FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

XML/JSON Data Processing

ITC5202 - Project

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HUMBER

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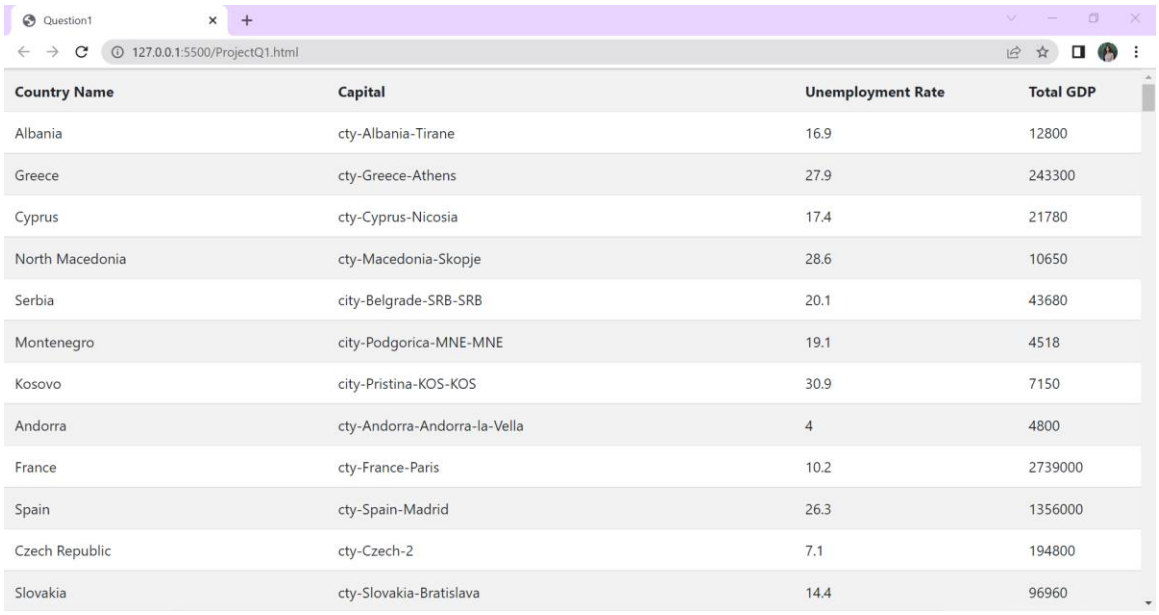
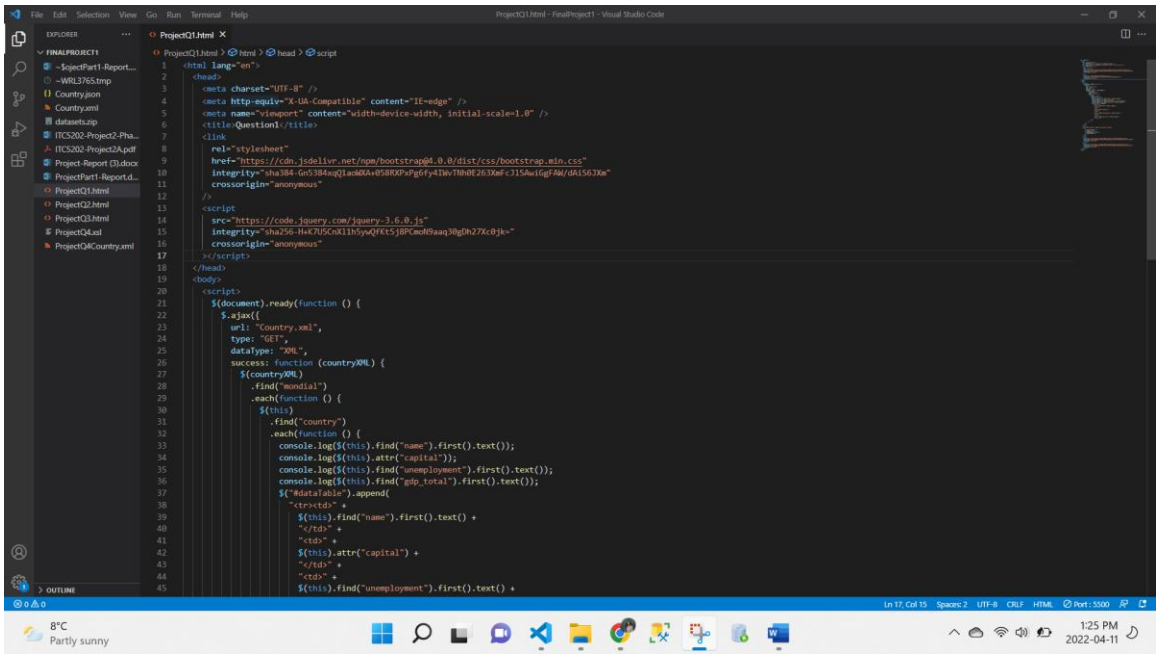
Question 1: Use JavaScript/Ajax to process XML data

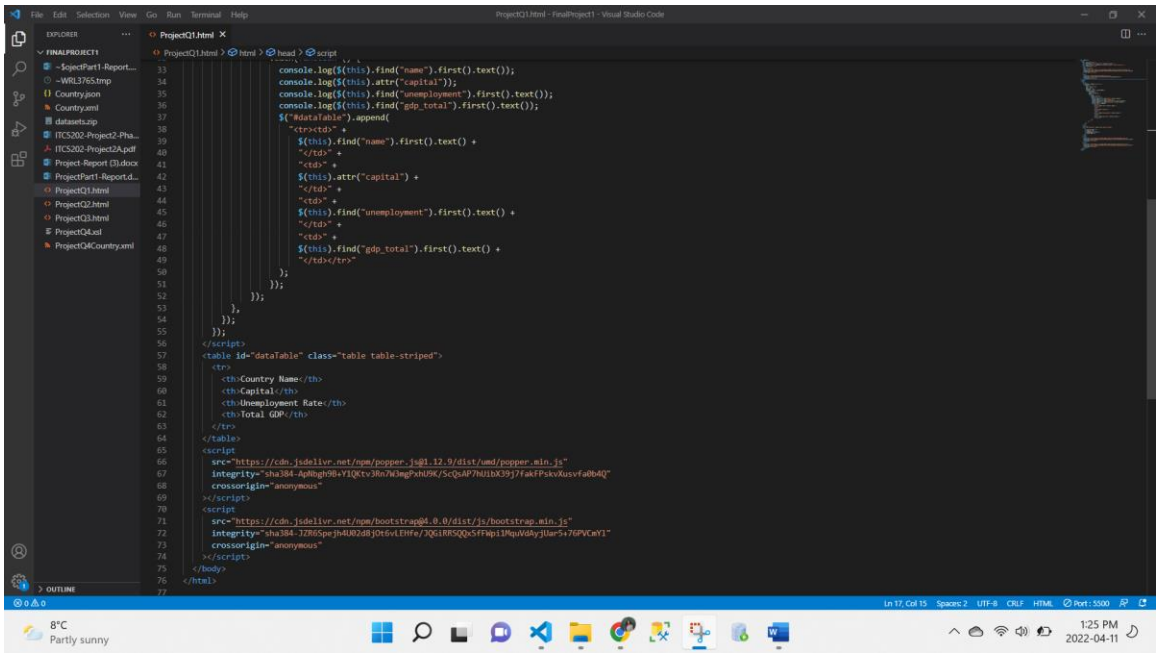
(Describe the major steps for designing the JavaScript function(s), how you test this program, add some screenshots of the output)

In this question, we've used ajax to load the XML file using an anonymous function and created a function called countryXML. To test the loaded data, we have displayed it in the console log. Using append, we have displayed the XML data in the tabular form using table tag. Apart from that, we've used jquery and bootstrap for styling.



Country Name	Capital	Unemployment Rate	Total GDP
Albania	cty-Albania-Tirane	16.9	12800
Greece	cty-Greece-Athens	27.9	243300
Cyprus	cty-Cyprus-Nicosia	17.4	21780
North Macedonia	cty-Macedonia-Skopje	28.6	10650
Serbia	city-Belgrade-SRB-SRB	20.1	43680
Montenegro	city-Podgorica-MNE-MNE	19.1	4518
Kosovo	city-Pristina-KOS-KOS	30.9	7150
Andorra	cty-Andorra-Andorra-la-Vella	4	4800
France	cty-France-Paris	10.2	2739000
Spain	cty-Spain-Madrid	26.3	1356000
Czech Republic	cty-Czech-2	7.1	194800
Slovakia	cty-Slovakia-Bratislava	14.4	96960




File Edit Selection View Go Run Terminal Help
ProjectQ1.html - FinalProject1 - Visual Studio Code
EXPLORER
FINALPROJECT1
ProjectQ1.html
ProjectQ1.html > html > head > script
console.log($(this).find("name").first().text());
console.log($(this).attr("capital"));
console.log($(this).find("unemployment").first().text());
console.log($(this).find("gdp_total").first().text());
$("#dataTable").append(
"<tr><td>" +
$(this).find("name").first().text() +
"</td>" +
"<td>" +
$(this).attr("capital") +
"</td>" +
"<td>" +
$(this).find("unemployment").first().text() +
"</td>" +
"<td>" +
$(this).find("gdp_total").first().text() +
"</td></tr>"
);
});
});
},
});
});
</script>
<table id="dataTable" class="table table-striped">
<tr>
<th>Country Name</th>
<th>Capital</th>
<th>Unemployment Rate</th>
<th>Total GDP</th>
</tr>
</table>
<script
src="https://cdn.jsdelivr.net/npm/popper.js@1.12.9/dist/umd/popper.min.js"
integrity="sha384-ApNbgh9B+Y1QKtv3Rn7W3mgPxhU9K/ScQsAP7hUibX39j7fakFPskvXusvfa0b4Q"
crossorigin="anonymous"
></script>
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@4.0.0/dist/js/bootstrap.min.js"
integrity="sha384-JZR6Spejh4U02d8jOt6vLEHfe/JQGiRRSQQxSfFWpi1MquVdAyjUar5+76PVCmY1"
crossorigin="anonymous"
></script>
</body>
</html>
OUTLINE
Ln 17, Col 15 Spaces: 2 UTF-8 CRLF HTML Port: 5500
8°C
Partly sunny
1:25 PM
2022-04-11

Question 2,3: Use JavaScript/jQuery to process JSON data

(Describe the major steps for designing the JavaScript function(s), how you test this program, add some screenshots of the output)

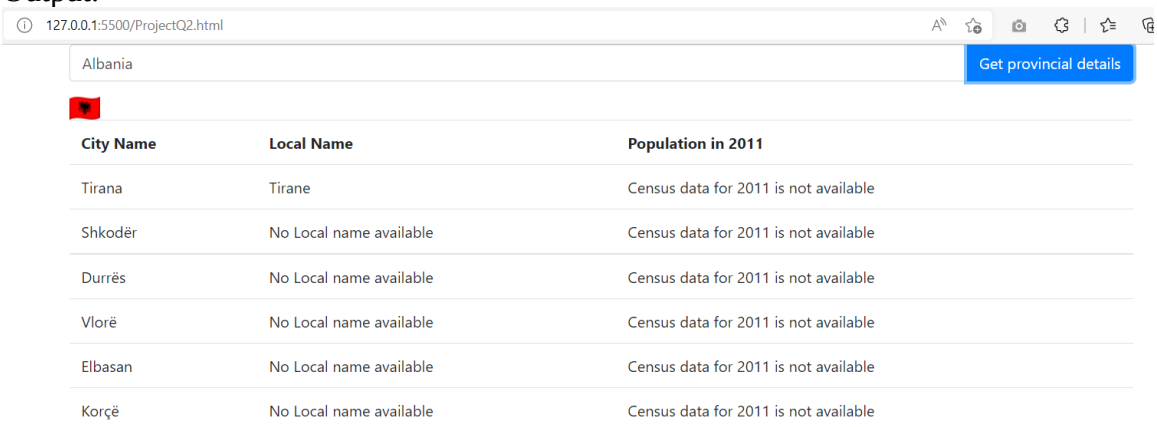
Question2:

Steps:

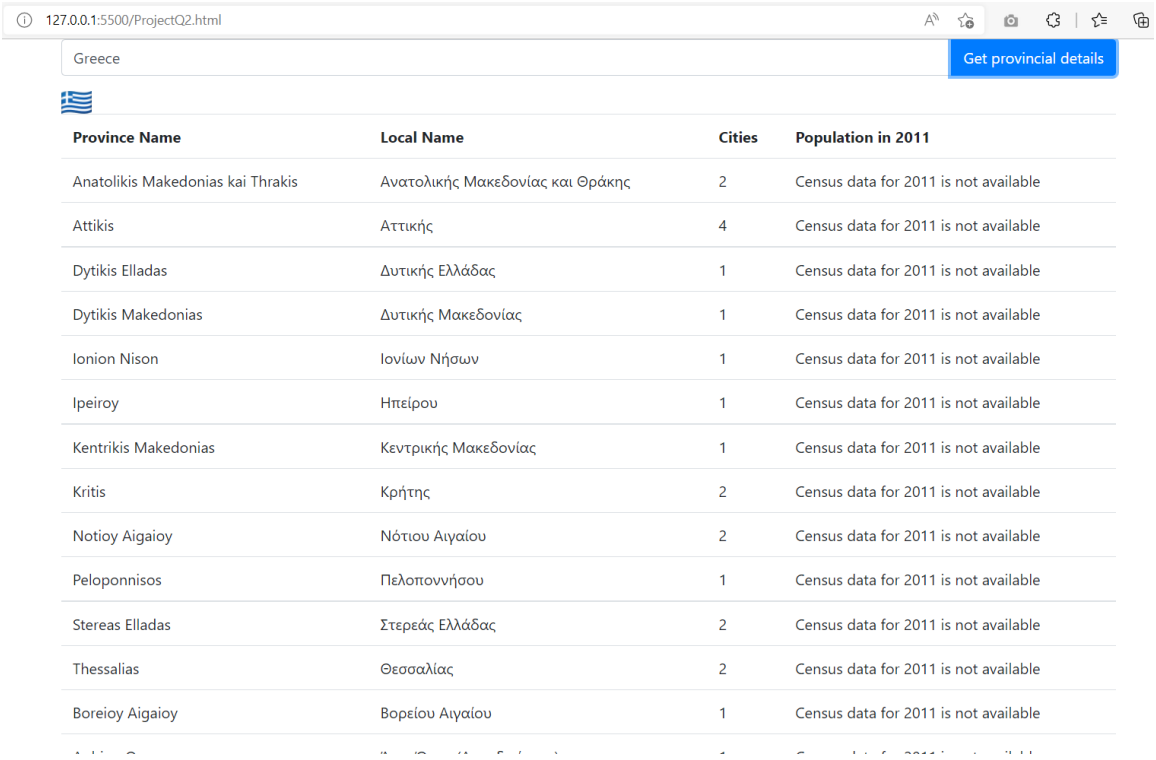
1. Load the country JSON file
2. Once we can fetch the country rows, we try to check if the country has provinces.
   - If the country has provinces, we change the table layout to show details according to provincial data.
   - Then we check if the province has population data and if it has that, we check if the data is available for 2011.
   - If we get all the desired results, we will pass the correct values else data not available messages
3. If we don't get the province data in step 2, we find cities inside our country and change the table headings according to city wise data.
   - We get the city name and local name from the dataset
   - If we find a field named population inside cities and if there is population available for 2011, we fetch that data as well.
   - If we get the data, we show them in results else we show appropriate message.

Code for this question can be found here
JSON data can be found here

Output:



City Name	Local Name	Population in 2011
Tirana	Tirane	Census data for 2011 is not available
Shkodër	No Local name available	Census data for 2011 is not available
Durrës	No Local name available	Census data for 2011 is not available
Vlorë	No Local name available	Census data for 2011 is not available
Elbasan	No Local name available	Census data for 2011 is not available
Korçë	No Local name available	Census data for 2011 is not available



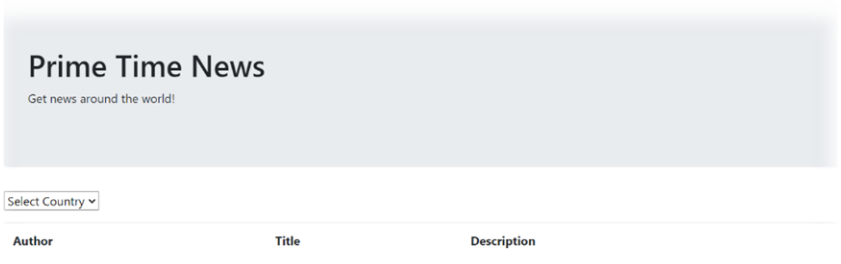
Province Name	Local Name	Cities	Population in 2011
Anatolikis Makedonias kai Thrakis	Ανατολικής Μακεδονίας και Θράκης	2	Census data for 2011 is not available
Attikis	Αττικής	4	Census data for 2011 is not available
Dytikis Elladas	Δυτικής Ελλάδας	1	Census data for 2011 is not available
Dytikis Makedonias	Δυτικής Μακεδονίας	1	Census data for 2011 is not available
Ionion Nison	Ιονίων Νήσων	1	Census data for 2011 is not available
Ipeiroy	Ηπείρου	1	Census data for 2011 is not available
Kentrikis Makedonias	Κεντρικής Μακεδονίας	1	Census data for 2011 is not available
Kritis	Κρήτης	2	Census data for 2011 is not available
Notioy Aigaioy	Νότιου Αιγαίου	2	Census data for 2011 is not available
Peloponnisos	Πελοποννήσου	1	Census data for 2011 is not available
Stereas Elladas	Στερεάς Ελλάδας	2	Census data for 2011 is not available
Thessalias	Θεσσαλίας	2	Census data for 2011 is not available
Boreioy Aigaioy	Βορείου Αιγαίου	1	Census data for 2011 is not available

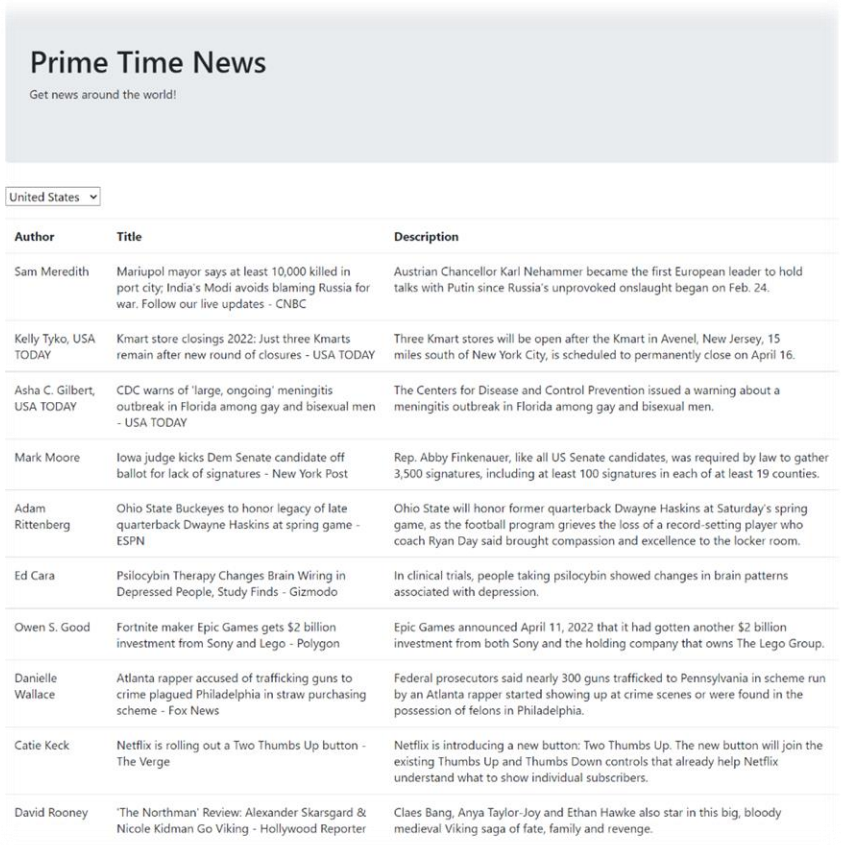
Question3:

Steps:

- For this question we have used this endpoint + country name
- Once we fetch the data, we fetch the articles for the selected country.
- Inside articles we fetch the author name, title and description of the article and append it to the output table
- Code for this question can be found here

Output:





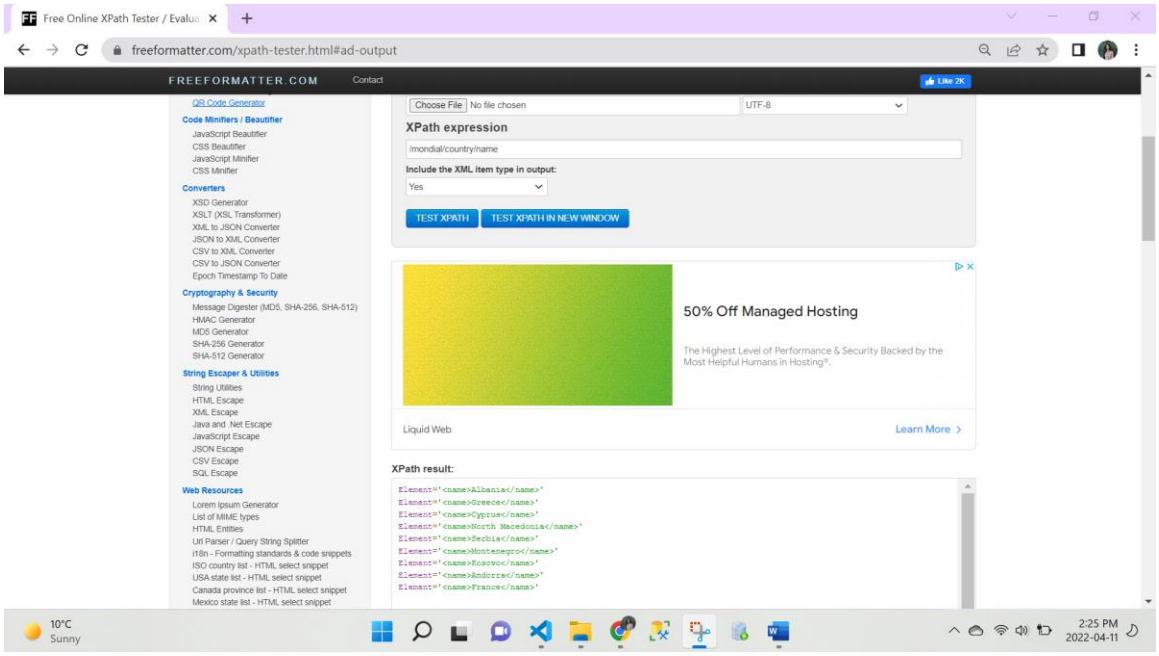
Author	Title	Description
Sam Meredith	Mariupol mayor says at least 10,000 killed in port city; India's Modi avoids blaming Russia for war. Follow our live updates - CNBC	Austrian Chancellor Karl Nehammer became the first European leader to hold talks with Putin since Russia's unprovoked onslaught began on Feb. 24.
Kelly Tyko, USA TODAY	Kmart store closings 2022: Just three Kmarts remain after new round of closures - USA TODAY	Three Kmart stores will be open after the Kmart in Avenel, New Jersey, 15 miles south of New York City, is scheduled to permanently close on April 16.
Asha C. Gilbert, USA TODAY	CDC warns of 'large, ongoing' meningitis outbreak in Florida among gay and bisexual men - USA TODAY	The Centers for Disease and Control Prevention issued a warning about a meningitis outbreak in Florida among gay and bisexual men.
Mark Moore	Iowa judge kicks Dem Senate candidate off ballot for lack of signatures - New York Post	Rep. Abby Finkenauer, like all US Senate candidates, was required by law to gather 3,500 signatures, including at least 100 signatures in each of at least 19 counties.
Adam Rittenberg	Ohio State Buckeyes to honor legacy of late quarterback Dwayne Haskins at spring game - ESPN	Ohio State will honor former quarterback Dwayne Haskins at Saturday's spring game, as the football program grieves the loss of a record-setting player who coach Ryan Day said brought compassion and excellence to the locker room.
Ed Cara	Psilocybin Therapy Changes Brain Wiring in Depressed People, Study Finds - Gizmodo	In clinical trials, people taking psilocybin showed changes in brain patterns associated with depression.
Owen S. Good	Fortnite maker Epic Games gets $2 billion investment from Sony and Lego - Polygon	Epic Games announced April 11, 2022 that it had gotten another $2 billion investment from both Sony and the holding company that owns The Lego Group.
Danielle Wallace	Atlanta rapper accused of trafficking guns to crime plagued Philadelphia in straw purchasing scheme - Fox News	Federal prosecutors said nearly 300 guns trafficked to Pennsylvania in scheme run by an Atlanta rapper started showing up at crime scenes or were found in the possession of felons in Philadelphia.
Catie Keck	Netflix is rolling out a Two Thumbs Up button - The Verge	Netflix is introducing a new button: Two Thumbs Up. The new button will join the existing Thumbs Up and Thumbs Down controls that already help Netflix understand what to show individual subscribers.
David Rooney	'The Northman' Review: Alexander Skarsgard & Nicole Kidman Go Viking - Hollywood Reporter	Claes Bang, Anya Taylor-Joy and Ethan Hawke also star in this big, bloody medieval Viking saga of fate, family and revenge.

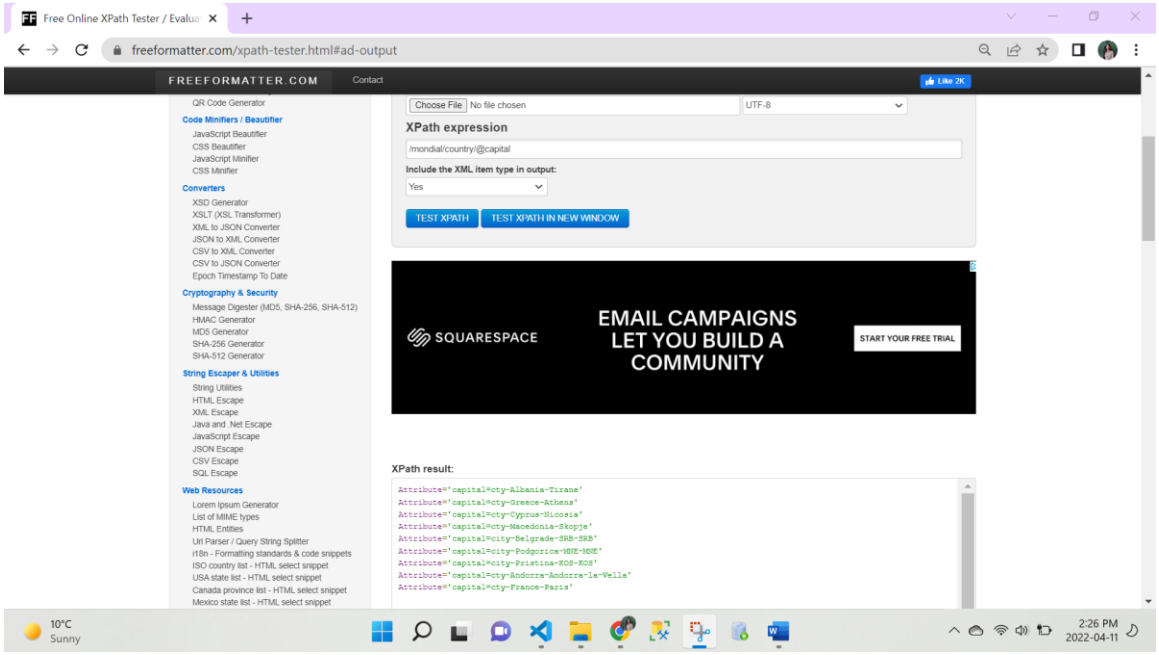
Question 4: XSLT and XPath

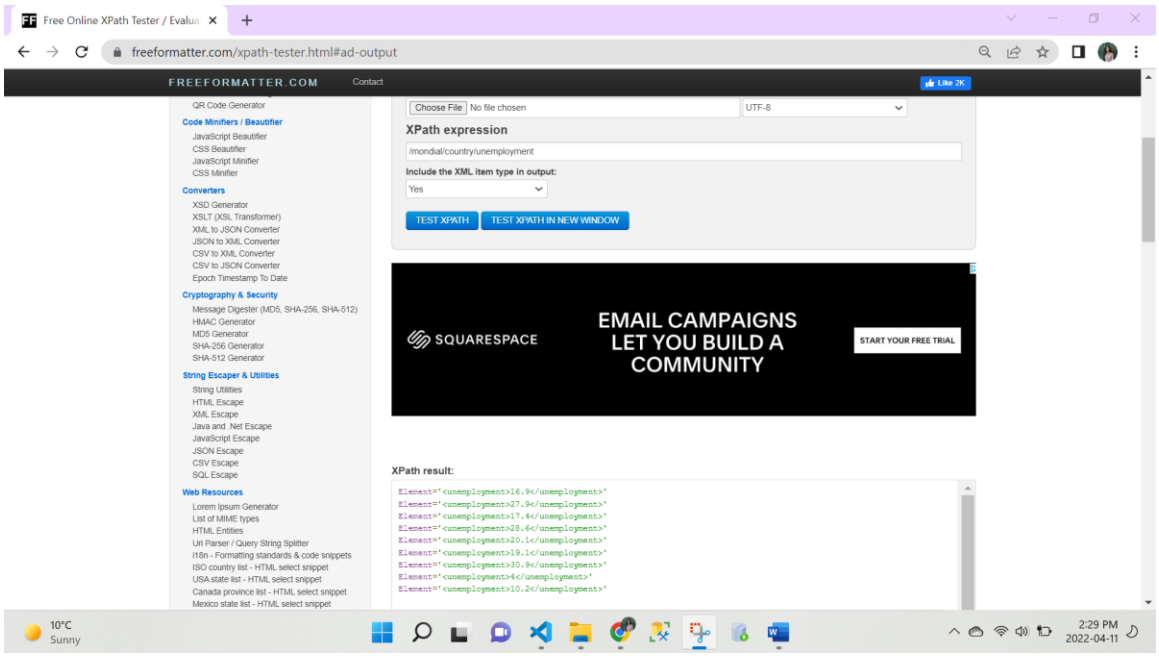
(Describe the major steps for designing the XSLT. How did you use XPath in the XSLT? Add screenshot of the XPath testing and the output of XSLT)

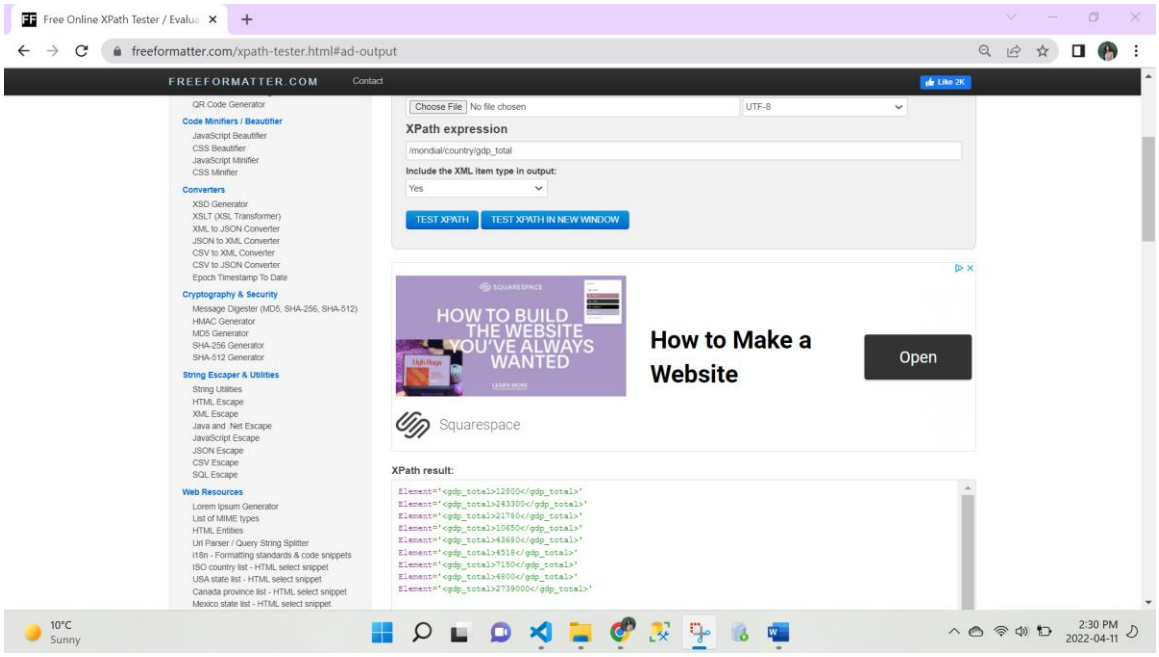
Using freeformatter, we tested data for various Xpath expressions to get the value of required elements. Then we used for each to access the elements inside the root path and displayed the values of those elements using xsl:value-of in tabular form.

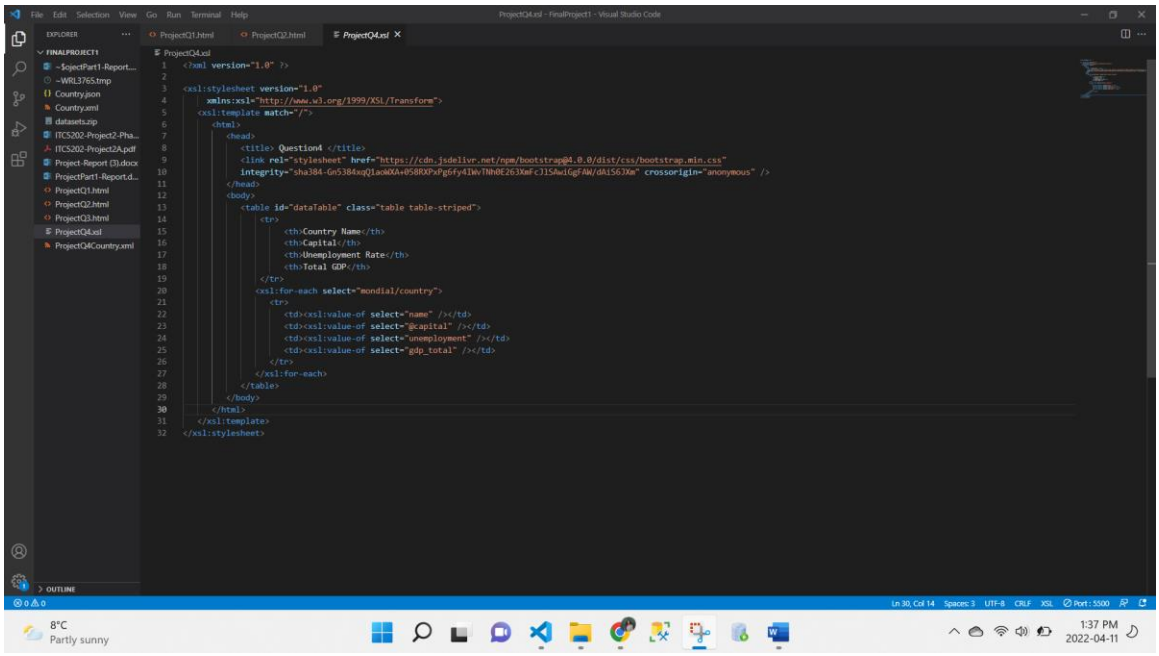
XPath testing:



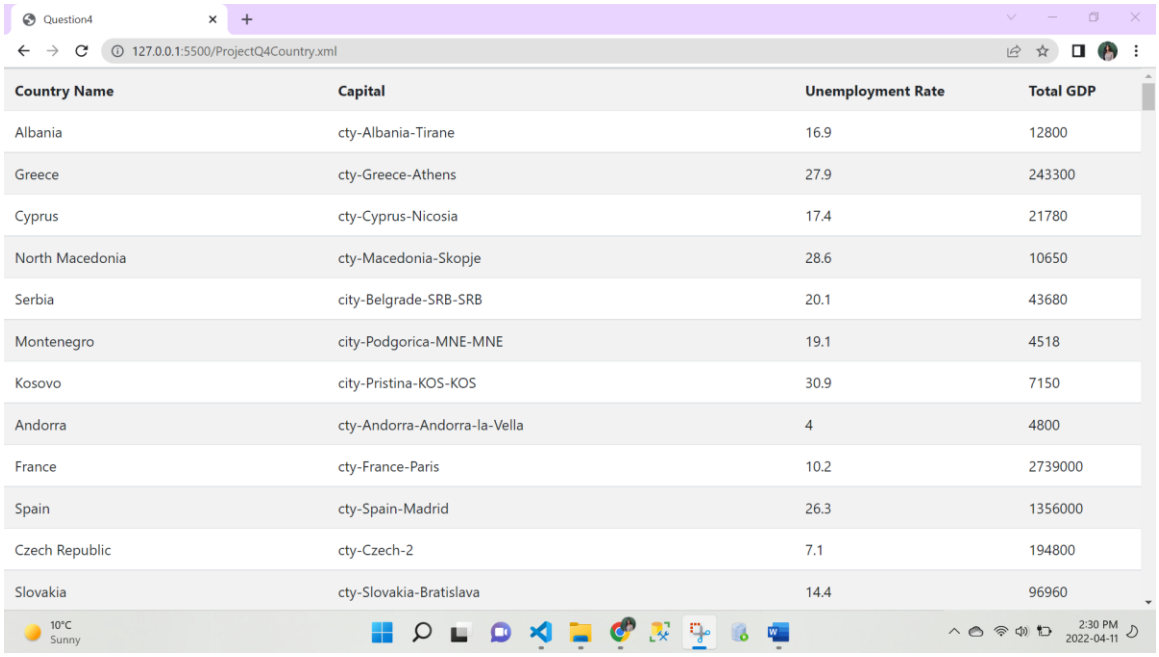



Free Online XPath Tester / Evalua
freeformatter.com/xpath-tester.html#ad-output
FREEFORMATTER.COM
Contact
Like 2K
QR Code Generator
Code Minifiers / Beautifier
JavaScript Beautifier
CSS Beautifier
JavaScript Minifier
CSS Minifier
Converters
XSD Generator
XSLT (XSL Transformer)
XML to JSON Converter
JSON to XML Converter
CSV to XML Converter
CSV to JSON Converter
Epoch Timestamp To Date
Cryptography & Security
Message Digester (MD5, SHA-256, SHA-512)
HMAC Generator
MD5 Generator
SHA-256 Generator
SHA-512 Generator
String Escaper & Utilities
String Utilities
HTML Escape
XML Escape
Java and .Net Escape
JavaScript Escape
JSON Escape
CSV Escape
SQL Escape
Web Resources
Lorem Ipsum Generator
List of MIME types
HTML Entities
Url Parser / Query String Splitter
i18n - Formatting standards & code snippets
ISO country list - HTML select snippet
USA state list - HTML select snippet
Canada province list - HTML select snippet
Mexico state list - HTML select snippet
Choose File
No file chosen
UTF-8
XPath expression
/mondial/country/unemployment
Include the XML item type in output:
Yes
TEST XPATH
TEST XPATH IN NEW WINDOW
SQUARESPACE
EMAIL CAMPAIGNS LET YOU BUILD A COMMUNITY
START YOUR FREE TRIAL
XPath result:
Element='<unemployment>16.9</unemployment>'
Element='<unemployment>27.9</unemployment>'
Element='<unemployment>17.4</unemployment>'
Element='<unemployment>28.6</unemployment>'
Element='<unemployment>20.1</unemployment>'
Element='<unemployment>19.1</unemployment>'
Element='<unemployment>30.9</unemployment>'
Element='<unemployment>4</unemployment>'
Element='<unemployment>10.2</unemployment>'
10°C
Sunny
2:29 PM
2022-04-11


Free Online XPath Tester / Evalua
freeformatter.com/xpath-tester.html#ad-output
FREEFORMATTER.COM
Contact
Like 2K
QR Code Generator
Code Minifiers / Beautifier
JavaScript Beautifier
CSS Beautifier
JavaScript Minifier
CSS Minifier
Converters
XSD Generator
XSLT (XSL Transformer)
XML to JSON Converter
JSON to XML Converter
CSV to XML Converter
CSV to JSON Converter
Epoch Timestamp To Date
Cryptography & Security
Message Digester (MD5, SHA-256, SHA-512)
HMAC Generator
MD5 Generator
SHA-256 Generator
SHA-512 Generator
String Escaper & Utilities
String Utilities
HTML Escape
XML Escape
Java and .Net Escape
JavaScript Escape
JSON Escape
CSV Escape
SQL Escape
Web Resources
Lorem Ipsum Generator
List of MIME types
HTML Entities
Url Parser / Query String Splitter
i18n - Formatting standards & code snippets
ISO country list - HTML select snippet
USA state list - HTML select snippet
Canada province list - HTML select snippet
Mexico state list - HTML select snippet
Choose File
No file chosen
UTF-8
XPath expression
/mondial/country/gdp_total
Include the XML item type in output:
Yes
TEST XPATH
TEST XPATH IN NEW WINDOW
HOW TO BUILD THE WEBSITE YOU'VE ALWAYS WANTED
How to Make a Website
Open
Squarespace
XPath result:
Element='<gdp_total>12800</gdp_total>'
Element='<gdp_total>243300</gdp_total>'
Element='<gdp_total>21780</gdp_total>'
Element='<gdp_total>10650</gdp_total>'
Element='<gdp_total>43680</gdp_total>'
Element='<gdp_total>4518</gdp_total>'
Element='<gdp_total>7150</gdp_total>'
Element='<gdp_total>4800</gdp_total>'
Element='<gdp_total>2739000</gdp_total>'
10°C
Sunny
2:30 PM
2022-04-11

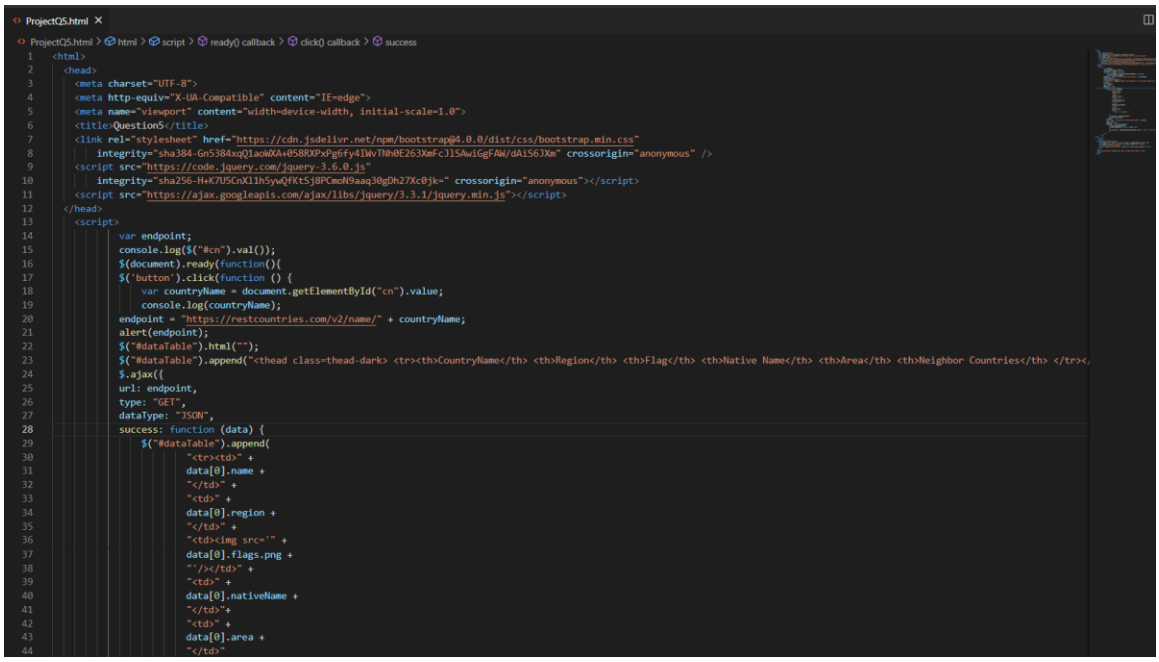

ProjectQ4.xsl - FinalProject1 - Visual Studio Code
ProjectQ4.xsl
<?xml version="1.0" ?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<head>
<title> Question4 </title>
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.0.0/dist/css/bootstrap.min.css"
integrity="sha384-Gn5384xqQ1aoWXA+058RXPxPg6fy4IWvTNh0E263XmFcJlSAwiGgFAW/dAiS6JXm" crossorigin="anonymous" />
</head>
<body>
<table id="dataTable" class="table table-striped">
<tr>
<th>Country Name</th>
<th>Capital</th>
<th>Unemployment Rate</th>
<th>Total GDP</th>
</tr>
<xsl:for-each select="mondial/country">
<tr>
<td><xsl:value-of select="name" /></td>
<td><xsl:value-of select="@capital" /></td>
<td><xsl:value-of select="unemployment" /></td>
<td><xsl:value-of select="gdp_total" /></td>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
8°C
Partly sunny
1:37 PM
2022-04-11

Output:

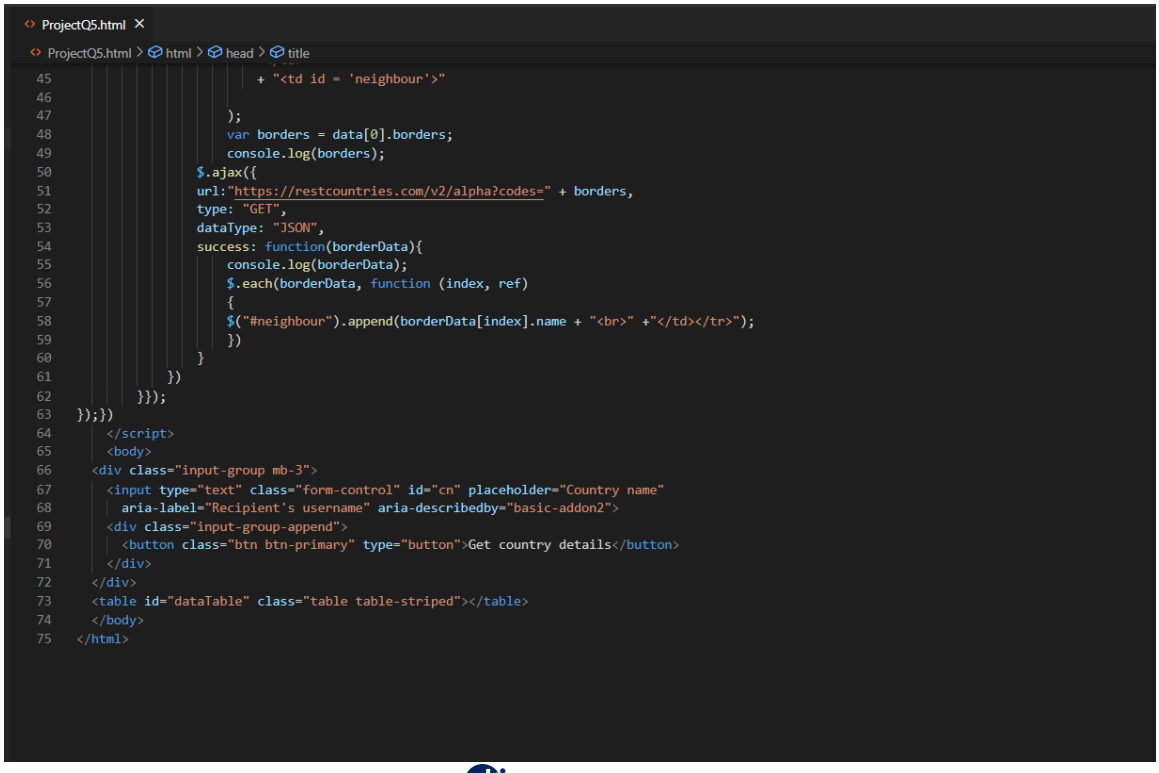

Question4
127.0.0.1:5500/ProjectQ4Country.xml
Country Name
Capital
Unemployment Rate
Total GDP
Albania
cty-Albania-Tirane
16.9
12800
Greece
cty-Greece-Athens
27.9
243300
Cyprus
cty-Cyprus-Nicosia
17.4
21780
North Macedonia
cty-Macedonia-Skopje
28.6
10650
Serbia
city-Belgrade-SRB-SRB
20.1
43680
Montenegro
city-Podgorica-MNE-MNE
19.1
4518
Kosovo
city-Pristina-KOS-KOS
30.9
7150
Andorra
cty-Andorra-Andorra-la-Vella
4
4800
France
cty-France-Paris
10.2
2739000
Spain
cty-Spain-Madrid
26.3
1356000
Czech Republic
cty-Czech-2
7.1
194800
Slovakia
cty-Slovakia-Bratislava
14.4
96960
10°C
Sunny
2:30 PM
2022-04-11

Question 5: Use JavaScript/jQuery to process JSON data

When the user enters the desired country name and hits the button, details of that country is fetched from the API. We created $.click in an anonymous function passing the user entered input into it. Using ajax, we loaded the json data from the link API link and created a function to display the details of the country selected and appended it in tabular form. We used the border data from the country details and appended it to the API for fetching neighborhood countries to display border countries.



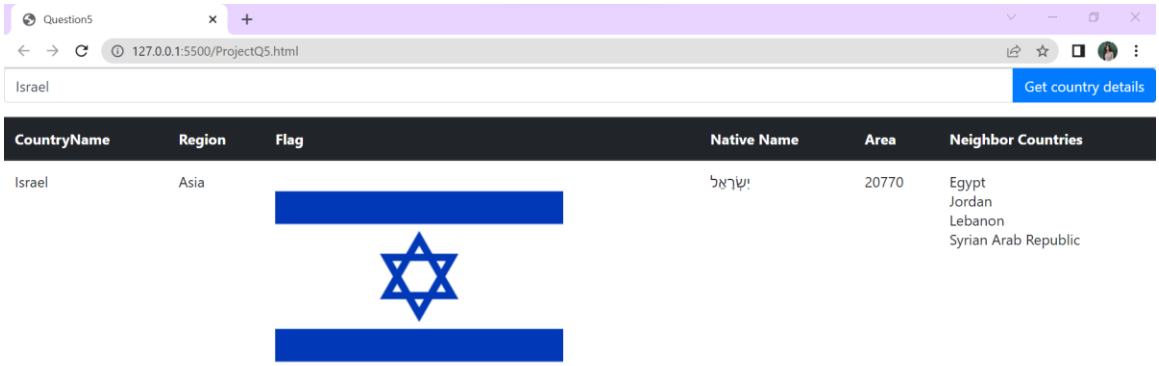
```
<html>
  <head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Question5</title>
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.0.0/dist/css/bootstrap.min.css"
        integrity="sha384-Gn5384xqQ1aoWXA+058RXPxPg6fy4IWvTNh0E263XmFcJlSAwiGgFAW/dAiS6JXm" crossorigin="anonymous" />
    <script src="https://code.jquery.com/jquery-3.6.0.js"
        integrity="sha256-H+K7U5CnXl1h5ywQfKtSj8PCmoN9aaq30gDh27Xc0jk=" crossorigin="anonymous"></script>
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  </head>
    <script>
        var endpoint;
        console.log($("#cn").val());
        $(document).ready(function(){
        $('button').click(function () {
            var countryName = document.getElementById("cn").value;
            console.log(countryName);
        endpoint = "https://restcountries.com/v2/name/" + countryName;
        alert(endpoint);
        $("#dataTable").html("");
        $("#dataTable").append("<thead class=thead-dark> <tr><th>CountryName</th> <th>Region</th> <th>Flag</th> <th>Native Name</th> <th>Area</th> <th>Neighbor Countries</th> </tr></
        $.ajax({
        url: endpoint,
        type: "GET",
        dataType: "JSON",
        success: function (data) {
            $("#dataTable").append(
                    "<tr><td>" +
                    data[0].name +
                    "</td>" +
                    "<td>" +
                    data[0].region +
                    "</td>" +
                    "<td><img src='" +
                    data[0].flags.png +
                    "'/></td>" +
                    "<td>" +
                    data[0].nativeName +
                    "</td>"+
                    "<td>" +
                    data[0].area +
                    "</td>"
```



```
ProjectQ5.html
ProjectQ5.html > html > head > title
                        + "<td id = 'neighbour'>"

                    );
                    var borders = data[0].borders;
                    console.log(borders);
                $.ajax({
                url:"https://restcountries.com/v2/alpha?codes=" + borders,
                type: "GET",
                dataType: "JSON",
                success: function(borderData){
                    console.log(borderData);
                    $.each(borderData, function (index, ref)
                    {
                    $("#neighbour").append(borderData[index].name + "<br>" +"</td></tr>");
                    })
                }
            })
        }});})
    </script>
    <body>
  <div class="input-group mb-3">
    <input type="text" class="form-control" id="cn" placeholder="Country name"
      aria-label="Recipient's username" aria-describedby="basic-addon2">
    <div class="input-group-append">
      <button class="btn btn-primary" type="button">Get country details</button>
    </div>
  </div>
  <table id="dataTable" class="table table-striped"></table>
  </body>
</html>
```

Output:

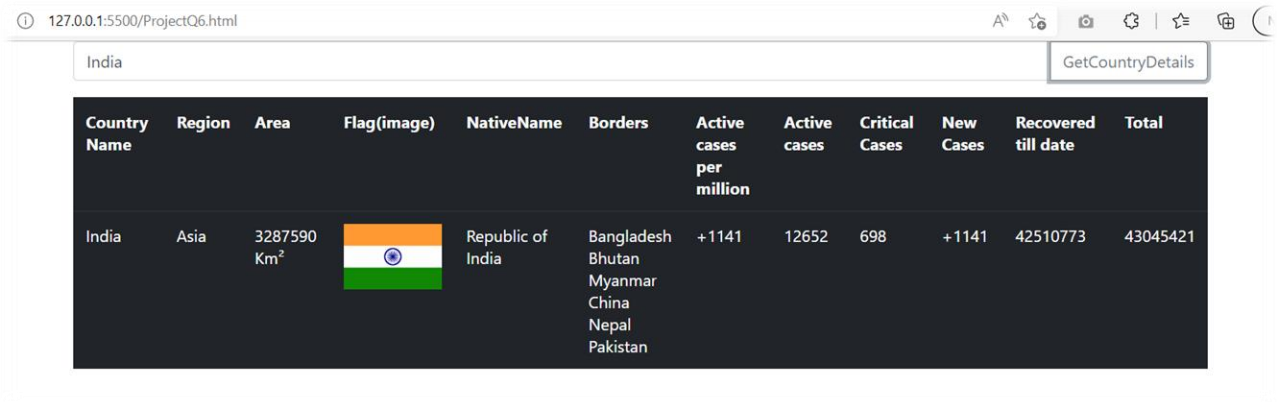

Question5
127.0.0.1:5500/ProjectQ5.html
Israel
Get country details
CountryName
Region
Flag
Native Name
Area
Neighbor Countries
Israel
Asia
יִשְׂרָאֵל
20770
Egypt
Jordan
Lebanon
Syrian Arab Republic

Question 6: Append additional data to the output of Question 5

Here, we have decided to use the endpoint ➔https://covid-193.p.rapidapi.com/statistics to fetch the covid related statistics for each country.
We have extracted the fields active cases per million, active cases, critical cases, new cases, recovered till date and total number of cases since the pandemic boke out.
Previous fields like Country name, region, area, native name of the country, image of flag, shared borders.
(NOTE: Data presented depends on availability)

Code for the question can be found here

Output:

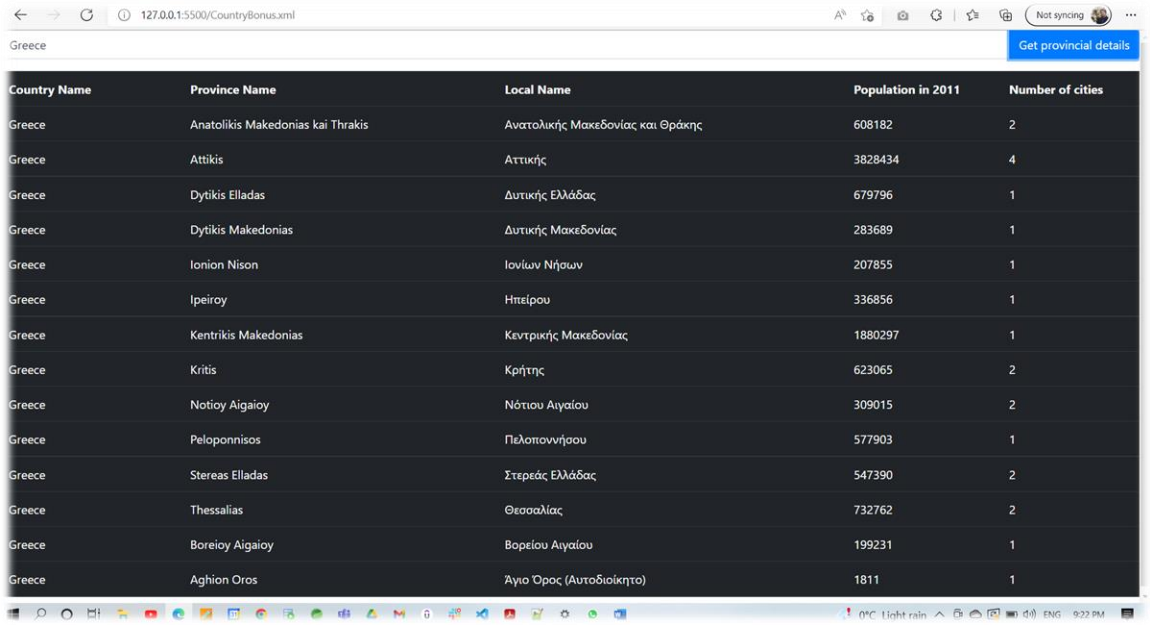


Question 7: Prepare the same output as question 2 with xslt

We have partially done this question.
We were able to get the countries having provinces and the respective details.
What we missed is that we have not handled countries without province and conditional messages for fields whose data is not available.

The XSL for the same can be found here
The XML doc can be found here

Output:



Country Name	Province Name	Local Name	Population in 2011	Number of cities
Greece	Anatolikis Makedonias kai Thrakis	Ανατολικής Μακεδονίας και Θράκης	608182	2
Greece	Attikis	Αττικής	3828434	4
Greece	Dytikis Elladas	Δυτικής Ελλάδας	679796	1
Greece	Dytikis Makedonias	Δυτικής Μακεδονίας	283689	1
Greece	Ionion Nison	Ιονίων Νήσων	207855	1
Greece	Ipeiroy	Ηπείρου	336856	1
Greece	Kentrikis Makedonias	Κεντρικής Μακεδονίας	1880297	1
Greece	Kritis	Κρήτης	623065	2
Greece	Notioy Aigaioy	Νότιου Αιγαίου	309015	2
Greece	Peloponnisos	Πελοποννήσου	577903	1
Greece	Stereas Elladas	Στερεάς Ελλάδας	547390	2
Greece	Thessalias	Θεσσαλίας	732762	2
Greece	Boreioy Aigaioy	Βορείου Αιγαίου	199231	1
Greece	Aghion Oros	Άγιο Όρος (Αυτοδιοίκητο)	1811	1

Summary

Question	Task Champion
1	Rhea
2	Sandeep
3	Sandeep
4	Rhea
5	Rhea
6	Sandeep
Bonus	Sandeep

Our key takeaways from this project were:

- First look at the data, then code
- $.ajax calls don't persist output outside their scope
- How JQuery has made implementation easier
- XSL is loaded on the server side so any javascript that is executed in an XSL document will only be effective after the document is ready.
- Learnt about API platforms, which provide multiple services free of cost.
- Got an idea how google currency conversion works, how google weather dashboard works.