSON format

Figure 2.6 show the code that will output the data in JSON format. The header is added and PHP already has its function to output in JSON (json_encode). This will take the array outputted from the SQL query and convert it to JSON format.

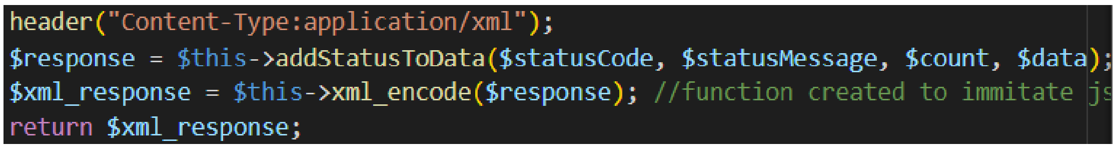


```
header("Content-Type:application/json");
$response = $this->addStatusToData($statusCode, $statusMessage, $count, $data);
$json_response = json_encode($response, JSON_UNESCAPED_SLASHES); //output in js
return $json_response;
```

Figure 2.6: Code to output in JSON format.

2.2.4.2: XML format

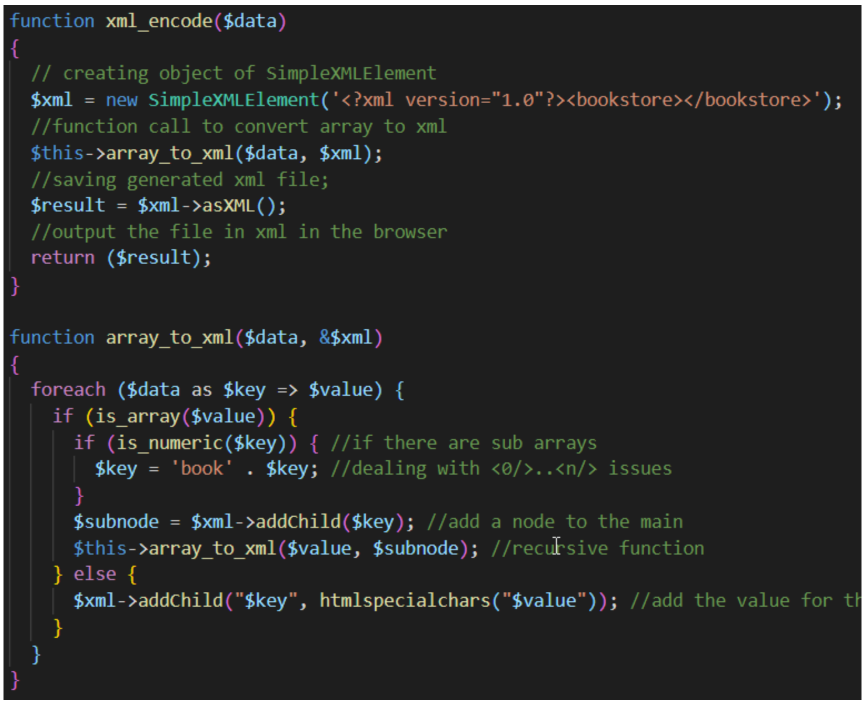
XML on the other hand is more complicated as there is no inbuilt method to encode in XML format. But the principle stays the same. A user-defined function should be created to perform this task. Figure 2.7 shows how the user-defined will look like.



```php
header("Content-Type:application/xml");
$response = $this->addStatusToData($statusCode, $statusMessage, $count, $data);
$xml_response = $this->xml_encode($response); //function created to immitate js
return $xml_response;
```

Figure 2.7: Code to output in XML format.

In Figure 2.8, the XML header is added together with the first element. Then the array will be retrieved from the SQL query will be converted to XML with bookX tag(s) (X start from 0 to total record in array) and inserted between the bookstore tags.

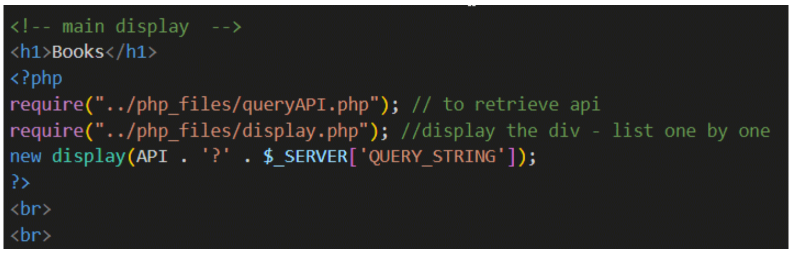


```php
function xml_encode($data)
{
  // creating object of SimpleXMLElement
  $xml = new SimpleXMLElement('<?xml version="1.0"?><bookstore></bookstore>');
  //function call to convert array to xml
  $this->array_to_xml($data, $xml);
  //saving generated xml file;
  $result = $xml->asXML();
  //output the file in xml in the browser
  return ($result);
}

function array_to_xml($data, &$xml)
{
  foreach ($data as $key => $value) {
    if (is_array($value)) {
      if (is_numeric($key)) { //if there are sub arrays
        $key = 'book' . $key; //dealing with <0/>..<n/> issues
      }
      $subnode = $xml->addChild($key); //add a node to the main
      $this->array_to_xml($value, $subnode); //recursive function
    } else {
      $xml->addChild("$key", htmlspecialchars("$value")); //add the value for th
    }
  }
}
```

Figure 2.8: User-defined function xml_encode

2.3: Client website

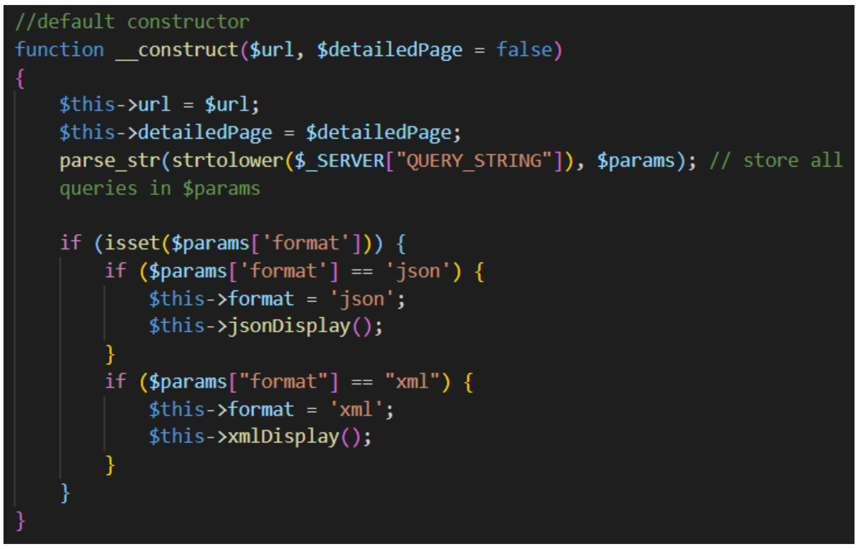
The client website supports both XML and JSON responses. To use the template efficiently, all codes were put on a separate file and then called in the pages as shown in Figure 2.9. It also indicates that the same query from the client URL will be pass through the API.



```
<!-- main display  -->
<h1>Books</h1>
<?php
require("../php_files/queryAPI.php"); // to retrieve api
require("../php_files/display.php"); //display the div - list one by one
new display(API . '?' . $_SERVER['QUERY_STRING']);
?>
<br>
<br>
```

Figure 2.9: Add php file to index page.

Figure 2.10 shows the default constructor of the display class. The constructor will talk the API and detailed page (will be used in books detailed page) as parameters. It will then gather the client’s query in the client’s URL and execute the appropriate function if the format detected is JSON or XML.

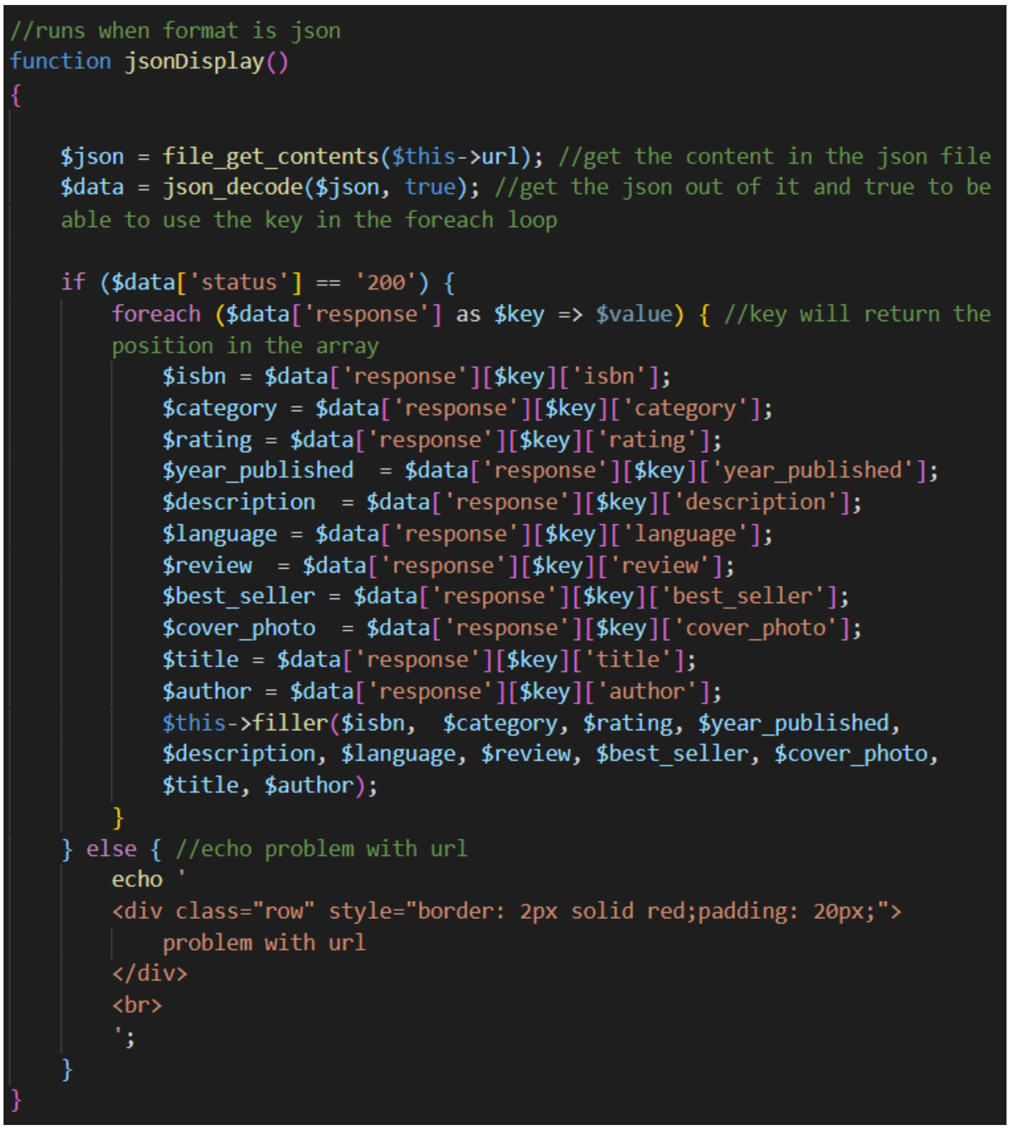


```
//default constructor
function __construct($url, $detailedPage = false)
{
    $this->url = $url;
    $this->detailedPage = $detailedPage;
    parse_str(strtolower($_SERVER["QUERY_STRING"]), $params); // store all
    queries in $params

    if (isset($params['format'])) {
        if ($params['format'] == 'json') {
            $this->format = 'json';
            $this->jsonDisplay();
        }
        if ($params["format"] == "xml") {
            $this->format = 'xml';
            $this->xmlDisplay();
        }
    }
}
```

Figure 2.10: Default constructor of display class.

2.3.1: JSON format

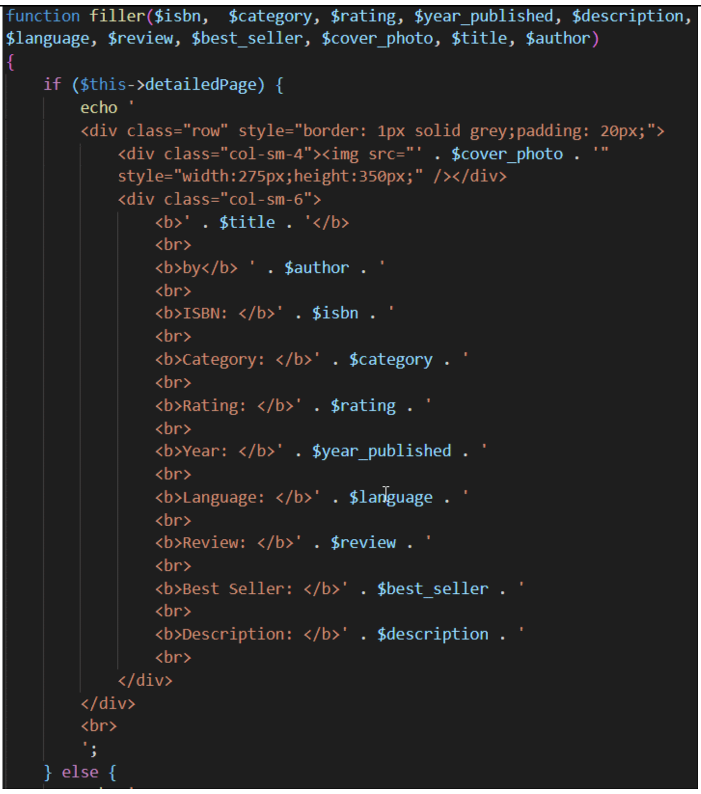
This function shown in Figure 2.11 will get the contents from the API and decode the retrieved JSON formatted data. It will then verify if the response has a status code of 200 and then start to display if it is not 200 an error message will be displayed. Then it will call the filler function for each record from the $data (JSON decode function).



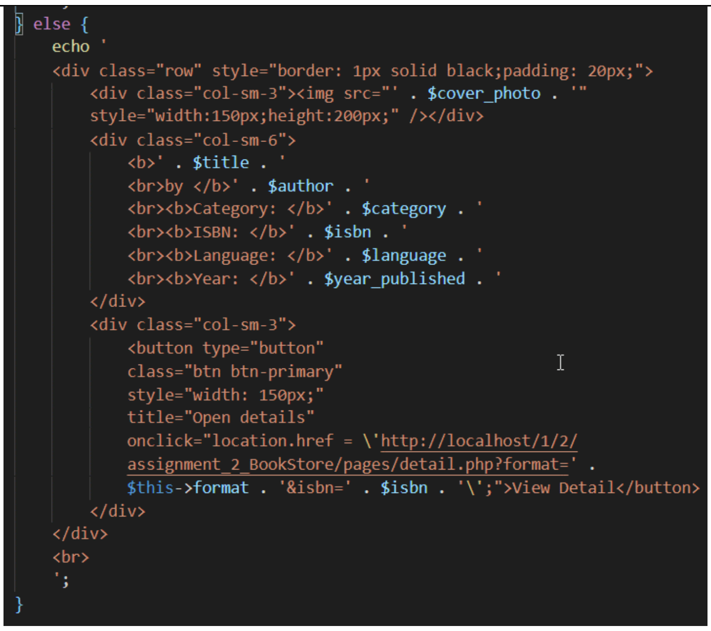
```php
//runs when format is json
function jsonDisplay()
{

    $json = file_get_contents($this->url); //get the content in the json file
    $data = json_decode($json, true); //get the json out of it and true to be
    able to use the key in the foreach loop

    if ($data['status'] == '200') {
        foreach ($data['response'] as $key => $value) { //key will return the
        position in the array
            $isbn = $data['response'][$key]['isbn'];
            $category = $data['response'][$key]['category'];
            $rating = $data['response'][$key]['rating'];
            $year_published  = $data['response'][$key]['year_published'];
            $description  = $data['response'][$key]['description'];
            $language = $data['response'][$key]['language'];
            $review  = $data['response'][$key]['review'];
            $best_seller = $data['response'][$key]['best_seller'];
            $cover_photo  = $data['response'][$key]['cover_photo'];
            $title = $data['response'][$key]['title'];
            $author = $data['response'][$key]['author'];
            $this->filler($isbn,  $category, $rating, $year_published,
            $description, $language, $review, $best_seller, $cover_photo,
            $title, $author);
        }
    } else { //echo problem with url
        echo '
        <div class="row" style="border: 2px solid red;padding: 20px;">
            problem with url
        </div>
        <br>
        ';
    }
}
```

Figure 2.11: JSON display function.

Figure 2.12 shows the filler function. This function will take all previously obtained values and put them in a hypertext markup language (HTML) format. Here the detailed page came into play. There are only two pages on the client website, one to display the list of books and the other to display all the details of the book.



```
function filler($isbn,  $category, $rating, $year_published, $description,
$language, $review, $best_seller, $cover_photo, $title, $author)
{
    if ($this->detailedPage) {
        echo '
        <div class="row" style="border: 1px solid grey;padding: 20px;">
            <div class="col-sm-4"><img src="' . $cover_photo . '"
            style="width:275px;height:350px;" /></div>
            <div class="col-sm-6">
                <b>' . $title . '</b>
                <br>
                <b>by</b> ' . $author . '
                <br>
                <b>ISBN: </b>' . $isbn . '
                <br>
                <b>Category: </b>' . $category . '
                <br>
                <b>Rating: </b>' . $rating . '
                <br>
                <b>Year: </b>' . $year_published . '
                <br>
                <b>Language: </b>' . $language . '
                <br>
                <b>Review: </b>' . $review . '
                <br>
                <b>Best Seller: </b>' . $best_seller . '
                <br>
                <b>Description: </b>' . $description . '
                <br>
            </div>
        </div>
        <br>
        ';
    } else {
```

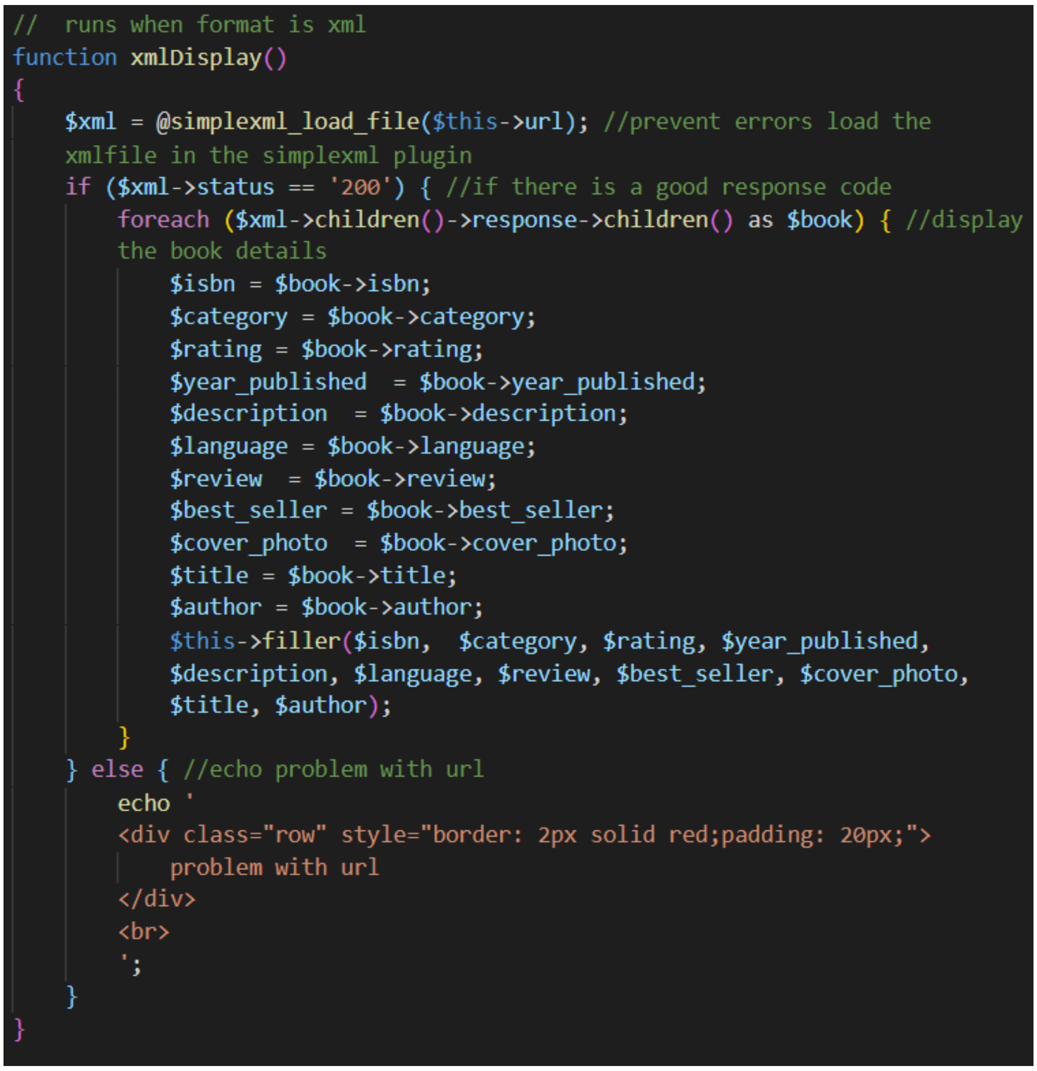


```
} else {
    echo '
    <div class="row" style="border: 1px solid black;padding: 20px;">
        <div class="col-sm-3"><img src="' . $cover_photo . '"
        style="width:150px;height:200px;" /></div>
        <div class="col-sm-6">
            <b>' . $title . '
            <br>by </b>' . $author . '
            <br><b>Category: </b>' . $category . '
            <br><b>ISBN: </b>' . $isbn . '
            <br><b>Language: </b>' . $language . '
            <br><b>Year: </b>' . $year_published . '
        </div>
        <div class="col-sm-3">
            <button type="button"
            class="btn btn-primary"
            style="width: 150px;"
            title="Open details"
            onclick="location.href = \'http://localhost/1/2/
            assignment_2_BookStore/pages/detail.php?format=' .
            $this->format . '&isbn=' . $isbn . '\';">View Detail</button>
        </div>
    </div>
    <br>
    ';
}
```

Figure 2.12: Filler function.

2.3.2: XML format

Figure 2.13 shows the XML Display function. It is the same principle as in section 2.3.1: JSON format. It will load the API, verify if its code is 200, and call the filler function. If it is not 200, an error message will be displayed.

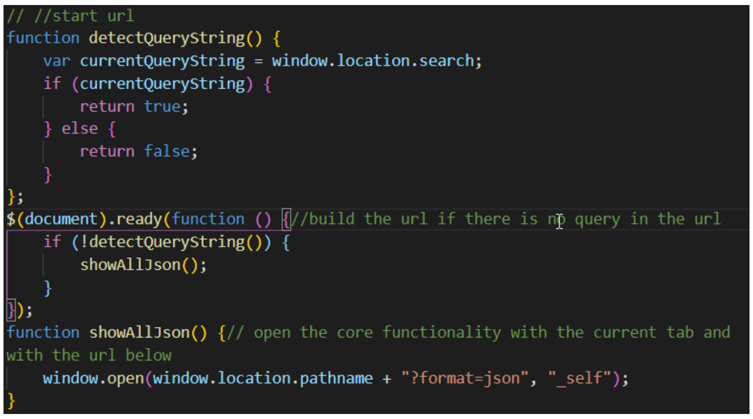


```
//  runs when format is xml
function xmlDisplay()
{
    $xml = @simplexml_load_file($this->url); //prevent errors load the
    xmlfile in the simplexml plugin
    if ($xml->status == '200') { //if there is a good response code
        foreach ($xml->children()->response->children() as $book) { //display
        the book details
            $isbn = $book->isbn;
            $category = $book->category;
            $rating = $book->rating;
            $year_published  = $book->year_published;
            $description  = $book->description;
            $language = $book->language;
            $review  = $book->review;
            $best_seller = $book->best_seller;
            $cover_photo  = $book->cover_photo;
            $title = $book->title;
            $author = $book->author;
            $this->filler($isbn,  $category, $rating, $year_published,
            $description, $language, $review, $best_seller, $cover_photo,
            $title, $author);
        }
    } else { //echo problem with url
        echo '
        <div class="row" style="border: 2px solid red;padding: 20px;">
            problem with url
        </div>
        <br>
        ';
    }
}
```

Figure 2.13: XML Display function.

2.3.3: JavaScript

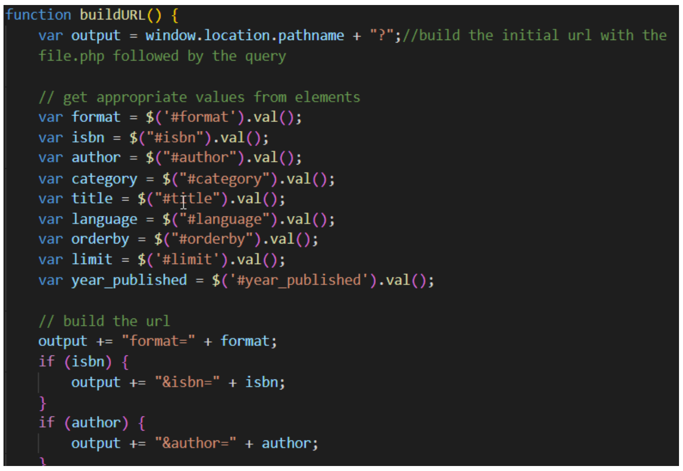
The piece of code shown in Figure 2.14 is responsible to verify if the client website has format in its query. This is vital as without this no book will be displayed. If there is no format in the query, javascript will add a default format to it (the chosen default format is JSON). Then the client website will be loaded with the new URL.



```
// //start url
function detectQueryString() {
    var currentQueryString = window.location.search;
    if (currentQueryString) {
        return true;
    } else {
        return false;
    }
};
$(document).ready(function () {//build the url if there is no query in the url
    if (!detectQueryString()) {
        showAllJson();
    }
});
function showAllJson() {// open the core functionality with the current tab and
with the url below
    window.open(window.location.pathname + "?format=json", "_self");
}
```

Figure 2.14: Verify format.

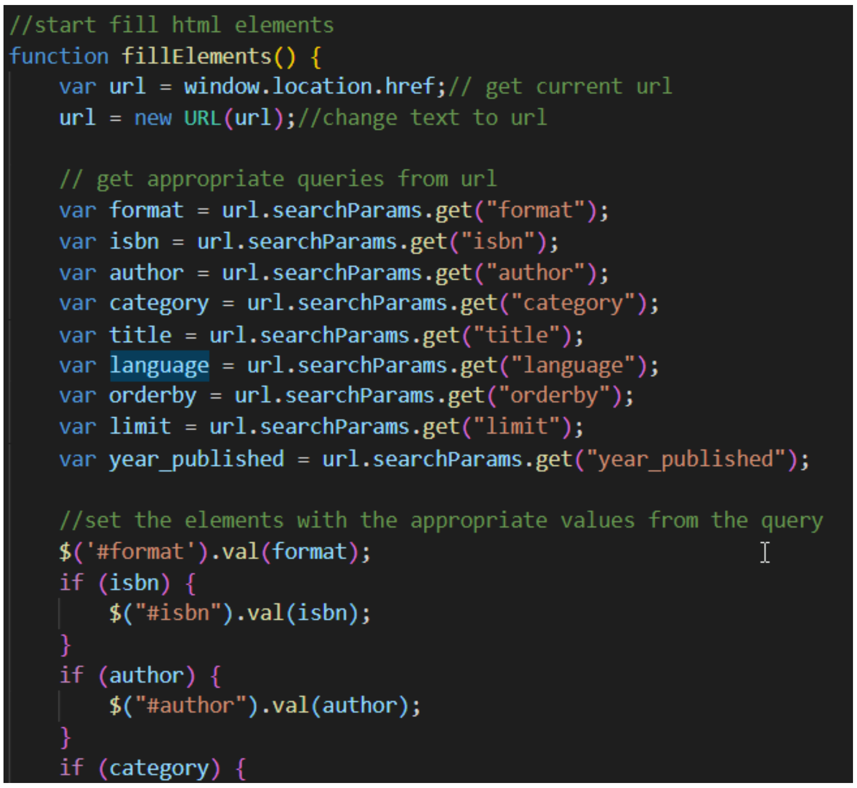
Figure 2.15 shows the search system of the client website. On clicking on the search button, the query will be built and then opens. While opening, it will be the new link that will be in the URL (built URL). This will facilitate the PHP API query and also reduce the server-side processing time.



```
function buildURL() {
    var output = window.location.pathname + "?";//build the initial url with the
    file.php followed by the query

    // get appropriate values from elements
    var format = $('#format').val();
    var isbn = $("#isbn").val();
    var author = $("#author").val();
    var category = $("#category").val();
    var title = $("#title").val();
    var language = $("#language").val();
    var orderby = $("#orderby").val();
    var limit = $('#limit').val();
    var year_published = $('#year_published').val();

    // build the url
    output += "format=" + format;
    if (isbn) {
        output += "&isbn=" + isbn;
    }
    if (author) {
        output += "&author=" + author;
    }
```

Figure 2.15: Build URL method.

Another function of javascript is the fill elements (see Figure 2.16). This snippet will take the parameters in the website URL and retrieve the queries. Each query will be associated with its respective textboxes or dropdown menu.



```javascript
//start fill html elements
function fillElements() {
    var url = window.location.href;// get current url
    url = new URL(url);//change text to url

    // get appropriate queries from url
    var format = url.searchParams.get("format");
    var isbn = url.searchParams.get("isbn");
    var author = url.searchParams.get("author");
    var category = url.searchParams.get("category");
    var title = url.searchParams.get("title");
    var language = url.searchParams.get("language");
    var orderby = url.searchParams.get("orderby");
    var limit = url.searchParams.get("limit");
    var year_published = url.searchParams.get("year_published");

    //set the elements with the appropriate values from the query
    $('#format').val(format);
    if (isbn) {
        $("#isbn").val(isbn);
    }
    if (author) {
        $("#author").val(author);
    }
    if (category) {
```

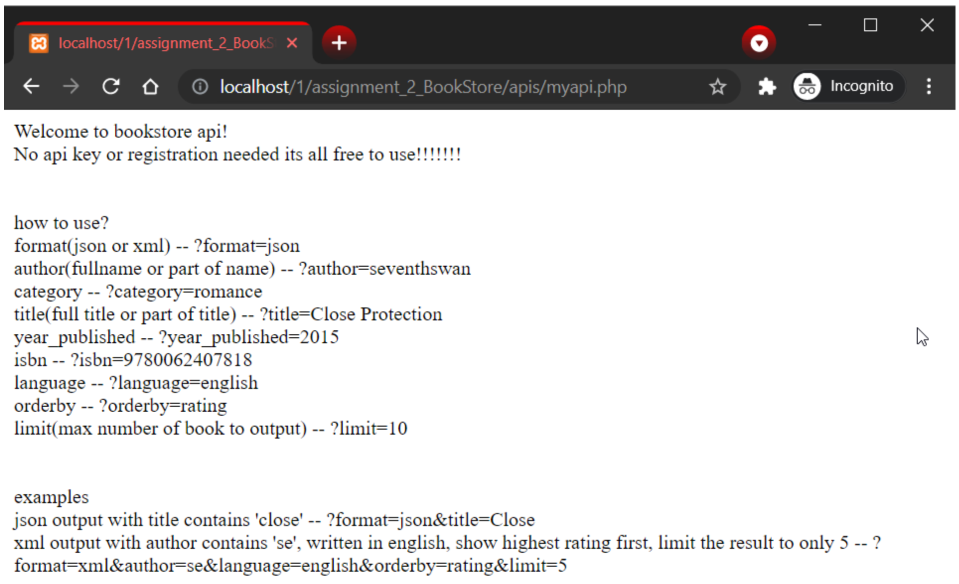
Figure 2.16: Fill elements.

Chapter 3: Testing

3.1: API Testing

3.1.1: How to use page

The how to use page appears when the link does not have any query as shown in Figure 3.1.


localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php
Incognito

Welcome to bookstore api!
No api key or registration needed its all free to use!!!!!!!

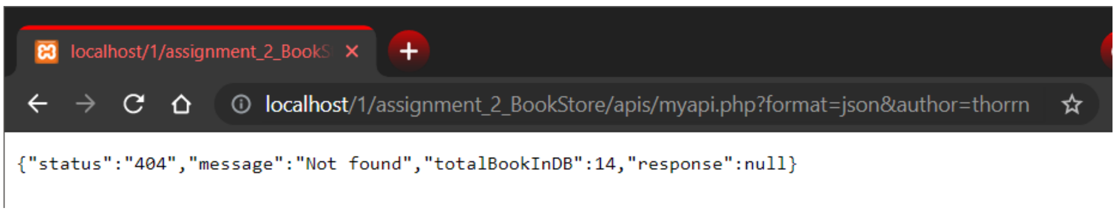
how to use?
format(json or xml) -- ?format=json
author(fullname or part of name) -- ?author=seventhswan
category -- ?category=romance
title(full title or part of title) -- ?title=Close Protection
year_published -- ?year_published=2015
isbn -- ?isbn=9780062407818
language -- ?language=english
orderby -- ?orderby=rating
limit(max number of book to output) -- ?limit=10

examples
json output with title contains 'close' -- ?format=json&title=Close
xml output with author contains 'se', written in english, show highest rating first, limit the result to only 5 -- ?format=xml&author=se&language=english&orderby=rating&limit=5

Figure 3.1: How to use page.

3.1.2: Book not found

Figure 3.2 shows the error code 404 for no book found. This is because no author has “thorn” in their name in the database.

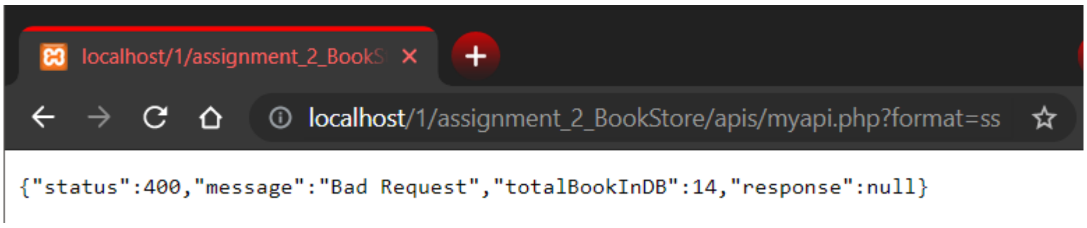

localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php?format=json&author=thorrn

```
{"status":"404","message":"Not found","totalBookInDB":14,"response":null}
```

Figure 3.2: No book found.

3.1.3: Bad request to the API page

Figure 3.3 shows what happened if there is a bad request. In this case a wrong format as a query.

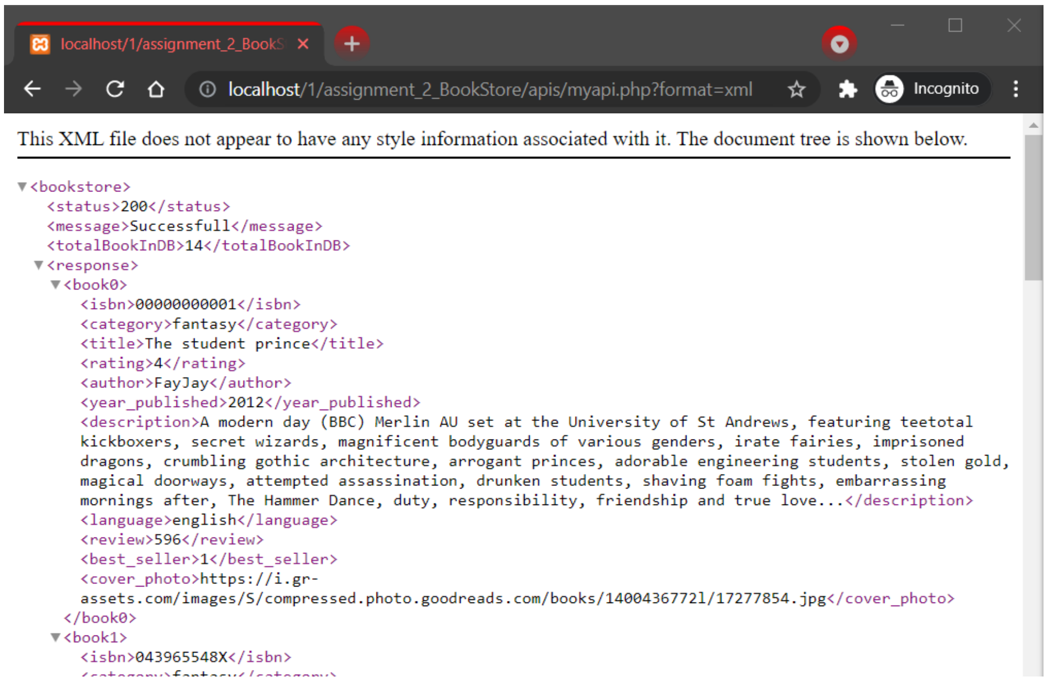

localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php?format=ss

```
{"status":400,"message":"Bad Request","totalBookInDB":14,"response":null}
```

Figure 3.3: Bad request.

3.1.4: Request XML format

Figure 3.4 shows the output when requesting for the XML format.


localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php?format=xml
Incognito

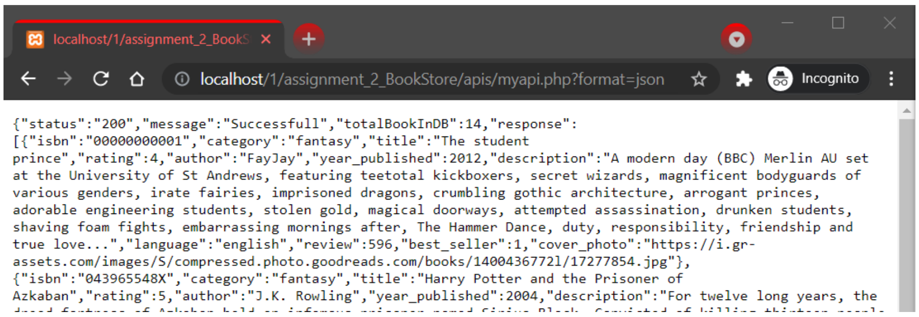
This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<bookstore>
   <status>200</status>
   <message>Successfull</message>
   <totalBookInDB>14</totalBookInDB>
 ▼<response>
   ▼<book0>
      <isbn>00000000001</isbn>
      <category>fantasy</category>
      <title>The student prince</title>
      <rating>4</rating>
      <author>FayJay</author>
      <year_published>2012</year_published>
      <description>A modern day (BBC) Merlin AU set at the University of St Andrews, featuring teetotal
      kickboxers, secret wizards, magnificent bodyguards of various genders, irate fairies, imprisoned
      dragons, crumbling gothic architecture, arrogant princes, adorable engineering students, stolen gold,
      magical doorways, attempted assassination, drunken students, shaving foam fights, embarrassing
      mornings after, The Hammer Dance, duty, responsibility, friendship and true love...</description>
      <language>english</language>
      <review>596</review>
      <best_seller>1</best_seller>
      <cover_photo>https://i.gr-
      assets.com/images/S/compressed.photo.goodreads.com/books/1400436772l/17277854.jpg</cover_photo>
    </book0>
   ▼<book1>
      <isbn>043965548X</isbn>
```

Figure 3.4: Request for XML format.

3.1.5: Request JSON format

Figure 3.5 shows the output when requesting the JSON format.

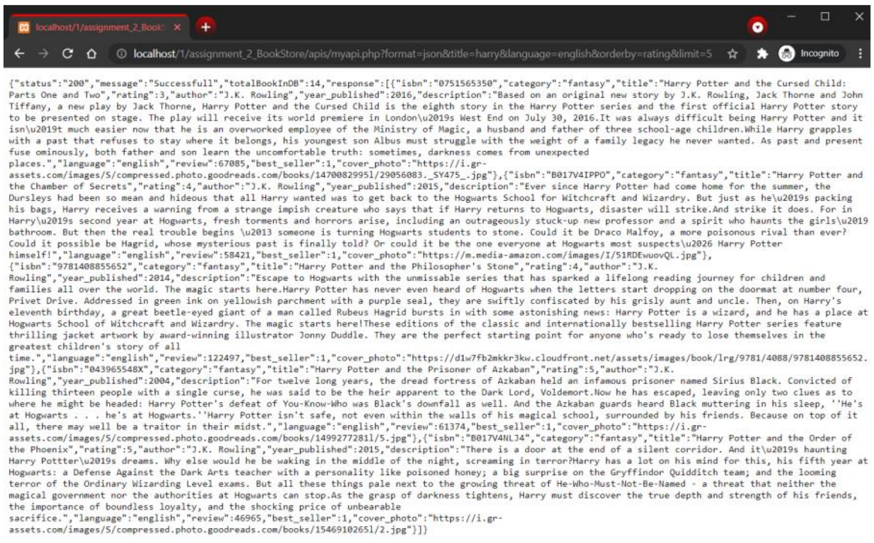

localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php?format=json
Incognito

```
{"status":"200","message":"Successfull","totalBookInDB":14,"response":
[{"isbn":"00000000001","category":"fantasy","title":"The student
prince","rating":4,"author":"FayJay","year_published":2012,"description":"A modern day (BBC) Merlin AU set
at the University of St Andrews, featuring teetotal kickboxers, secret wizards, magnificent bodyguards of
various genders, irate fairies, imprisoned dragons, crumbling gothic architecture, arrogant princes,
adorable engineering students, stolen gold, magical doorways, attempted assassination, drunken students,
shaving foam fights, embarrassing mornings after, The Hammer Dance, duty, responsibility, friendship and
true love...","language":"english","review":596,"best_seller":1,"cover_photo":"https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1400436772l/17277854.jpg"},
{"isbn":"043965548X","category":"fantasy","title":"Harry Potter and the Prisoner of
Azkaban","rating":5,"author":"J.K. Rowling","year_published":2004,"description":"For twelve long years, the
```

Figure 3.5: Request for JSON format

3.1.6: Request for part of a word and several queries at once

The status code 200 with the message Successful and the total book in the database are displayed in every request. Figure 3.6 illustrates the query for part of the title “harry” and multiple queries such as language, limit, and order by. In this database, the title of the books that have “harry” in them are the “Harry Potter” s books.


localhost/1/assignment_2_BookS
localhost/1/assignment_2_BookStore/apis/myapi.php?format=json&title=harry&language=english&orderby=rating&limit=5
Incognito

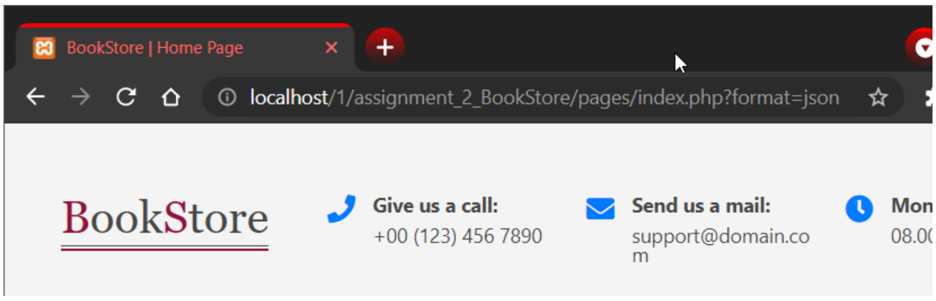
```
{"status":"200","message":"Successfull","totalBookInDB":14,"response":[{"isbn":"0751565350","category":"fantasy","title":"Harry Potter and the Cursed Child:
Parts One and Two","rating":3,"author":"J.K. Rowling","year_published":2016,"description":"Based on an original new story by J.K. Rowling, Jack Thorne and John
Tiffany, a new play by Jack Thorne, Harry Potter and the Cursed Child is the eighth story in the Harry Potter series and the first official Harry Potter story
to be presented on stage. The play will receive its world premiere in London\u2019s West End on July 30, 2016.It was always difficult being Harry Potter and it
isn\u2019t much easier now that he is an overworked employee of the Ministry of Magic, a husband and father of three school-age children.While Harry grapples
with a past that refuses to stay where it belongs, his youngest son Albus must struggle with the weight of a family legacy he never wanted. As past and present
fuse ominously, both father and son learn the uncomfortable truth: sometimes, darkness comes from unexpected
places.","language":"english","review":67085,"best_seller":1,"cover_photo":"https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1470082995l/29056083._SY475_.jpg"},{"isbn":"B017V4IPPO","category":"fantasy","title":"Harry Potter and
the Chamber of Secrets","rating":4,"author":"J.K. Rowling","year_published":2015,"description":"Ever since Harry Potter had come home for the summer, the
Dursleys had been so mean and hideous that all Harry wanted was to get back to the Hogwarts School for Witchcraft and Wizardry. But just as he\u2019s packing
his bags, Harry receives a warning from a strange impish creature who says that if Harry returns to Hogwarts, disaster will strike.And strike it does. For in
Harry\u2019s second year at Hogwarts, fresh torments and horrors arise, including an outrageously stuck-up new professor and a spirit who haunts the girls\u2019
bathroom. But then the real trouble begins \u2013 someone is turning Hogwarts students to stone. Could it be Draco Malfoy, a more poisonous rival than ever?
Could it possible be Hagrid, whose mysterious past is finally told? Or could it be the one everyone at Hogwarts most suspects\u2026 Harry Potter
himself!","language":"english","review":58421,"best_seller":1,"cover_photo":"https://m.media-amazon.com/images/I/51RDEwuovQL.jpg"},
{"isbn":"9781408855652","category":"fantasy","title":"Harry Potter and the Philosopher's Stone","rating":4,"author":"J.K.
Rowling","year_published":2014,"description":"Escape to Hogwarts with the unmissable series that has sparked a lifelong reading journey for children and
families all over the world. The magic starts here.Harry Potter has never even heard of Hogwarts when the letters start dropping on the doormat at number four,
Privet Drive. Addressed in green ink on yellowish parchment with a purple seal, they are swiftly confiscated by his grisly aunt and uncle. Then, on Harry's
eleventh birthday, a great beetle-eyed giant of a man called Rubeus Hagrid bursts in with some astonishing news: Harry Potter is a wizard, and he has a place at
Hogwarts School of Witchcraft and Wizardry. The magic starts here!These editions of the classic and internationally bestselling Harry Potter series feature
thrilling jacket artwork by award-winning illustrator Jonny Duddle. They are the perfect starting point for anyone who's ready to lose themselves in the
greatest children's story of all
time.","language":"english","review":122497,"best_seller":1,"cover_photo":"https://d1w7fb2mkkr3kw.cloudfront.net/assets/images/book/lrg/9781/4088/9781408855652.
jpg"},{"isbn":"043965548X","category":"fantasy","title":"Harry Potter and the Prisoner of Azkaban","rating":5,"author":"J.K.
Rowling","year_published":2004,"description":"For twelve long years, the dread fortress of Azkaban held an infamous prisoner named Sirius Black. Convicted of
killing thirteen people with a single curse, he was said to be the heir apparent to the Dark Lord, Voldemort.Now he has escaped, leaving only two clues as to
where he might be headed: Harry Potter's defeat of You-Know-Who was Black's downfall as well. And the Azkaban guards heard Black muttering in his sleep, ''He's
at Hogwarts . . . he's at Hogwarts.''Harry Potter isn't safe, not even within the walls of his magical school, surrounded by his friends. Because on top of it
all, there may well be a traitor in their midst.","language":"english","review":61374,"best_seller":1,"cover_photo":"https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1499277281l/5.jpg"},{"isbn":"B017V4NLJ4","category":"fantasy","title":"Harry Potter and the Order of
the Phoenix","rating":5,"author":"J.K. Rowling","year_published":2015,"description":"There is a door at the end of a silent corridor. And it\u2019s haunting
Harry Pottter\u2019s dreams. Why else would he be waking in the middle of the night, screaming in terror?Harry has a lot on his mind for this, his fifth year at
Hogwarts: a Defense Against the Dark Arts teacher with a personality like poisoned honey; a big surprise on the Gryffindor Quidditch team; and the looming
terror of the Ordinary Wizarding Level exams. But all these things pale next to the growing threat of He-Who-Must-Not-Be-Named - a threat that neither the
magical government nor the authorities at Hogwarts can stop.As the grasp of darkness tightens, Harry must discover the true depth and strength of his friends,
the importance of boundless loyalty, and the shocking price of unbearable
sacrifice.","language":"english","review":46965,"best_seller":1,"cover_photo":"https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1546910265l/2.jpg"}]}
```

Figure 3.6: Request for part of a word and several queries at once.

3.2: Website Testing

3.2.1: Link without query

As intended, the "?format=json" was added automatically by javascript as shown in Figure 3.7.



BookStore | Home Page

localhost/1/assignment_2_BookStore/pages/index.php?format=json

BookStore

Give us a call:
+00 (123) 456 7890

Send us a mail:
support@domain.co
m

Mon
08.00

Figure 3.7: Link without query.

3.2.2: Build URL as per query and fill textboxes

The queries will be built by clicking on the search button. Figure 3.8 shows the browser's link changed after and before clicking on the search button.

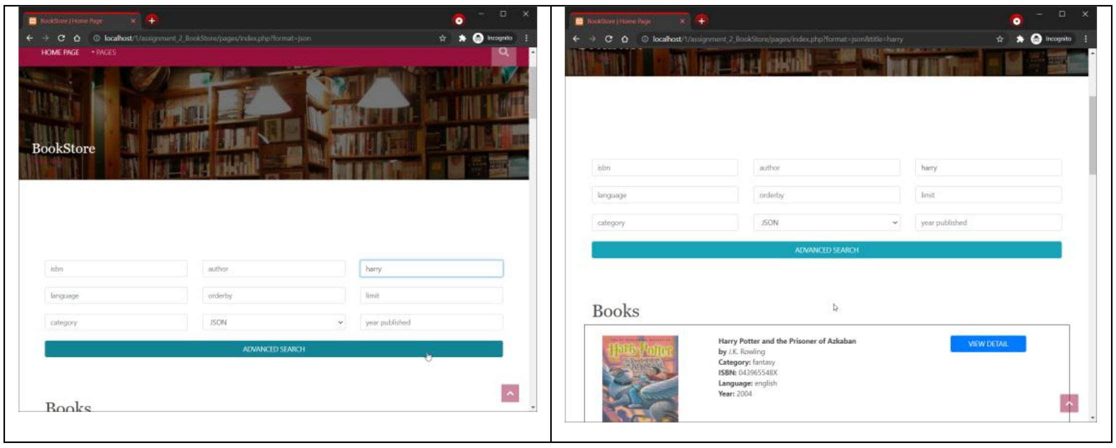
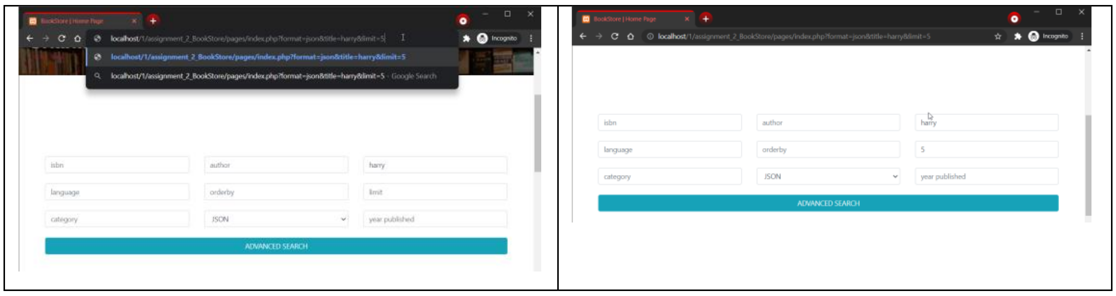


Figure 3.8: Build URL.

The same thing will apply to querying directly the URL. The textboxes will be filled automatically as shown in Figure 3.9.


BookStore | Home Page

localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&limit=5

localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&limit=5

localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&limit=5 - Google Search

isbn | author | harry
language | orderby | limit
category | JSON | year published

ADVANCED SEARCH

BookStore | Home Page

localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&limit=5

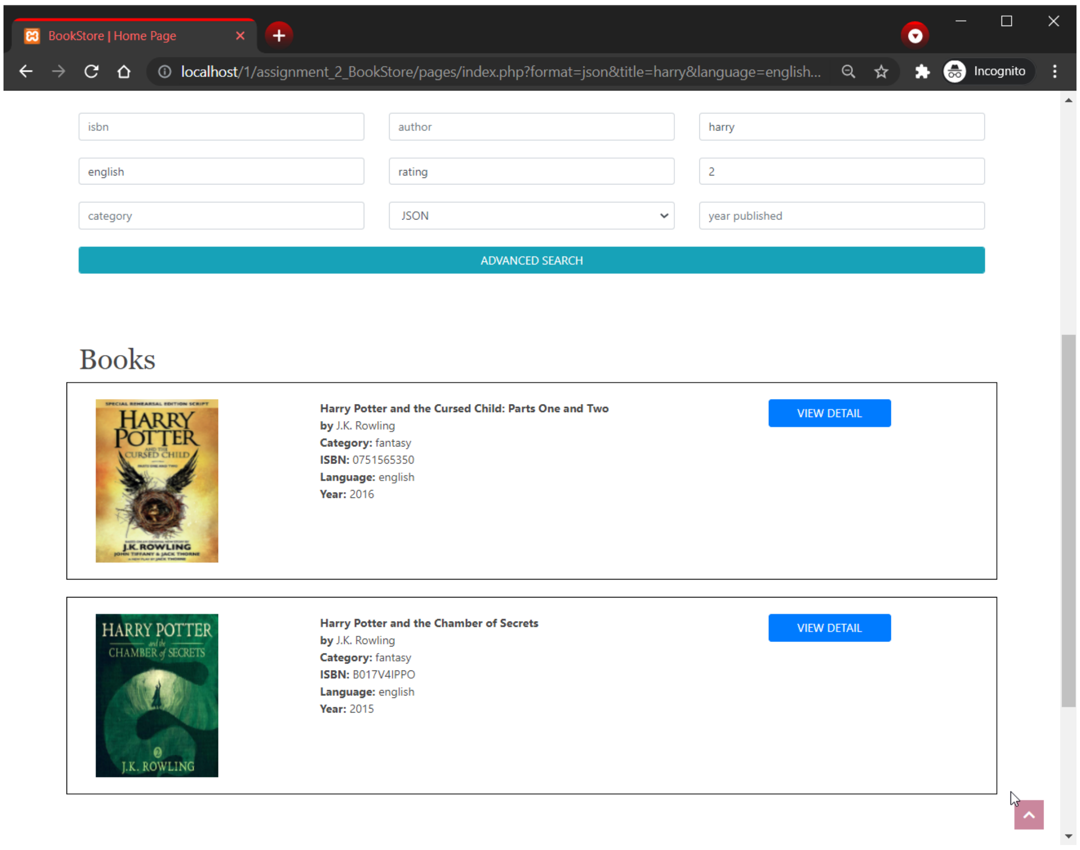
isbn | author | harry
language | orderby | 5
category | JSON | year published

ADVANCED SEARCH

Figure 3.9: Fill textboxes as per link.

3.2.3: Multiple queries & part of a word in column

Figure 3.10 shows an example of multiple queries. The queries are; title=harry, language=English, orderby=rating, limit=2, and format=json. The part of the title harry can be found in the database. They are “harry potters” books.


BookStore | Home Page

localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&language=english...

Incognito

isbn | author | harry
english | rating | 2
category | JSON | year published

ADVANCED SEARCH

Books

Harry Potter and the Cursed Child: Parts One and Two
by J.K. Rowling
Category: fantasy
ISBN: 0751565350
Language: english
Year: 2016

VIEW DETAIL

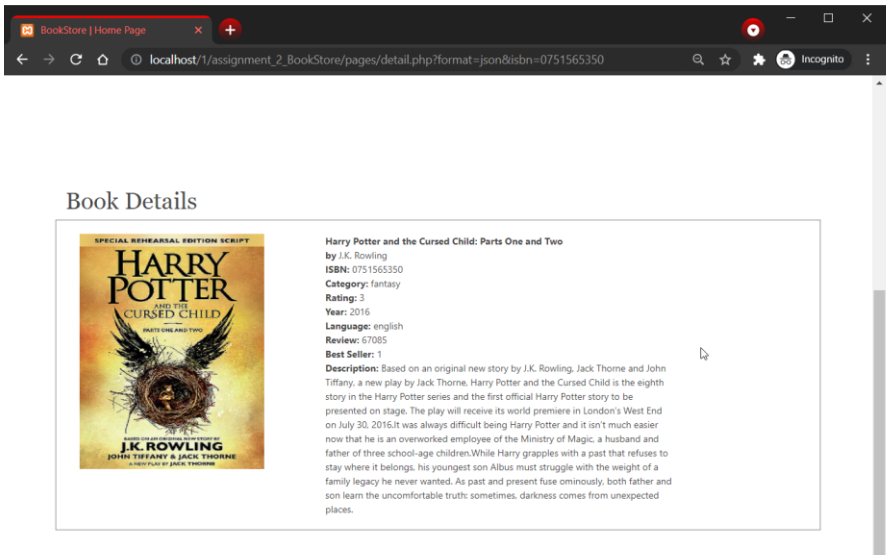
Harry Potter and the Chamber of Secrets
by J.K. Rowling
Category: fantasy
ISBN: B017V4IPPO
Language: english
Year: 2015

VIEW DETAIL

Figure 3.10: Multiple queries & part of a word in column

3.2.4: Detail page

Figure 3.11 shows the details (Description, rating, review, best seller) of the book searched for that appears once the View detail button was clicked.



localhost/1/assignment_2_BookStore/pages/detail.php?format=json&isbn=0751565350

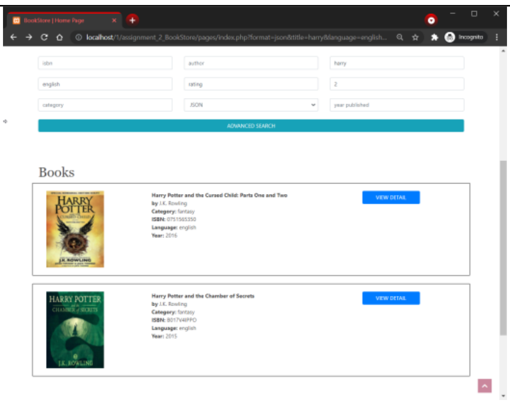
Book Details

Harry Potter and the Cursed Child: Parts One and Two
by J.K. Rowling
ISBN: 0751565350
Category: fantasy
Rating: 3
Year: 2016
Language: english
Review: 67085
Best Seller: 1
Description: Based on an original new story by J.K. Rowling, Jack Thorne and John Tiffany, a new play by Jack Thorne, Harry Potter and the Cursed Child is the eighth story in the Harry Potter series and the first official Harry Potter story to be presented on stage. The play will receive its world premiere in London's West End on July 30, 2016.It was always difficult being Harry Potter and it isn't much easier now that he is an overworked employee of the Ministry of Magic, a husband and father of three school-age children.While Harry grapples with a past that refuses to stay where it belongs, his youngest son Albus must struggle with the weight of a family legacy he never wanted. As past and present fuse ominously, both father and son learn the uncomfortable truth: sometimes, darkness comes from unexpected places.

Figure 3.11: Detailed page.

3.2.5: XML and JSON supports

Figure 3.12 shows that the client website support JSON responses from the API and Figure 3.13 shows that it also supports XML responses from the API.



localhost/1/assignment_2_BookStore/pages/index.php?format=json&title=harry&language=english...

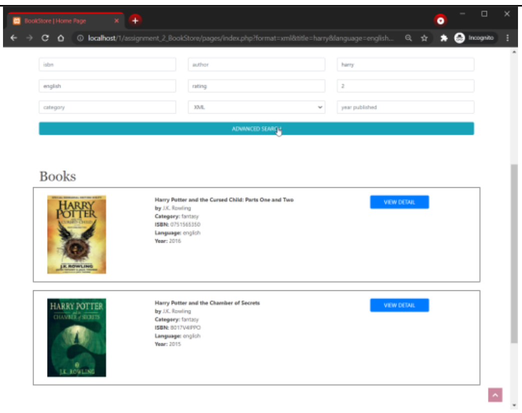
isbn | author | harry
english | rating | 2
category | JSON | year published

Books

Harry Potter and the Cursed Child: Parts One and Two
by J.K. Rowling
Category: fantasy
ISBN: 0751565350
Language: english
Year: 2016

Harry Potter and the Chamber of Secrets
by J.K. Rowling
Category: fantasy
ISBN: B017V4IPPO
Language: english
Year: 2015

Figure 3.12: JSON support.



localhost/1/assignment_2_BookStore/pages/index.php?format=xml&title=harry&language=english...

isbn | author | harry
english | rating | 2
category | XML | year published

Books

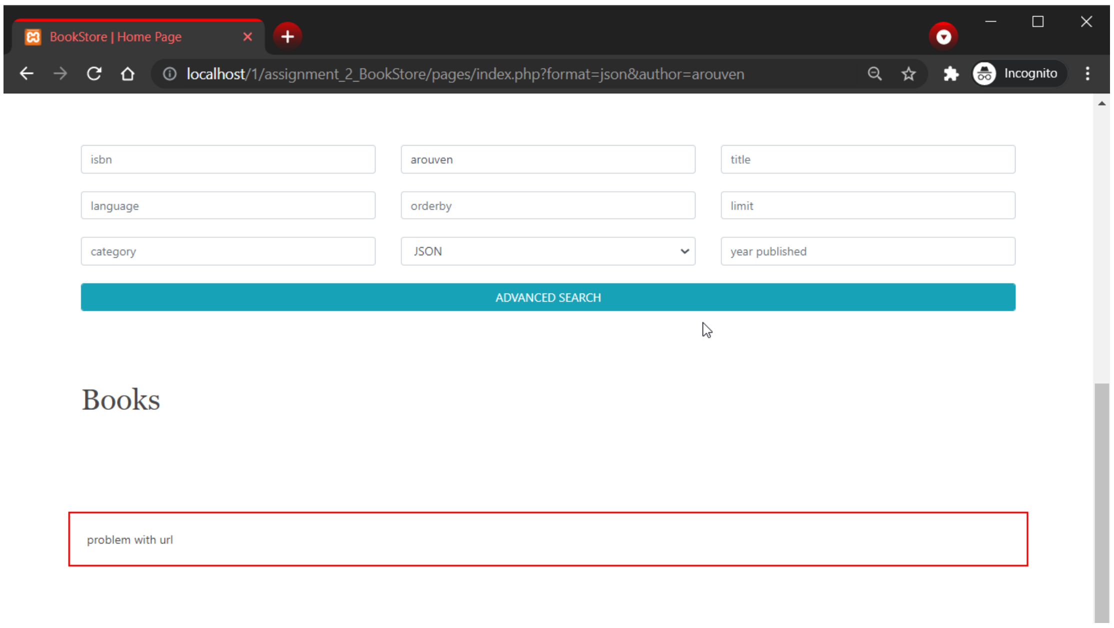
Harry Potter and the Cursed Child: Parts One and Two
by J.K. Rowling
Category: fantasy
ISBN: 0751565350
Language: english
Year: 2016

Harry Potter and the Chamber of Secrets
by J.K. Rowling
Category: fantasy
ISBN: B017V4IPPO
Language: english
Year: 2015

Figure 3.13: XML support.

3.2.6: Error message

Figure 3.14 shows the error message that will appear when no book is found or problem with the URL.



problem with url

Figure 3.14: Error message.

Chapter 4: Conclusion

As seen in the Chapter 3: Testing, the whole project works well. As an improvement, a user basket could be added. This will help the book buyers to know how much they will buy or improve checkout. Another improvement will be a notification that will tell the buyer when the stock is going down or in case of promotion.

The link to the GitHub file:

https://github.com/Arouven/webservices

Annex A: myjs.js

```
// //start url
function detectQueryString() {
    var currentQueryString = window.location.search;
    if (currentQueryString) {
        return true;
    } else {
        return false;
    }
};
$(document).ready(function () {//build the url if there is no query in
the url
    if (!detectQueryString()) {
        showAllJson();
    }
});
function showAllJson() {// open the core functionality with the current
 tab and with the url below
    window.open(window.location.pathname + "?format=json", "_self");
}
function buildURL() {
    var output = window.location.pathname + "?";//build the initial url
 with the file.php followed by the query

    // get appropriate values from elements
    var format = $('#format').val();
    var isbn = $("#isbn").val();
    var author = $("#author").val();
    var category = $("#category").val();
    var title = $("#title").val();
    var language = $("#language").val();
    var orderby = $("#orderby").val();
    var limit = $('#limit').val();
    var year_published = $('#year_published').val();

    // build the url
    output += "format=" + format;
    if (isbn) {
        output += "&isbn=" + isbn;
    }
    if (author) {
        output += "&author=" + author;
    }
    if (category) {
        output += "&category=" + category;
    }
    if (title) {
        output += "&title=" + title;
    }
    if (year_published) {
        output += "&year_published=" + year_published;
    }
    if (language) {
        output += "&language=" + language;
    }
    if (orderby) {
        output += "&orderby=" + orderby;
    }
    if (limit) {
        output += "&limit=" + limit;
    }
    window.open(output, "_self");//open the url in the current tab
}
//end url


//start fill html elements
function fillElements() {
    var url = window.location.href;// get current url
    url = new URL(url);//change text to url

    // get appropriate queries from url
    var format = url.searchParams.get("format");
    var isbn = url.searchParams.get("isbn");
    var author = url.searchParams.get("author");
    var category = url.searchParams.get("category");
    var title = url.searchParams.get("title");
    var language = url.searchParams.get("language");
    var orderby = url.searchParams.get("orderby");
    var limit = url.searchParams.get("limit");
    var year_published = url.searchParams.get("year_published");

    //set the elements with the appropriate values from the query
    $('#format').val(format);
    if (isbn) {
        $("#isbn").val(isbn);
    }
    if (author) {
        $("#author").val(author);
    }
    if (category) {
        $("#category").val(category);
    }
    if (title) {
        $("#title").val(title);
    }
    if (language) {
        $("#language").val(language);
    }
    if (orderby) {
        $("#orderby").val(orderby);
    }
    if (limit) {
        $('#limit').val(limit);
    }
    if (year_published) {
        $('#year_published').val(year_published);
    }
}
//end filling html elements
```

Annex B: display.php

```
<?php
class display
{
    private $url;
    private $detailedPage;
    private $format;

    //default constructor
    function __construct($url, $detailedPage = false)
    {
        $this->url = $url;
        $this->detailedPage = $detailedPage;
        parse_str(strtolower($_SERVER["QUERY_STRING"]), $params); // st
ore all queries in $params

        if (isset($params['format'])) {
            if ($params['format'] == 'json') {
                $this->format = 'json';
                $this->jsonDisplay();
            }
            if ($params["format"] == "xml") {
                $this->format = 'xml';
                $this->xmlDisplay();
            }
        }
    }

    //  runs when format is xml
    function xmlDisplay()
    {
        $xml = @simplexml_load_file($this-
>url); //prevent errors load the xmlfile in the simplexml plugin
        if ($xml->status == '200') { //if there is a good response code
            foreach ($xml->children()->response-
>children() as $book) { //display the book details
                $isbn = $book->isbn;
                $category = $book->category;
                $rating = $book->rating;
                $year_published  = $book->year_published;
                $description  = $book->description;
                $language = $book->language;
                $review  = $book->review;
                $best_seller = $book->best_seller;
                $cover_photo  = $book->cover_photo;
                $title = $book->title;
                $author = $book->author;
                $this-
>filler($isbn,  $category, $rating, $year_published, $description, $lan
guage, $review, $best_seller, $cover_photo, $title, $author);
            }
        } else { //echo problem with url
            echo '
            <div class="row" style="border: 2px solid red;padding: 20px
;">
                problem with url
            </div>
            <br>
            ';
        }
    }

    //runs when format is json
    function jsonDisplay()
    {

        $json = file_get_contents($this-
>url); //get the content in the json file
        $data = json_decode($json, true); //get the json out of it and
true to be able to use the key in the foreach loop

        if ($data['status'] == '200') {
            foreach ($data['response'] as $key => $value) { //key will
return the position in the array
                $isbn = $data['response'][$key]['isbn'];
                $category = $data['response'][$key]['category'];
                $rating = $data['response'][$key]['rating'];
                $year_published  = $data['response'][$key]['year_publis
hed'];
                $description  = $data['response'][$key]['description'];
                $language = $data['response'][$key]['language'];
                $review  = $data['response'][$key]['review'];
                $best_seller = $data['response'][$key]['best_seller'];
                $cover_photo  = $data['response'][$key]['cover_photo'];
                $title = $data['response'][$key]['title'];
                $author = $data['response'][$key]['author'];
                $this-
>filler($isbn,  $category, $rating, $year_published, $description, $lan
guage, $review, $best_seller, $cover_photo, $title, $author);
            }
        } else { //echo problem with url
```

```
            echo '
            <div class="row" style="border: 2px solid red;padding: 20px
;">
                problem with url
            </div>
            <br>
            ';
        }
    }

    function filler($isbn,  $category, $rating, $year_published, $descr
iption, $language, $review, $best_seller, $cover_photo, $title, $author
)
    {
        if ($this->detailedPage) {
            echo '
            <div class="row" style="border: 1px solid grey;padding: 20p
x;">
                <div class="col-sm-
4"><img src="' . $cover_photo . '" style="width:275px;height:350px;" />
</div>
                <div class="col-sm-6">
                    <b>' . $title . '</b>
                    <br>
                    <b>by</b> ' . $author . '
                    <br>
                    <b>ISBN: </b>' . $isbn . '
                    <br>
                    <b>Category: </b>' . $category . '
                    <br>
                    <b>Rating: </b>' . $rating . '
                    <br>
                    <b>Year: </b>' . $year_published . '
                    <br>
                    <b>Language: </b>' . $language . '
                    <br>
                    <b>Review: </b>' . $review . '
                    <br>
                    <b>Best Seller: </b>' . $best_seller . '
                    <br>
                    <b>Description: </b>' . $description . '
                    <br>
                </div>
            </div>
            <br>
            ';
        } else {
            echo '
            <div class="row" style="border: 1px solid black;padding: 20
px;">
                <div class="col-sm-
3"><img src="' . $cover_photo . '" style="width:150px;height:200px;" />
</div>
                <div class="col-sm-6">
                    <b>' . $title . '
                    <br>by </b>' . $author . '
                    <br><b>Category: </b>' . $category . '
                    <br><b>ISBN: </b>' . $isbn . '
                    <br><b>Language: </b>' . $language . '
                    <br><b>Year: </b>' . $year_published . '
                </div>
                <div class="col-sm-3">
                    <button type="button"
                    class="btn btn-primary"
                    style="width: 150px;"
                    title="Open details"
                    onclick="location.href = \'http://localhost/1/assig
nment_2_BookStore/pages/detail.php?format=' . $this-
>format . '&isbn=' . $isbn . '\';">View Detail</button>
                </div>
            </div>
            <br>
            ';
        }
    }
}
```

Annex C: database.php

```php
<?php
require 'credentials.php';
class database
{
    private $conn;
    function __construct()
    {
        $this->conn = $this->getConnection();
    }

    public function getConnection()
    {
        $conn = new mysqli(HOST, USERNAME, PASSWORD, DATABASENAME);
        if (mysqli_connect_errno()) {
            trigger_error("Problem with connecting to database.");
        }

        $conn->set_charset("utf8");
        return $conn;
    }

    /**
     * To get database results
     *
     * @param string $query
     * @param string $paramType
     * @param array $paramArray
     * @return array
     */
    public function select($query)
    {
        $stmt = $this->conn->prepare($query);


        $stmt->execute();
        $result = $stmt->get_result();

        if ($result->num_rows > 0) {
            while ($row = $result->fetch_assoc()) {
                $resultset[] = $row;
            }
        }

        if (!empty($resultset)) {
            return $resultset;
        }
    }
}
```

Annex D: credentials.php

```
<?php

const HOST = 'localhost';
const USERNAME = 'root';
const PASSWORD = '';
const DATABASENAME = 'bookstore';
```

Annex E: queryAPI.php

```
<?php

const API = 'http://localhost/1/assignment_2_BookStore/apis/myapi.php';
```

Annex F: myapi.php

```php
<?php

require 'database.php';

new api();

class api
{
  private $format;
  private $query;
  private $db;

  function __construct()
  {
    // Use parse_str() function to parse the
    // string passed via URL
    parse_str(strtolower($_SERVER["QUERY_STRING"]), $params); // store
all queries in $params

    if (isset($params['format'])) {
      if ($params['format'] == 'json') {
        $this->format = 'json'; //set format var to json
      }
      if ($params["format"] == "xml") {
        $this->format = 'xml'; //set format var to xml
      }
      $this->query = "SELECT * FROM books" . $this-
>subquery($params); //generate the sql query and set the var query
      $this->db = new database(); //create the database class
      print $this->select($this-
>query); //retrieve the output from the query
    } else { //if there is a wrong query the page will display how to u
se to the user

      print "Welcome to bookstore api!";
      print "</br>";
      print "No api key or registration needed its all free to use!!!!!
!!";
      print "</br>";
      print "</br>";
      print "</br>";
      print "how to use?";
      print "</br>";
      print "format(json or xml) -- ?format=json";
      print "</br>";
      print "author(fullname or part of name) -- ?author=seventhswan";
      print "</br>";
      print "category -- ?category=romance";
      print "</br>";
      print "title(full title or part of title) -
- ?title=Close Protection";
      print "</br>";
      print "year_published -- ?year_published=2015";
      print "</br>";
      print "isbn -- ?isbn=9780062407818";
      print "</br>";
      print "language -- ?language=english";
      print "</br>";
      print "orderby -- ?orderby=rating";
      print "</br>";
      print "limit(max number of book to output) -- ?limit=10";
      print "</br>";
      print "</br>";
      print "</br>";
      print "examples";
      print "</br>";
      print "json output with title contains 'close' -
- ?format=json&title=Close";
      print "</br>";
      print "xml output with author contains 'se', written in english,
show highest rating first, limit the result to only 5 -
- ?format=xml&author=se&language=english&orderby=rating&limit=5";
    }
  }

  function subquery($params)
  { // generate sql sub query -- starting from 'WHERE'
    $subquery = "";
    $subqueryarray = array(); //everything that will have 'AND' in fron
t will be push to array
    if (isset($params['isbn'])) {
      array_push($subqueryarray, " isbn LIKE '%" . $params["isbn"] . "%
'");
    }
    if (isset($params['author'])) {
      array_push($subqueryarray, " author LIKE '%" . $params["author"]
. "%'");
    }
    if (isset($params['category'])) {
      array_push($subqueryarray, " category LIKE '%" . $params["categor
y"] . "%'");
    }
    if (isset($params['title'])) {
      array_push($subqueryarray,  " title LIKE '%" . $params['title'] .
 "%'");
    }
    if (isset($params['language'])) {
      array_push($subqueryarray, " language LIKE '%" . $params['languag
e'] . "%'");
    }
    if (isset($params['year_published'])) {
      array_push($subqueryarray, " year_published LIKE '%" . $params['y
ear_published'] . "%'");
    }

    if (!empty($subqueryarray)) { // adding the 'AND' word infront of e
ach value in the array
      $subquery .= " WHERE";
      foreach ($subqueryarray as $key => $value) {
        if (!empty($value)) {
          $subquery .= " AND" . $value;
        }
      }
    }
    if (isset($params['orderby'])) { //no 'AND' infront therefore no ne
ed to push to array
      $subquery .=  " ORDER BY " . $params['orderby'] . "";
    }
    if (isset($params['limit'])) { //no 'AND' infront therefore no need
 to push to array
      $subquery .=  " LIMIT " . $params['limit'] . "";
    }
    return str_replace(' WHERE AND', ' WHERE', $subquery . ";"); //retu
rn a usable sql select query statement
  }
  function select($selectquery = "SELECT * FROM books", $countquery = "
SELECT COUNT(*) FROM books")
  {
    $count = $this->db-
>select($countquery)[0]["COUNT(*)"]; //get number of rows in books tabl
e
    $data = $this->db-
>select($selectquery); // get all details from books table
    $statusCode = "";
    $statusMessage = "";
    if (!empty($data)) { //executed when there is format query
      $statusCode = "200";
      $statusMessage = "Successfull";
    } else {
      $statusCode = "404";
      $statusMessage = "Not found";
    }

    if ($this->format == 'json') {
      header("Content-Type:application/json");
      $response = $this-
>addStatusToData($statusCode, $statusMessage, $count, $data); //call fu
ntion to add status code , message , totalbook  to the response
      $json_response = json_encode($response, JSON_UNESCAPED_SLASHES);
//output in json format
      return $json_response;
    } elseif ($this->format == 'xml') {
      header("Content-Type:application/xml");
      $response = $this-
>addStatusToData($statusCode, $statusMessage, $count, $data); //call fu
ntion to add status code , message , totalbook  to the response
      $xml_response = $this-
>xml_encode($response); //function created to immitate json_encode
      return $xml_response;
    } else { //bad request
      header("Content-Type:application/json");
      $response = $this-
>addStatusToData(400, 'Bad Request', $count, null); //call funtion to a
dd status code , message , totalbook  to the response
      $json_response = json_encode($response, JSON_UNESCAPED_SLASHES);
//output in json format
      return $json_response;
    }
  }

  function addStatusToData($status, $statusMessage, $count, $data)
  { // adding status code , message , totalbook  to the response
    header("HTTP/1.1 $status $statusMessage");
    $response['status'] = $status;
    $response['message'] = $statusMessage;
    $response['totalBookInDB'] = $count;
    $response['response'] = $data;
    return $response;
  }
  function xml_encode($data)
  {
    // creating object of SimpleXMLElement
    $xml = new SimpleXMLElement('<?xml version="1.0"?><bookstore></book
store>');
    //function call to convert array to xml
    $this->array_to_xml($data, $xml);
    //saving generated xml file;
    $result = $xml->asXML();
    //output the file in xml in the browser
    return ($result);
  }

  function array_to_xml($data, &$xml)
  {
    foreach ($data as $key => $value) {
      if (is_array($value)) {
        if (is_numeric($key)) { //if there are sub arrays
          $key = 'book' . $key; //dealing with <0/>..<n/> issues
        }
        $subnode = $xml->addChild($key); //add a node to the main
        $this->array_to_xml($value, $subnode); //recursive function
      } else {
        $xml-
>addChild("$key", htmlspecialchars("$value")); //add the value for the
node
      }
    }
  }
}
```

Annex G: index.php

```
<!DOCTYPE html>
<!--
Template Name: Wavefire
Author: <a href="https://www.os-templates.com/">OS Templates</a>
Author URI: https://www.os-templates.com/
Copyright: OS-Templates.com
Licence: Free to use under our free template licence terms
Licence URI: https://www.os-templates.com/template-terms
-->
<html lang="en">
<!-
- To declare your language - read more here: https://www.w3.org/Interna
tional/questions/qa-html-language-declarations -->

<head>
  <title>BookStore | Home Page</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0, maximum-scale=1.0, user-scalable=no">
  <link href="../layout/styles/layout.css" rel="stylesheet" type="text/
css" media="all">
  <link href="../fontawesome-free-5.15.3-
web/css/all.css" rel="stylesheet">
  <link href="../bootstrap/4.3.1/css/bootstrap.min.css" rel="stylesheet
">
  <link href="../layout/styles/mycss.css" rel="stylesheet">
</head>

<!-
- when the body load fill the elements with the appropriate details suc
h as date time alertlevel format... -->

<body id="top" onload="fillElements()">
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <div class="wrapper row0">
    <header id="header" class="hoc clear">
```

```
      <!-
- ######################################################################
########################### -->
      <div id="logo" class="one_quarter first">
        <h1><a href="index.php"><span>B</span>ook<span>S</span>tore</a>
</h1>
      </div>
      <div class="three_quarter">
        <ul class="nospace clear">
          <li class="one_third first">
            <div class="block clear"><a href="#"><i class="fas fa-
phone"></i></a> <span><strong>Give us a call:</strong> +00 (123) 456 78
90</span></div>
          </li>
          <li class="one_third">
            <div class="block clear"><a href="#"><i class="fas fa-
envelope"></i></a> <span><strong>Send us a mail:</strong> support@domai
n.com</span></div>
          </li>
          <li class="one_third">
            <div class="block clear"><a href="#"><i class="fas fa-
clock"></i></a> <span><strong> Mon. - Sat.:</strong> 08.00am - 18.00pm<
/span></div>
          </li>
        </ul>
      </div>
      <!-
- ######################################################################
########################### -->
    </header>
  </div>
  <!-
- ######################################################################
########################### -->
  <!-
- ######################################################################
########################### -->
  <!-
- ######################################################################
########################### -->
  <div class="wrapper row1">
    <section class="hoc clear">
      <!-
- ######################################################################
########################### -->
      <nav id="mainav">
```

```
        <ul class="clear">
          <li><a href="index.php">Home Page</a></li>
          <li class="active"><a class="drop" href="#">Pages</a>
            <ul>
              <li class="active"><a href="index.php">Home Page</a></li>
            </ul>
          </li>
        </ul>
      </nav>
      <!-
- #####################################################################
########################### -->
      <div id="searchform">
        <div>

        </div>
      </div>
      <!-
- #####################################################################
########################### -->
    </section>
  </div>
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <div class="wrapper bgded overlay" style="background-
image:url('../images/demo/backgrounds/01.png');">
    <div id="breadcrumb" class="hoc clear">
      <!-
- #####################################################################
########################### -->
      <h6 class="heading">BookStore</h6>
      <ul>
        <li><a href="#">Home Page</a></li>
      </ul>
      <!-
- #####################################################################
########################### -->
    </div>
  </div>
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <div class="wrapper row3">
    <main class="hoc container clear">
      <!-- main body -->
      <!-
- #####################################################################
########################### -->
      <div class="content">
        <!-
- #####################################################################
########################### -->


        <br>
        <br>



        <br>
        <br>

        <div class="row">
          <div class="col-sm-4">
            <input type="text" value="" name="isbn" id="isbn" class="fo
rm-control" placeholder="isbn">
          </div>
          <div class="col-sm-4">
            <input type="text" value="" name="author" id="author" class
="form-control" placeholder="author">
          </div>
          <div class="col-sm-4">
            <input type="text" value="" name="title" id="title" class="
form-control" placeholder="title">
          </div>
        </div>
        <br>
        <div class="row">
          <div class="col-sm-4">
            <input type="text" value="" name="language" id="language" c
lass="form-control" placeholder="language">
```

```
          </div>
          <div class="col-sm-4">
            <input type="text" value="" name="orderby" id="orderby" cla
ss="form-control" placeholder="orderby">
          </div>
          <div class="col-sm-4">
            <input type="text" value="" name="limit" id="limit" class="
form-control" placeholder="limit">
          </div>
        </div>
        <br>
        <div class="row">
          <div class="col-sm-4">
            <input type="text" value="" name="category" id="category" c
lass="form-control" placeholder="category">

          </div>
          <div class="col-sm-4">
            <select name="format" id="format" class="form-control">
              <option value="xml">XML</option>
              <option value="json">JSON</option>
            </select>
          </div>
          <div class="col-sm-4">
            <input type="text" value="" name="year_published" id="year_
published" class="form-control" placeholder="year published">
          </div>
        </div>
        <br>
        <div class="row">
          <div class="col-sm-12">
            <!--
on click the js will build the url and then request the server -->
            <input type="button" name="search" id="search" value="Advan
ced Search" class="btn btn-info form-control" onclick="buildURL();" />
          </div>
        </div>
        <br>
        <br>


        <br>
        <br>

        <!-- main display  -->
        <h1>Books</h1>
        <?php
        require("../php_files/queryAPI.php"); // to retrieve api
        require("../php_files/display.php"); //display the div - list o
ne by one
        new display(API . '?' . $_SERVER['QUERY_STRING']);
        ?>
        <br>
        <br>


        <!-
- #####################################################################
########################### -->
      </div>
      <!-
- #####################################################################
########################### -->
      <!-- / main body -->
      <div class="clear"></div>
    </main>
  </div>
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <div class="wrapper row4">
    <footer id="footer" class="hoc clear">
      <!-
- #####################################################################
########################### -->

      <!-
- #####################################################################
########################### -->
    </footer>
  </div>
  <!-
- #####################################################################
########################### -->
```

```
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <div class="wrapper row5">
    <div id="copyright" class="hoc clear">
      <!-
- #####################################################################
########################### -->
      <p class="fl_left">Copyright &copy; 2018 - All Rights Reserved -
<a href="#">Domain Name</a></p>
      <p class="fl_right">Template by <a target="_blank" href="https://
www.os-
templates.com/" title="Free Website Templates">OS Templates</a></p>
      <!-
- #####################################################################
########################### -->
    </div>
  </div>
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <!-
- #####################################################################
########################### -->
  <a id="backtotop" href="#top"><i class="fas fa-chevron-up"></i></a>
  <!-- JAVASCRIPTS -->
  <script src="../layout/scripts/jquery-3.5.1.min.js"></script>
  <!-- <script src="../layout/scripts/jquery.min.js"></script> -->
  <script src="../layout/scripts/jquery.backtotop.js"></script>
  <script src="../layout/scripts/jquery.mobilemenu.js"></script>
  <script src="../bootstrap/4.3.1/js/bootstrap.min.js"></script>
  <script src="../layout/scripts/myjs.js"></script>
</body>

</html>
```

Annex H: detail.php

```
<!DOCTYPE html>
<!--
Template Name: Wavefire
Author: <a href="https://www.os-templates.com/">OS Templates</a>
Author URI: https://www.os-templates.com/
Copyright: OS-Templates.com
Licence: Free to use under our free template licence terms
Licence URI: https://www.os-templates.com/template-terms
-->
<html lang="en">
<!-
- To declare your language - read more here: https://www.w3.org/Interna
tional/questions/qa-html-language-declarations -->

<head>
    <title>BookStore | Home Page</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0, maximum-scale=1.0, user-scalable=no">
    <link href="../layout/styles/layout.css" rel="stylesheet" type="tex
t/css" media="all">
    <link href="../fontawesome-free-5.15.3-
web/css/all.css" rel="stylesheet">
    <link href="../bootstrap/4.3.1/css/bootstrap.min.css" rel="styleshe
et">
    <link href="../layout/styles/mycss.css" rel="stylesheet">
</head>

<!-
- when the body load fill the elements with the appropriate details suc
h as date time alertlevel format... -->

<body id="top">
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <div class="wrapper row0">
        <header id="header" class="hoc clear">
```

```
            <!-
- ######################################################################
########################### -->
            <div id="logo" class="one_quarter first">
                <h1><a href="index.php"><span>B</span>ook<span>S</span>
tore</a></h1>
            </div>
            <div class="three_quarter">
                <ul class="nospace clear">
                    <li class="one_third first">
                        <div class="block clear"><a href="#"><i class="
fas fa-
phone"></i></a> <span><strong>Give us a call:</strong> +00 (123) 456 78
90</span></div>
                    </li>
                    <li class="one_third">
                        <div class="block clear"><a href="#"><i class="
fas fa-
envelope"></i></a> <span><strong>Send us a mail:</strong> support@domai
n.com</span></div>
                    </li>
                    <li class="one_third">
                        <div class="block clear"><a href="#"><i class="
fas fa-
clock"></i></a> <span><strong> Mon. - Sat.:</strong> 08.00am - 18.00pm<
/span></div>
                    </li>
                </ul>
            </div>
            <!-
- ######################################################################
########################### -->
        </header>
    </div>
    <!-
- ######################################################################
########################### -->
    <!-
- ######################################################################
########################### -->
    <!-
- ######################################################################
########################### -->
    <div class="wrapper row1">
        <section class="hoc clear">
```

```
            <!-
- #####################################################################
########################### -->
            <nav id="mainav">
                <ul class="clear">
                    <li><a href="index.php">Home Page</a></li>
                    <li class="active"><a class="drop" href="#">Pages</
a>
                        <ul>
                            <li class="active"><a href="index.php">Home
 Page</a></li>
                        </ul>
                    </li>
                </ul>
            </nav>
            <!-
- #####################################################################
########################### -->
            <div id="searchform">
                <div>
                    <form action="#" method="post">
                        <fieldset>
                            <legend>Quick Search:</legend>
                            <input type="text" placeholder="Enter searc
h term&hellip;">
                            <button type="submit"><i class="fas fa-
search"></i></button>
                        </fieldset>
                    </form>
                </div>
            </div>
            <!-
- #####################################################################
########################### -->
        </section>
    </div>
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
```

```
    <div class="wrapper bgded overlay" style="background-
image:url('../images/demo/backgrounds/01.png');">
        <div id="breadcrumb" class="hoc clear">
            <!-
- #####################################################################
########################### -->
            <h6 class="heading">BookStore</h6>
            <ul>
                <li><a href="#">Home Page</a></li>
            </ul>
            <!-
- #####################################################################
########################### -->
        </div>
    </div>
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <div class="wrapper row3">
        <main class="hoc container clear">
            <!-- main body -->
            <!-
- #####################################################################
########################### -->
            <div class="content">
                <!-
- #####################################################################
########################### -->


                <br>
                <br>


                <br>
                <br>


                <br>

                <br>
                <br>


                <br>
                <br>

                <!-- main display  -->
                <h1>Book Details</h1>
                <?php
                require("../php_files/queryAPI.php"); // to retrieve ap
i
                require("../php_files/display.php"); //display the div
- list one by one
                new display(API . '?' . $_SERVER['QUERY_STRING'], true)
;
                ?>
                <br>
                <br>


                <!-
- ####################################################################
########################### -->
            </div>
            <!-
- ####################################################################
########################### -->
            <!-- / main body -->
            <div class="clear"></div>
        </main>
    </div>
    <!-
- ####################################################################
########################### -->
    <!-
- ####################################################################
########################### -->
    <!-
- ####################################################################
########################### -->
    <div class="wrapper row4">
        <footer id="footer" class="hoc clear">
            <!-
- ####################################################################
########################### -->
```

```
            <!-
- #####################################################################
########################### -->
        </footer>
    </div>
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <div class="wrapper row5">
        <div id="copyright" class="hoc clear">
            <!-
- #####################################################################
########################### -->
            <p class="fl_left">Copyright &copy; 2018 - All Rights Reser
ved - <a href="#">Domain Name</a></p>
            <p class="fl_right">Template by <a target="_blank" href="ht
tps://www.os-
templates.com/" title="Free Website Templates">OS Templates</a></p>
            <!-
- #####################################################################
########################### -->
        </div>
    </div>
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <!-
- #####################################################################
########################### -->
    <a id="backtotop" href="#top"><i class="fas fa-chevron-up"></i></a>
    <!-- JAVASCRIPTS -->
    <script src="../layout/scripts/jquery-3.5.1.min.js"></script>
    <!-- <script src="../layout/scripts/jquery.min.js"></script> -->
    <script src="../layout/scripts/jquery.backtotop.js"></script>
    <script src="../layout/scripts/jquery.mobilemenu.js"></script>
    <script src="../bootstrap/4.3.1/js/bootstrap.min.js"></script>
    <script src="../layout/scripts/myjs.js"></script>
```

```html
</body>

</html>
```

Annex I: bookstore.sql

```
CREATE DATABASE `bookstore`;

CREATE TABLE bookstore.books(isbn Varchar(255) PRIMARY KEY NOT NULL,cat
egory varchar(255) NOT NULL,title Varchar(255) NOT NULL,rating int(1) N
OT NULL,author varchar(255) not null,year_published int(4) NOT NULL,des
cription LONGTEXT NOT NULL,language Varchar(255) NOT NULL,review INT(5)
 NOT NULL,best_seller boolean NOT NULL,cover_photo varchar(255) NOT NUL
L);
use bookstore;
INSERT INTO `books` (`isbn`,`category`,`title`,`rating`,`author`,`year_
published`,`description`,`language`,`review`,`best_seller`,`cover_photo
`) VALUES
    ('9780062407818','All category','Never Split the Difference: Negoti
ating As If Your Life Depended On It',5,'Chris Voss',2016,"From Scribd:
 About the Book.Hailed as one of the best modern books on the art of ne
gotiation, Never Split the Difference is written by Chris Voss, a renow
ned negotiator.After serving on the police force in Kansas City, Missou
ri, and experiencing what the rough streets there had to offer, Voss jo
ined the FBI to further his career. He eventually became a hostage nego
tiator, and in this line of work he often came face-to-
face with a range of criminals, including bank robbers and terrorists.O
nly by becoming the FBI' s lead international kidnapping negotiator did
 Voss reach the pinnacle of his career,and Never Split the Difference w
ill take you inside the life - or - death stakes negotiations that Voss
 managed.This book gets inside Voss 's head, revealing his skills and m
ethods that allowed him and his colleagues to be so successful when so
much was on the line.Broken down into nine effective principles, this p
ractical guide will teach you the methods and strategies you can use to
 become more persuasive in both your personal and professional life.As
Voss says, life is a series of negotiations that you should always be p
repared for. Everything from buying a car to negotiating a salary, and
even discussing things with your partner. With the knowledge contained
in Never Split the Difference you can take your emotional intelligence
to the next level.",'english',110,'1','https://imgv2-1-
f.scribdassets.com/img/word_document/310560108/original/216x287/7b8f899
09b/1627012728?v=1'),
    ('2626920','erotica','The Violet and the Tom',5,'Eve Ocotillo',2009
,'In what might have been the middle ages, had neither Alexander the Gr
eat nor Jesus the prophet died young, the Greek State is a powerful eco
nomic force in southern Europe, and slavery is a profitable and well-
entrenched social institution. Nygell, a Lord of the Northern Isles, is
 given the gift of a Grecian slave by the King. Nygell wants no such re
sponsibility.A homoerotic romance. Set in an alternate universe with in
stitutionalized slavery, thus consent is by nature dubious at best. Ele
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ments of BDSM.','english',343,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1295750108l/81
64754.jpg'),
    ('00000000001','fantasy','The student prince',4,'FayJay',2012,'A mo
dern day (BBC) Merlin AU set at the University of St Andrews, featuring
 teetotal kickboxers, secret wizards, magnificent bodyguards of various
 genders, irate fairies, imprisoned dragons, crumbling gothic architect
ure, arrogant princes, adorable engineering students, stolen gold, magi
cal doorways, attempted assassination, drunken students, shaving foam f
ights, embarrassing mornings after, The Hammer Dance, duty, responsibil
ity, friendship and true love...','english',596,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1400436772l/17
277854.jpg'),
    ('1426714343','romance','Heart in Hand',3,'salifiable',2011,'Hockey
 RPF.Darryl had realized very early on that for better or worse, he wou
ld be linked to Aleksey Kuznetsov for the rest of his life. But he neve
r expected anything like this.','english',316,'0','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1364753584l/13
151360.jpg'),
    ('1980900388','romance','Close Protection',4,'Cordelia Kingsbridge'
,2012,"bodyguard’s life is turned upside down by his intriguing new cha
rge. After three consecutive expulsions for sexual misconduct, Luca D'A
mato has no choice but to return to America. Jacob Ryder is the man cha
rged with protecting him from his family's many enemies – but who will
protect Ryder from Luca?",'english',267,'0','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1391963345l/13
481282.jpg'),
    ('979-
8679122673','romance','Drunk Text',3,'seventhswan',2018,"Gunnar wakes u
p in his dorm room on a Friday in April and notices three things in rap
id succession. The most pressing is a text message that says: 'God, my
ass hurts. I can't even sit down properly. Cheers to you. Coffee @ 1?'"
,'english',237,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1395690840l/13
494082.jpg'),
    ('9781408855652','fantasy',"Harry Potter and the Philosopher's Ston
e",4,'J.K. Rowling',2014,"Escape to Hogwarts with the unmissable series
 that has sparked a lifelong reading journey for children and families
all over the world. The magic starts here.Harry Potter has never even h
eard of Hogwarts when the letters start dropping on the doormat at numb
er four, Privet Drive. Addressed in green ink on yellowish parchment wi
th a purple seal, they are swiftly confiscated by his grisly aunt and u
ncle. Then, on Harry's eleventh birthday, a great beetle-
eyed giant of a man called Rubeus Hagrid bursts in with some astonishin
g news: Harry Potter is a wizard, and he has a place at Hogwarts School
 of Witchcraft and Wizardry. The magic starts here!These editions of th
```

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e classic and internationally bestselling Harry Potter series feature t
hrilling jacket artwork by award-
winning illustrator Jonny Duddle. They are the perfect starting point f
or anyone who's ready to lose themselves in the greatest children's sto
ry of all time.",'english',122497,'1','https://d1w7fb2mkkr3kw.cloudfron
t.net/assets/images/book/lrg/9781/4088/9781408855652.jpg'),
    ('B017V4IPPO','fantasy',"Harry Potter and the Chamber of Secrets",4
,'J.K. Rowling',2015,"Ever since Harry Potter had come home for the sum
mer, the Dursleys had been so mean and hideous that all Harry wanted wa
s to get back to the Hogwarts School for Witchcraft and Wizardry. But j
ust as he’s packing his bags, Harry receives a warning from a strange i
mpish creature who says that if Harry returns to Hogwarts, disaster wil
l strike.And strike it does. For in Harry’s second year at Hogwarts, fr
esh torments and horrors arise, including an outrageously stuck-
up new professor and a spirit who haunts the girls’ bathroom. But then
the real trouble begins – someone is turning Hogwarts students to stone
. Could it be Draco Malfoy, a more poisonous rival than ever? Could it
possible be Hagrid, whose mysterious past is finally told? Or could it
be the one everyone at Hogwarts most suspects… Harry Potter himself!",'
english',58421,'1','https://m.media-
amazon.com/images/I/51RDEwuovQL.jpg'),
    ('043965548X','fantasy',"Harry Potter and the Prisoner of Azkaban",
5,'J.K. Rowling',2004,"For twelve long years, the dread fortress of Azk
aban held an infamous prisoner named Sirius Black. Convicted of killing
 thirteen people with a single curse, he was said to be the heir appare
nt to the Dark Lord, Voldemort.Now he has escaped, leaving only two clu
es as to where he might be headed: Harry Potter's defeat of You-Know-
Who was Black's downfall as well. And the Azkaban guards heard Black mu
ttering in his sleep, ''He's at Hogwarts . . . he's at Hogwarts.''Harry
 Potter isn't safe, not even within the walls of his magical school, su
rrounded by his friends. Because on top of it all, there may well be a
traitor in their midst.",'english',61374,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1499277281l/5.
jpg'),
    ('B017V4NQGM','fantasy',"Harry Potter and the Goblet of Fire",5,'J.
K. Rowling',2015,"Harry Potter is midway through his training as a wiza
rd and his coming of age. Harry wants to get away from the pernicious D
ursleys and go to the International Quidditch Cup with Hermione, Ron, a
nd the Weasleys. He wants to dream about Cho Chang, his crush (and mayb
e do more than dream). He wants to find out about the mysterious event
that's supposed to take place at Hogwarts this year, an event involving
 two other rival schools of magic, and a competition that hasn't happen
ed for hundreds of years. He wants to be a normal, fourteen-year-
old wizard. But unfortunately for Harry Potter, he's not normal - even
by wizarding standards.",'english',54304,'1','https://i.gr-
```

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assets.com/images/S/compressed.photo.goodreads.com/books/1554006152l/6.
jpg'),
    ('B017V4NLJ4','fantasy',"Harry Potter and the Order of the Phoenix"
,5,'J.K. Rowling',2015,"There is a door at the end of a silent corridor
. And it’s haunting Harry Pottter’s dreams. Why else would he be waking
 in the middle of the night, screaming in terror?Harry has a lot on his
 mind for this, his fifth year at Hogwarts: a Defense Against the Dark
Arts teacher with a personality like poisoned honey; a big surprise on
the Gryffindor Quidditch team; and the looming terror of the Ordinary W
izarding Level exams. But all these things pale next to the growing thr
eat of He-Who-Must-Not-Be-
Named - a threat that neither the magical government nor the authoritie
s at Hogwarts can stop.As the grasp of darkness tightens, Harry must di
scover the true depth and strength of his friends, the importance of bo
undless loyalty, and the shocking price of unbearable sacrifice.",'engl
ish',46965,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1546910265l/2.
jpg'),
    ('B017V4NOEG','fantasy',"Harry Potter and the Half-
Blood Prince",5,'J.K. Rowling',2015,"The war against Voldemort is not g
oing well; even Muggle governments are noticing. Ron scans the obituary
 pages of the Daily Prophet, looking for familiar names. Dumbledore is
absent from Hogwarts for long stretches of time, and the Order of the P
hoenix has already suffered losses.And yet . . .As in all wars, life go
es on. The Weasley twins expand their business. Sixth-
year students learn to Apparate - and lose a few eyebrows in the proces
s. Teenagers flirt and fight and fall in love. Classes are never straig
htforward, through Harry receives some extraordinary help from the myst
erious Half-
Blood Prince.So it's the home front that takes center stage in the mult
ilayered sixth installment of the story of Harry Potter. Here at Hogwar
ts, Harry will search for the full and complete story of the boy who be
came Lord Voldemort - and thereby find what may be his only vulnerabili
ty.",'english',43364,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1587697303l/1.
_SX318_.jpg'),
    ('B017WJ5PR4','fantasy',"Harry Potter and the Deathly Hallows",5,'J
.K. Rowling',2015,"Harry Potter is leaving Privet Drive for the last ti
me. But as he climbs into the sidecar of Hagrid’s motorbike and they ta
ke to the skies, he knows Lord Voldemort and the Death Eaters will not
be far behind.The protective charm that has kept him safe until now is
broken. But the Dark Lord is breathing fear into everything he loves. A
nd he knows he can’t keep hiding.To stop Voldemort, Harry knows he must
 find the remaining Horcruxes and destroy them.He will have to face his
 enemy in one final battle.",'english',69958,'1','https://i.gr-
```

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assets.com/images/S/compressed.photo.goodreads.com/books/1474171184l/13
6251._SY475_.jpg'),
    ('0751565350','fantasy',"Harry Potter and the Cursed Child: Parts O
ne and Two",3,'J.K. Rowling',2016,"Based on an original new story by J.
K. Rowling, Jack Thorne and John Tiffany, a new play by Jack Thorne, Ha
rry Potter and the Cursed Child is the eighth story in the Harry Potter
 series and the first official Harry Potter story to be presented on st
age. The play will receive its world premiere in London’s West End on J
uly 30, 2016.It was always difficult being Harry Potter and it isn’t mu
ch easier now that he is an overworked employee of the Ministry of Magi
c, a husband and father of three school-
age children.While Harry grapples with a past that refuses to stay wher
e it belongs, his youngest son Albus must struggle with the weight of a
 family legacy he never wanted. As past and present fuse ominously, bot
h father and son learn the uncomfortable truth: sometimes, darkness com
es from unexpected places.",'english',67085,'1','https://i.gr-
assets.com/images/S/compressed.photo.goodreads.com/books/1470082995l/29
056083._SY475_.jpg');
```