CTU training solutions

CAREER SUCCESS STARTS AT CTU

Faculty of Information Technology								
I declare that I am familiar with, and will abide to the Examination rules of CTU Signature	**SUBJECT NAME: ADVANCED DESIGN PATTERN** **SUBJECT CODE: ADP631**							
	Summative Assessment **Duration**: **Date**: **Total Marks**: 300 **Total pages**: 15				**Examiner**: Mr. Gerhard L **Moderator**: Mr. Isaac L			
	Student number							
	7	2	9	9				
	Surname: Van Straaten				**Initials**: R		/	%

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Campus Name: Bloemfontein

ADP631_SA Section-2 Evidence

Contents

PART-1 SERVERLESS

Question-1.1

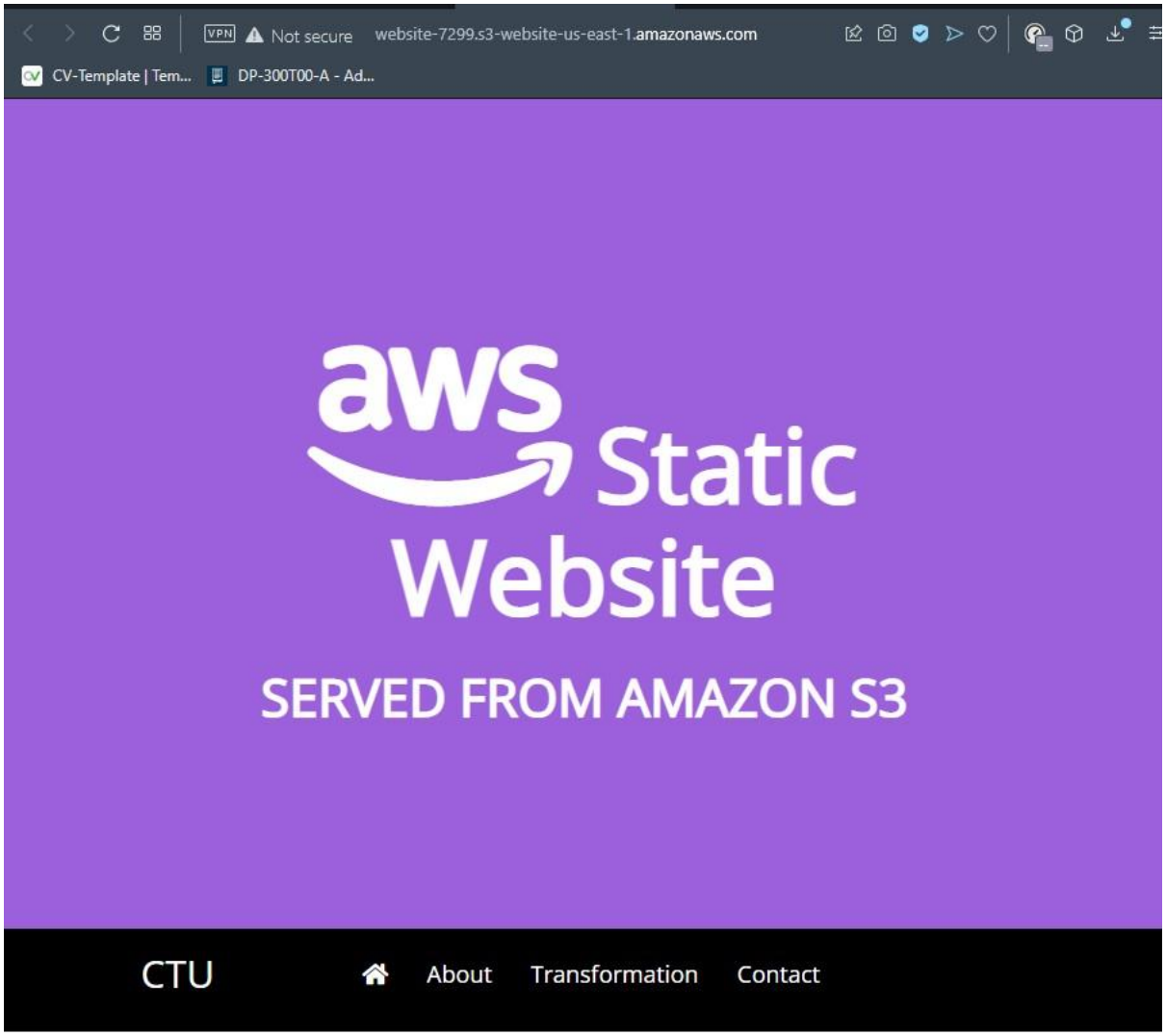
1.1

Files and folders (4 Total, 16.0 KB)

Find by name

Name	Folder	Type	Size	Status	Error
error.html	-	text/html	3.2 KB	Succeeded	-
index.html	-	text/html	7.5 KB	Succeeded	-
script.js	-	text/javascript	2.0 KB	Succeeded	-
style.css	-	text/css	3.3 KB	Succeeded	-

1.2



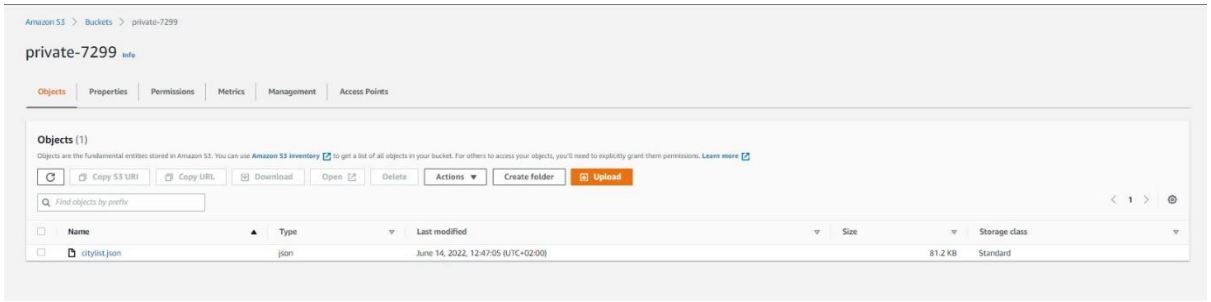
ABOUT US

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur nec nisl odio.

Mauris vehicula at nunc id posuere.

Question-1.2

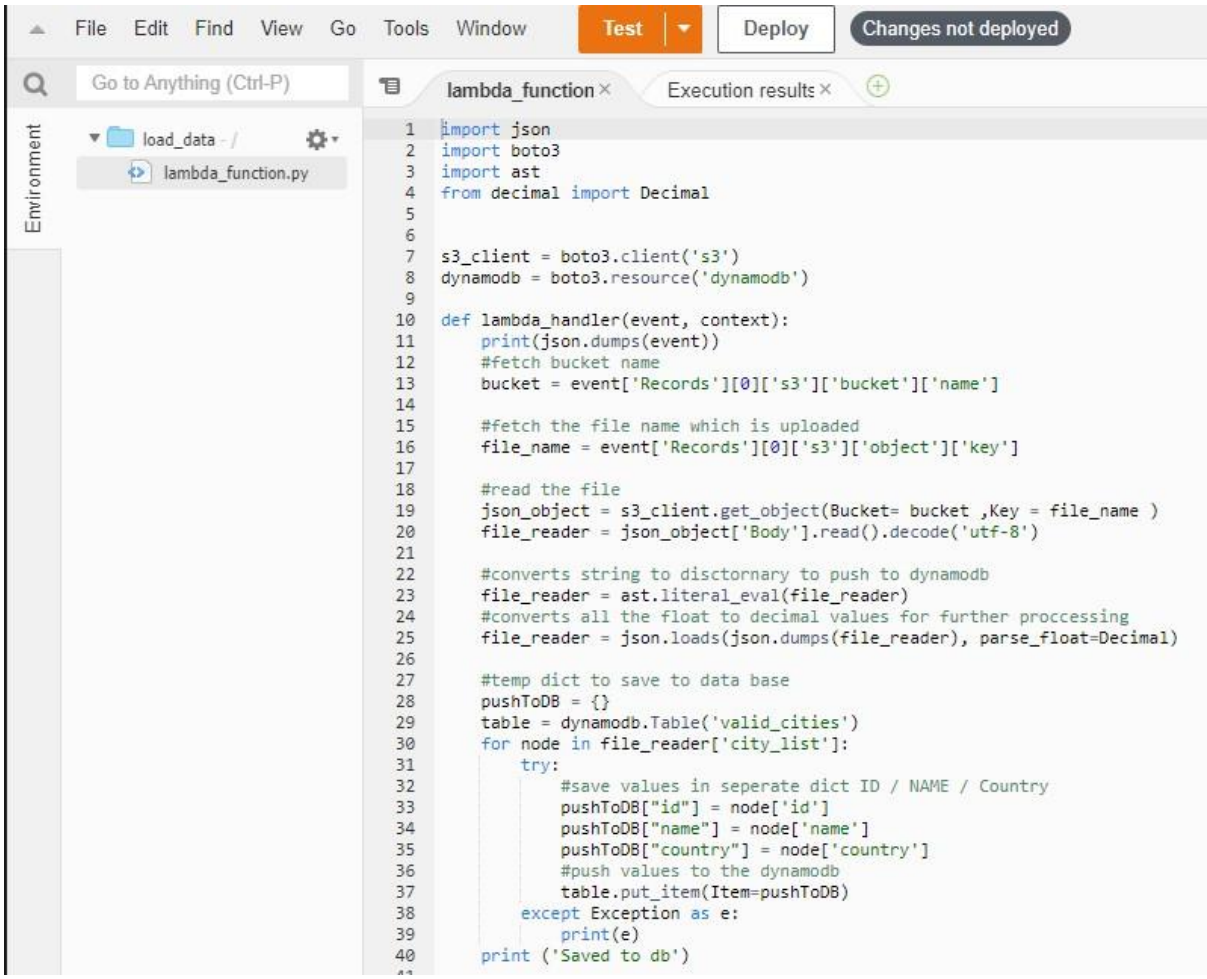
2.1



2.2

```
import json
import boto3
import ast
from decimal import Decimal


s3_client = boto3.client('s3')
dynamodb = boto3.resource('dynamodb')

def lambda_handler(event, context):
    print(json.dumps(event))
    #fetch bucket name
    bucket = event['Records'][0]['s3']['bucket']['name']

    #fetch the file name which is uploaded
    file_name = event['Records'][0]['s3']['object']['key']

    #read the file
    json_object = s3_client.get_object(Bucket= bucket ,Key = file_name )
    file_reader = json_object['Body'].read().decode('utf-8')

    #converts string to disctornary to push to dynamodb
    file_reader = ast.literal_eval(file_reader)
    #converts all the float to decimal values for further proccessing
    file_reader = json.loads(json.dumps(file_reader), parse_float=Decimal)

    #temp dict to save to data base
    pushToDB = {}
    table = dynamodb.Table('valid_cities')
    for node in file_reader['city_list']:
        try:
            #save values in seperate dict ID / NAME / Country
            pushToDB["id"] = node['id']
            pushToDB["name"] = node['name']
```

```
        pushToDB["country"] = node['country']
        #push values to the dynamodb
        table.put_item(Item=pushToDB)
    except Exception as e:
        print(e)
print ('Saved to db')
```




```python
import json
import boto3
import ast
from decimal import Decimal


s3_client = boto3.client('s3')
dynamodb = boto3.resource('dynamodb')

def lambda_handler(event, context):
    print(json.dumps(event))
    #fetch bucket name
    bucket = event['Records'][0]['s3']['bucket']['name']

    #fetch the file name which is uploaded
    file_name = event['Records'][0]['s3']['object']['key']

    #read the file
    json_object = s3_client.get_object(Bucket= bucket ,Key = file_name )
    file_reader = json_object['Body'].read().decode('utf-8')

    #converts string to disctornary to push to dynamodb
    file_reader = ast.literal_eval(file_reader)
    #converts all the float to decimal values for further proccessing
    file_reader = json.loads(json.dumps(file_reader), parse_float=Decimal)

    #temp dict to save to data base
    pushToDB = {}
    table = dynamodb.Table('valid_cities')
    for node in file_reader['city_list']:
        try:
            #save values in seperate dict ID / NAME / Country
            pushToDB["id"] = node['id']
            pushToDB["name"] = node['name']
            pushToDB["country"] = node['country']
            #push values to the dynamodb
            table.put_item(Item=pushToDB)
        except Exception as e:
            print(e)
    print ('Saved to db')
```

2.3 Supply a screenshot of the load_data Lambda function's execution logs in CloudWatch.

Log streams (100+)

By default, we only load the most recent log streams. Load more.

Delete | Create log stream | Se

Filter loaded log streams or try prefix search

1 2 ...

Log stream	Last event time
2022/06/16/[$LATEST]84e3111a02b247a2bc1bbd3906474cbc	2022-06-16 12:33:17 (UTC+02:00)
2022/06/16/[$LATEST]edc25f1a5ff541fbac4a31bb9264ee4e	2022-06-16 12:28:21 (UTC+02:00)
2022/06/16/[$LATEST]ec99fd5632c64ca48c397d85080f8e1c	2022-06-16 12:24:09 (UTC+02:00)
2022/06/16/[$LATEST]ccb6eaf387f6494db55cdd384aff9c1a	2022-06-16 12:23:39 (UTC+02:00)
2022/06/16/[$LATEST]3131194ab7fe4de497b94d0f37595a15	2022-06-16 12:22:36 (UTC+02:00)
2022/06/16/[$LATEST]f5c8243de5f64992aab5f41a8e00fb27	2022-06-16 12:18:55 (UTC+02:00)
2022/06/16/[$LATEST]63d3eaffef1d4d03b01423f237faee2d	2022-06-16 12:17:14 (UTC+02:00)
2022/06/16/[$LATEST]29d44c9687b341429a65e53470a85e19	2022-06-16 12:14:44 (UTC+02:00)
2022/06/16/[$LATEST]43b41ffde344451ab2556fb451baabc2	2022-06-16 12:08:31 (UTC+02:00)
2022/06/16/[$LATEST]58b8e7952b554b58bdcec4f490cee6aa	2022-06-16 12:07:42 (UTC+02:00)
2022/06/16/[$LATEST]c8b88103f5f74fd8be88315728449410	2022-06-16 12:06:24 (UTC+02:00)
2022/06/16/[$LATEST]1efbe3e68f5e426c9a4b800e2e44548c	2022-06-16 12:05:57 (UTC+02:00)
2022/06/16/[$LATEST]ea8f0c5bb45740d9a554653076701fbd	2022-06-16 12:05:07 (UTC+02:00)
2022/06/16/[$LATEST]00ee43448b5340a1adaccf3a95446014	2022-06-16 12:04:25 (UTC+02:00)
2022/06/16/[$LATEST]0a9d33e488ab4ab3b4a694ca0265d61d	2022-06-16 12:02:41 (UTC+02:00)
2022/06/16/[$LATEST]f5ccef167e884ce0816a26f4d43e93cb	2022-06-16 12:01:53 (UTC+02:00)

Items returned (50)

Actions | Create item

1 ...

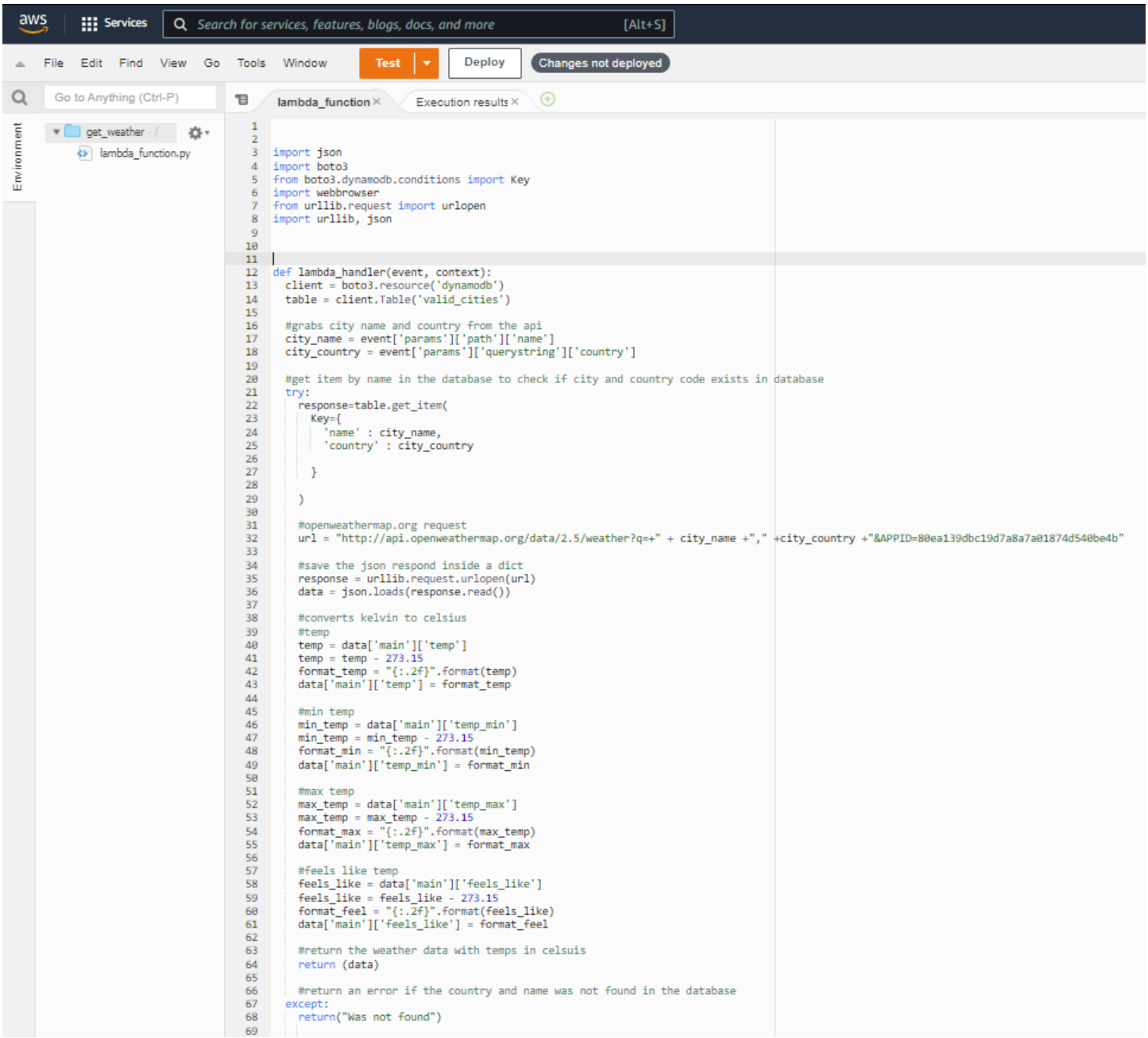
name	country	id
Eersterus	ZA	1105774
Rietvlei	ZA	961331
Orania	ZA	967542
eSikhawini	ZA	1005029
Generaal de Wet	ZA	1002174
Reservoir Hills	ZA	962649
Port Saint Johns	ZA	964408
Erand	ZA	1005265
Vanadjou	KM	1092041
Bophelong	ZA	1017447
Ebenhaezer	ZA	1006919
Bloemfontein	ZA	1018725
Onverwacht	ZA	967827
Standerton	ZA	952747
Dundee	ZA	1007400
Josefsdeel	ZA	993643
Meersig	NA	3364236

Question-1.3

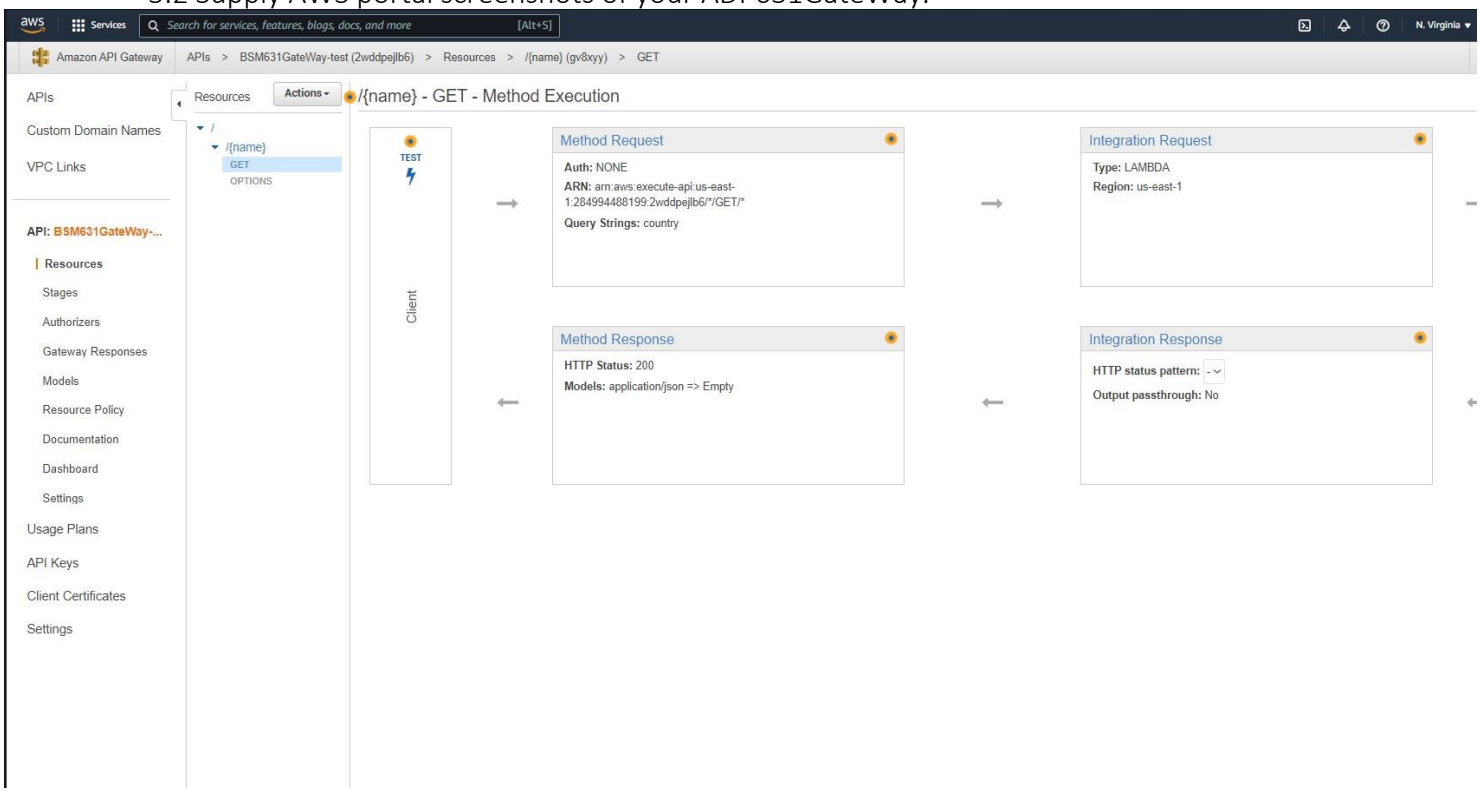
3.1

```
import json
import boto3
from boto3.dynamodb.conditions import Key
import webbrowser
from urllib.request import urlopen
import urllib, json



def lambda_handler(event, context):
  client = boto3.resource('dynamodb')
  table = client.Table('valid_cities')

  #grabs city name and country from the api
  city_name = event['params']['path']['name']
  city_country = event['params']['querystring']['country']

  #get item by name in the database to check if city and country code exists in database
  try:
    response=table.get_item(
      Key={
        'name' : city_name,
        'country' : city_country

      }

    )

    #openweathermap.org request
    url = "http://api.openweathermap.org/data/2.5/weather?q=+" + city_name +","
+city_country +"&APPID=80ea139dbc19d7a8a7a01874d540be4b"

    #save the json respond inside a dict
    response = urllib.request.urlopen(url)
    data = json.loads(response.read())

    #converts kelvin to celsius
    #temp
    temp = data['main']['temp']
    temp = temp - 273.15
    format_temp = "{:.2f}".format(temp)
    data['main']['temp'] = format_temp

    #min temp
    min_temp = data['main']['temp_min']
    min_temp = min_temp - 273.15
    format_min = "{:.2f}".format(min_temp)
```

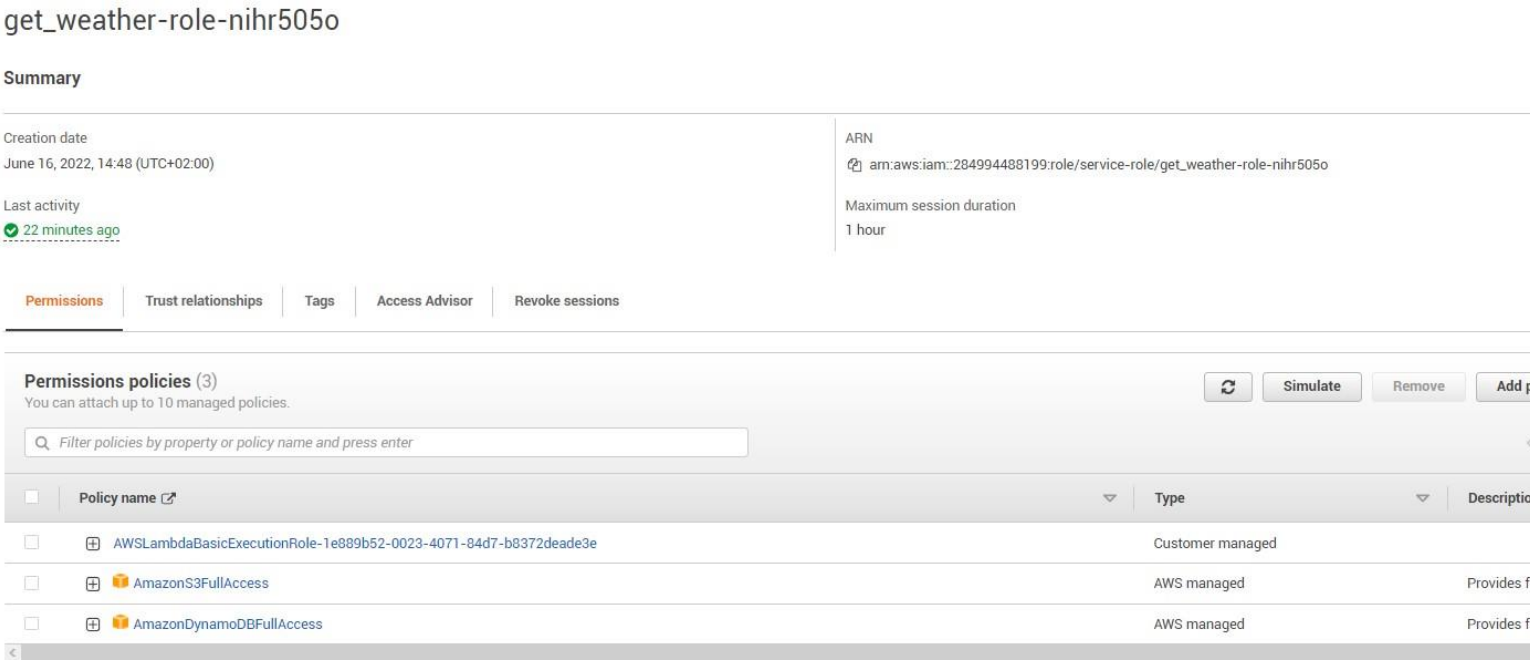
```
data['main']['temp_min'] = format_min

#max temp
max_temp = data['main']['temp_max']
max_temp = max_temp - 273.15
format_max = "{:.2f}".format(max_temp)
data['main']['temp_max'] = format_max

#feels like temp
feels_like = data['main']['feels_like']
feels_like = feels_like - 273.15
format_feel = "{:.2f}".format(feels_like)
data['main']['feels_like'] = format_feel

#return the weather data with temps in celsuis
return (data)

#return an error if the country and name was not found in the database
except:
return("Was not found")
```



3.2 Supply AWS portal screenshots of your ADP631GateWay.



3.3 Supply a screenshot of your get_weather function's IAM Role's policies.



3.4 Supply a screenshot of your get_weather function's json output to the client (browser).

2wddpejlb6.execute-api.us-east-1.amazonaws.com/v1/Rietvlei

CV-Template | Tem... DP-300T00-A - Ad...

{"coord": {"lon": 29.8739, "lat": -23.0787}, "weather": [{"id": 804, "main": "Clouds", "description": "overcast clouds", "icon": "04d"}], "base": "stations", "main": {"temp": "15.07", "feels_like": "14.67", "temp_
1027, "humidity": 78, "sea_level": 1027, "grnd_level": 924}, "visibility": 10000, "wind": {"speed": 5.88, "deg": 104, "gust": 9.91}, "clouds": {"all": 99}, "dt": 1655719241, "sys": {"country": "ZA", "sunrise": 16
7200, "id": 961331, "name": "Rietvlei", "cod": 200}

In Postman for better viewing

GET https://2wddpejlb6.execute-api.us-east-1.amazonaws.com/v1/Rietvlei?country=ZA

Params Authorization Headers (6) Body Pre-request Script Tests Settings

Body Cookies Headers (8) Test Results

Pretty Raw Preview Visualize JSON


```
{
    "coord": {
        "lon": 29.8739,
        "lat": -23.0787
    },
    "weather": [
        {
            "id": 804,
            "main": "Clouds",
            "description": "overcast clouds",
            "icon": "04d"
        }
    ],
    "base": "stations",
    "main": {
        "temp": "15.07",
        "feels_like": "14.67",
        "temp_min": "15.07",
        "temp_max": "15.07",
        "pressure": 1027,
        "humidity": 78,
        "sea_level": 1027,
        "grnd_level": 924
    },
    "visibility": 10000,
    "wind": {
        "speed": 5.88,
        "deg": 104,
        "gust": 9.91
    },
    "clouds": {
        "all": 99
    },
    "dt": 1655719330,
    "sys": {
        "country": "ZA",
```

3.5 Supply a screenshot of your get_weather function's execution logs in CloudWatch.

Log streams (96+)

By default, we only load the most recent log streams. Load more.

Filter loaded log streams or try prefix search

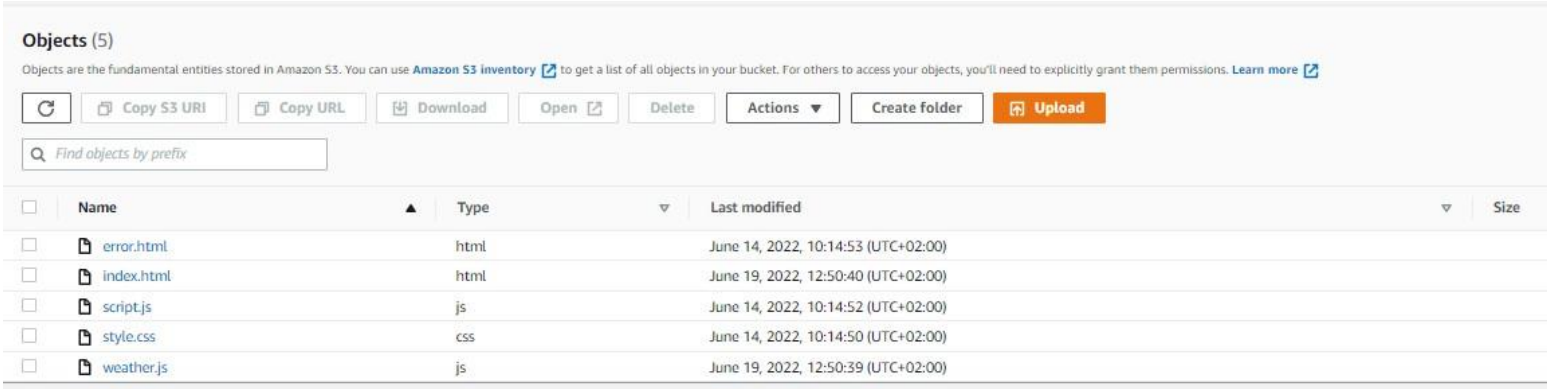
Delete | Create log stream | Search all

1 2 ...

Log stream	Last event time
2022/06/19/[$LATEST]1fb55bde270a4ed4b940435f27e991d3	2022-06-19 12:51:04 (UTC+02:00)
2022/06/19/[$LATEST]fac68e6090f24b8482140e9c45f9a3a2	2022-06-19 12:44:47 (UTC+02:00)
2022/06/19/[$LATEST]250da1a3c4ac48709d2a14b21e50b8a0	2022-06-19 12:18:42 (UTC+02:00)
2022/06/19/[$LATEST]0f92decd3f7541acae7ddb06f8763b0e	2022-06-19 11:31:17 (UTC+02:00)
2022/06/18/[$LATEST]32363e0c089b498a864e4cfe63f2f9b0	2022-06-18 17:06:44 (UTC+02:00)
2022/06/18/[$LATEST]1cb8c2359ce2489eaa67bd25d5e56e62	2022-06-18 16:57:12 (UTC+02:00)
2022/06/18/[$LATEST]aa4dcca327ff42c991ecb5de99705910	2022-06-18 16:47:19 (UTC+02:00)
2022/06/18/[$LATEST]5d9729a1d69b4d52864cf8d01629d333	2022-06-18 16:35:46 (UTC+02:00)
2022/06/18/[$LATEST]84a9094cb4a44e5e854eef5a8e9daa2a	2022-06-18 15:53:15 (UTC+02:00)
2022/06/18/[$LATEST]925969abb15f418582ce9fe0658bb8b21	2022-06-18 15:46:11 (UTC+02:00)
2022/06/18/[$LATEST]18caffcb5df945b6ba6b6dcaba23f8e6	2022-06-18 15:31:52 (UTC+02:00)
2022/06/18/[$LATEST]033264283bb54e6ab8ba46118d6d8e69	2022-06-18 15:18:38 (UTC+02:00)
2022/06/18/[$LATEST]c40d9f7dd92d4390a4bf99f836a5e066	2022-06-18 15:05:32 (UTC+02:00)
2022/06/18/[$LATEST]3a5a5edfe0904b29b7c9cce06601ad10	2022-06-18 14:46:21 (UTC+02:00)
2022/06/18/[$LATEST]3bbf1412b12b4ff19d1a25f0e9ef2cea	2022-06-18 11:57:19 (UTC+02:00)
2022/06/18/[$LATEST]eccc4a0a664b4dd1bffe04c6b61103cd	2022-06-18 11:56:01 (UTC+02:00)
2022/06/18/[$LATEST]09b564fd88134789a5de60ccd766fb84	2022-06-18 11:55:45 (UTC+02:00)

Question-1.4

4.1 Supply a screenshot of your website-123 S3 bucket. containing the weather.js file (amongst the other static files).



4.2 Supply a text copy of your weather.js file, containing your Ajax function.

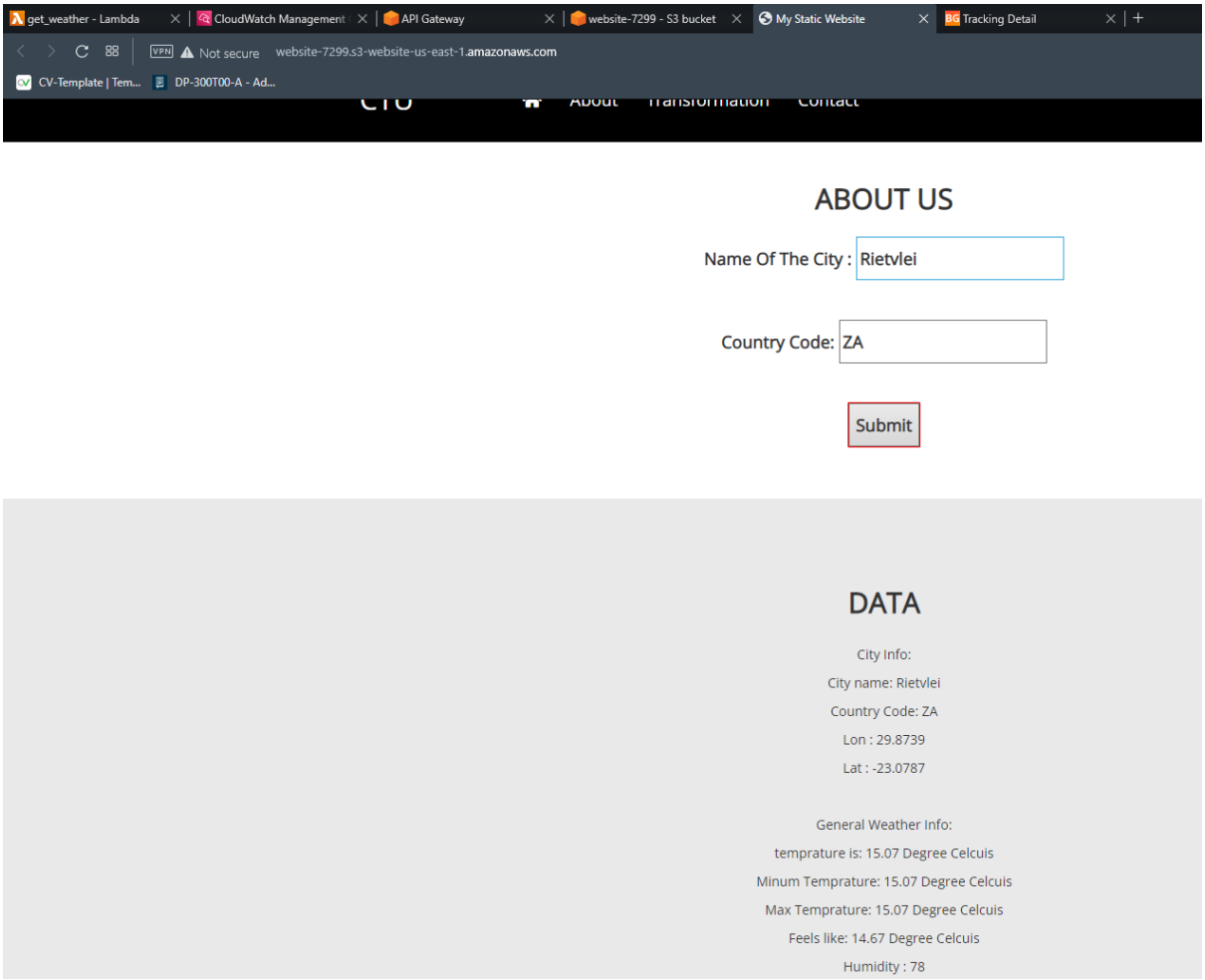
```
async function getWet()
{
      //Get data from text boxes
      var name = document.getElementById('fname').value;
      var country = document.getElementById('fcountry').value;
      console.log(name + country)

      try {
             //send request to the api
      const URL = ('https://2wddpejlb6.execute-api.us-east-
1.amazonaws.com/v1/'+name+'?country='+country)
      //gets the respone in json format
      const response = await fetch(URL);
      const data = await response.json();

      //prints the response inside the html page
      var output = document.getElementById('displayhere')
      output.innerHTML =
      "City Info: " + "<br>" +
      "City name: " +    data.name + "<br>" +
      "Country Code: " + data.sys['country'] + "<br>" +
      "Lon : " + data.coord['lon'] + "<br>" +
      "Lat : " + data.coord['lat'] + "<br>" + "<br>" +

      "General Weather Info:" + "<br>" +
      "temprature is: " + data.main['temp'] + " Degree Celcuis"+ "<br>" +
      "Minum Temprature: " + data.main['temp_min'] + " Degree Celcuis"+
"<br>" +
      "Max Temprature: " +   data.main['temp_max'] +" Degree Celcuis" +
"<br>" +
      "Feels like: " +   data.main['feels_like'] +" Degree Celcuis" +
"<br>" +
      "Humidity : " +   data.main['humidity'] + "<br>" +
      "Pressure : " +   data.main['pressure']  + "<br>" +
      "Sea Level : " +   data.main['sea_level']  + "<br>" +
      "Ground Level : " +   data.main['grnd_level']  + "<br>" +
      "Sky : " + data.weather[0]["description"] + "<br>" +  "<br>" +
      "Wind Info: " + "<br>" +
      "Wind Speed : " +   data.wind['speed']+ "km/h" + "<br>" +
      "Gust Speed : " +   data.wind['gust']+ "km/h" + "<br>" +
      "Wind Deg :   " +   data.wind['deg']+  "<br>"
      //in case of error
      } catch (error) {
          var output = document.getElementById('displayhere')
```

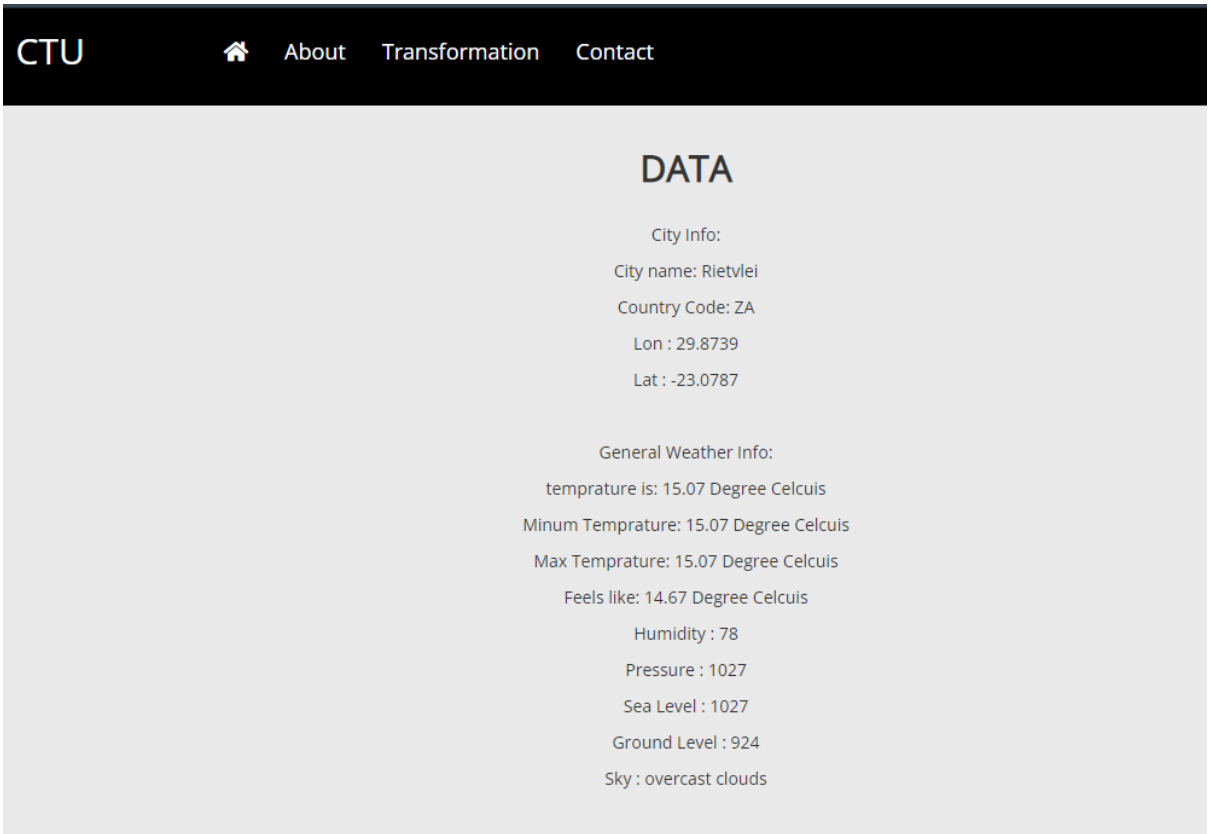
index.html weather.js

weather.js > getWet

```javascript
async function getWet()
{
    //Get data from text boxes
    var name = document.getElementById('fname').value;
    var country = document.getElementById('fcountry').value;
    console.log(name + country)

    try {
        //send request to the api
    const URL = ('https://2wddpejlb6.execute-api.us-east-1.amazonaws.com/v1/'+name+'?country='+country)
    //gets the respone in json format
    const response = await fetch(URL);
    const data = await response.json();

    //prints the response inside the html page
    var output = document.getElementById('displayhere')
    output.innerHTML =
    "City Info: " + "<br>" +
    "City name: " +    data.name + "<br>" +
    "Country Code: " + data.sys['country'] + "<br>" +
    "Lon : " + data.coord['lon'] + "<br>" +
    "Lat : " + data.coord['lat'] + "<br>" + "<br>" +

    "General Weather Info:" + "<br>" +
    "temprature is: " + data.main['temp'] + " Degree Celcuis"+ "<br>" +
    "Minum Temprature: " + data.main['temp_min'] + " Degree Celcuis"+ "<br>" +
    "Max Temprature: " +   data.main['temp_max'] +" Degree Celcuis" + "<br>" +
    "Feels like: " +   data.main['feels_like'] +" Degree Celcuis" + "<br>" +
    "Humidity : " +   data.main['humidity'] + "<br>" +
    "Pressure : " +   data.main['pressure']  + "<br>" +
    "Sea Level : " +   data.main['sea_level']  + "<br>" +
    "Ground Level : " +   data.main['grnd_level']  + "<br>" +
    "Sky : " + data.weather[0]["description"] + "<br>" +  "<br>" +

    "Wind Info: " + "<br>" +
    "Wind Speed : " +   data.wind['speed']+ "km/h" + "<br>" +
    "Gust Speed : " +   data.wind['gust']+ "km/h" + "<br>" +
    "Wind Deg :   " +   data.wind['deg']+  "<br>"



    //in case of error
    } catch (error) {
        var output = document.getElementById('displayhere')
    output.innerHTML = "Invalid Reqeust"
    }

}
```

4.3 Supply a screenshot of your index.html page displaying a city with its weather details.





PART-2 CONTAINERS

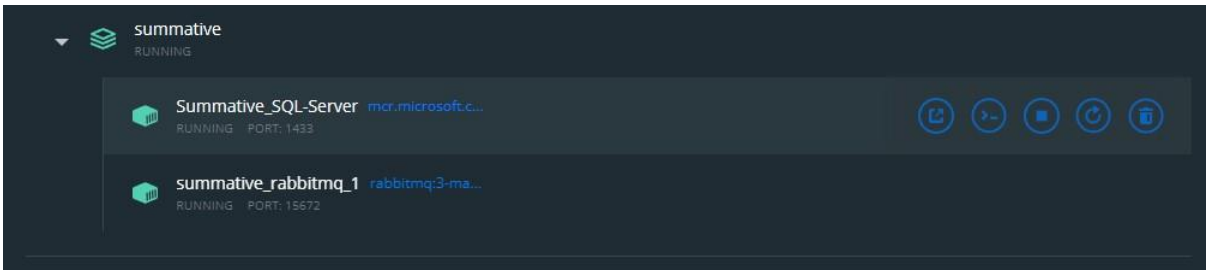
Question-2.1

1.1.

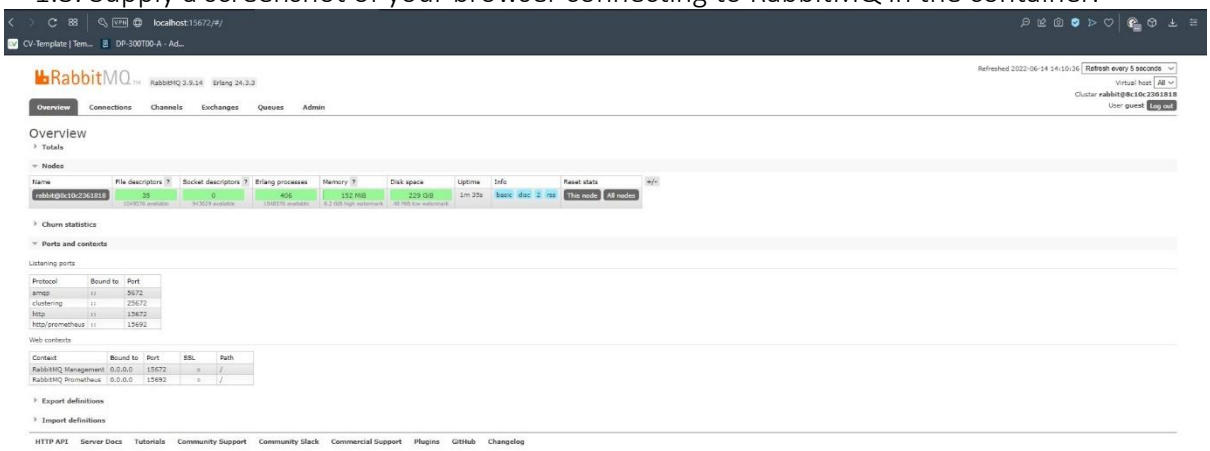
```
# Specify the compose format the file conforms to
version: "3"
# Specify the set of services your app is composed of
services:
# This is the db service
  db:
# The image to pull from docker hub
    image: mcr.microsoft.com/mssql/server:2019-latest
    hostname: Summative_SQL-Server
    container_name: Summative_SQL-Server
# Maps the HOST port of 1433 to the container port of 1433 (the
default sql port)
    ports:
      - "1433:1433"
# Set environment variables
#   Set the ACCEPT_EULA variable to any value to confirm your
acceptance of the
#   End-User Licensing Agreement.
#   Also set the password for the Sys Admin user.
    environment:
      - ACCEPT_EULA=Y
      - SA_PASSWORD=Password01
  rabbitmq:
# The image to pull from docker hub
    image: "rabbitmq:3-management"
# Maps ports HOST:Container, where 5672 is the port your apps will
be connecting to rabbit
# 15672 is the port for the management portal enter localhost:15672
in your browser
    ports:
      - "5672:5672"
      - "15672:15672"
# Create a volume for rabbit to persist its data to
    volumes:
      - "rabbitmq_data:/data"
#specifies the volumes to create as part of your app
volumes:
  rabbitmq_data:
```

```
# Specify the compose format the file conforms to
version: "3"
# Specify the set of services your app is composed of
services:
# This is the db service
  db:
# The image to pull from docker hub
    image: mcr.microsoft.com/mssql/server:2019-latest
    hostname: Summative_SQL-Server
    container_name: Summative_SQL-Server
# Maps the HOST port of 1433 to the container port of 1433 (the
default sql port)
    ports:
      - "1433:1433"
# Set environment variables
#   Set the ACCEPT_EULA variable to any value to confirm your
acceptance of the
#   End-User Licensing Agreement.
#   Also set the password for the Sys Admin user.
    environment:
      - ACCEPT_EULA=Y
      - SA_PASSWORD=Password01
  rabbitmq:
# The image to pull from docker hub
    image: "rabbitmq:3-management"
# Maps ports HOST:Container, where 5672 is the port your apps
will be connecting to rabbit
# 15672 is the port for the management portal enter
localhost:15672 in your browser
    ports:
      - "5672:5672"
      - "15672:15672"
# Create a volume for rabbit to persist its data to
    volumes:
      - "rabbitmq_data:/data"
#specifies the volumes to create as part of your app
volumes:
  rabbitmq_data:
```

1.2. Supply a screenshot of your containers running in the Docker Dashboard.



1.3. Supply a screenshot of your browser connecting to RabbitMQ in the container.



1.4. Supply a screenshot of SSMS connecting to the SQL Server in the container.

Question-2.2

2.1. Controller Action

```
using Microsoft.AspNetCore.Mvc;
using Products.DTO;
 using Microsoft.Extensions.Hosting;
using Newtonsoft.Json;
using System;
using System.Threading;
using System.Threading.Tasks;
using System.Diagnostics;
using System.Net.Http;
using System.Collections.Generic;
using RabbitMQ.Client;
using System.Text;

namespace Products.Controllers
{
    [ApiController]
    [Route("[controller]")]
    public class productController : ControllerBase
    {
        [HttpGet]
        public IActionResult Get()
                 => Ok("Product Service is running!");

        [HttpPost]
        public async Task<IActionResult> Order([FromBody] OrderDTO dto)
        {
            //check if the values being posted in postman is Null or empty price
and qty has to be checked to 0 because postman automatically posts empty
            //intergers or decimals to 0
            //Also checks if qty is less than 0
            if ((string.IsNullOrEmpty(dto.Item) ) || (dto.Price.Equals(0)) ||
(dto.Qty.Equals(0)) || (dto.Qty <= 0))
            {
                return Ok("Invalid Request");
            }


            Debug.WriteLine(dto.Item + dto.Price + dto.Qty);
            // Connect to RabbitMQ in your container
            var factory = new ConnectionFactory
            {
                Uri = new Uri("amqp://guest:guest@localhost:5672")
            };
            using var connection = factory.CreateConnection();
            using var channel = connection.CreateModel();

            // Connect to the "price-moved" queue on RabbitMQ
            channel.QueueDeclare(
                "Order-Placed",
```

```
                exclusive: false,
                autoDelete: false,
                arguments: null);

            // Serialize the MessageDto object into a json string
            var OrderEventAdded = JsonConvert.SerializeObject(dto);
            // Encode the json string into UTF8
            var body = Encoding.UTF8.GetBytes(OrderEventAdded);
            // Publish the message to the queue
            channel.BasicPublish("", "Order-Placed", null, body);

            return Ok("Order Placed");
        }


    }
}
```

2.2. The que was send inside the controller itself

2.3.

Overview				Messages			Message rates			+/-
Name	**Type**	Features	**State**	**Ready**	**Unacked**	**Total**	**incoming**	**deliver / get**	**ack**	
Order-Placed	classic		idle	0	0	0	0.00/s	0.00/s	0.00/s	

2.5. Supply text copies of your startup.cs file in the Products Service.

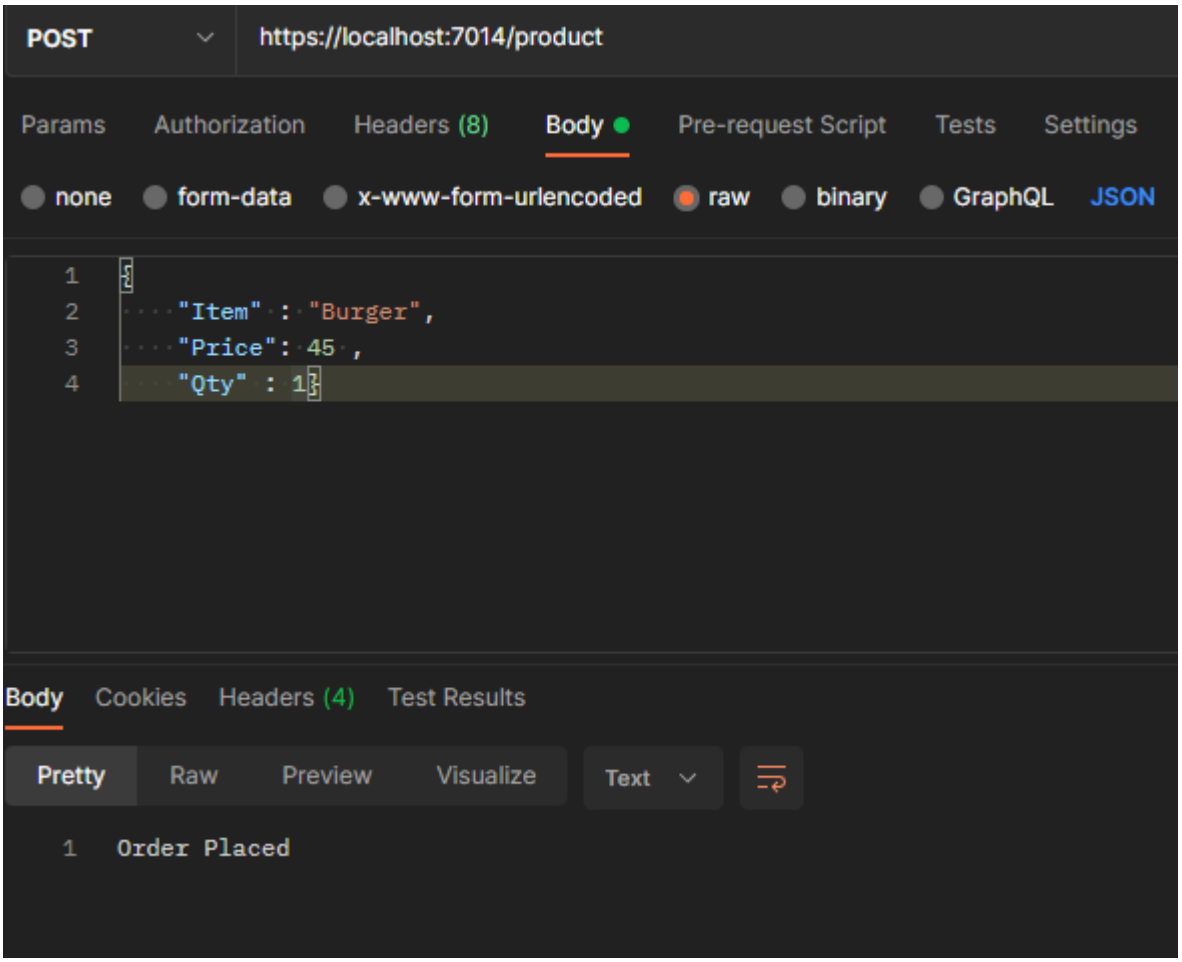
```
namespace Products
{
    public class Startup
    {
        public Startup(IConfiguration configuration)
        {
            Configuration = configuration;
        }

        public IConfiguration Configuration { get; }

        // This method gets called by the runtime. Use this method to add
services to the container.
        public void ConfigureServices(IServiceCollection services)
        {
            services.AddControllers();
        }

        // This method gets called by the runtime. Use this method to configure
the HTTP request pipeline.
        public void Configure(IApplicationBuilder app, IWebHostEnvironment env)
        {
            if (env.IsDevelopment())
            {
                app.UseDeveloperExceptionPage();
            }

            app.UseHttpsRedirection();

            app.UseRouting();

            app.UseAuthorization();

            app.UseEndpoints(endpoints =>
            {
                endpoints.MapControllers();
            });
        }
    }
}
```

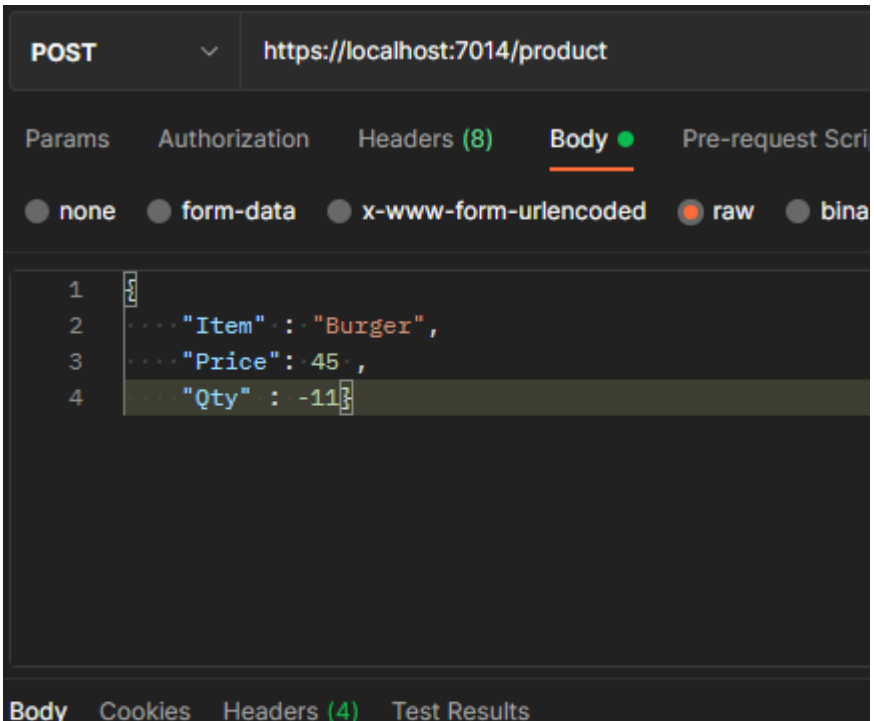
2.6. Supply text copies of your launchSettings.json file in the Products Service.

```
{
  "$schema": "https://json.schemastore.org/launchsettings.json",
  "iisSettings": {
    "windowsAuthentication": false,
    "anonymousAuthentication": true,
    "iisExpress": {
      "applicationUrl": "http://localhost:4194",
      "sslPort": 44304
    }
```

```
  },
  "profiles": {
    "Products": {
      "commandName": "Project",
      "dotnetRunMessages": true,
      "launchBrowser": true,
      "launchUrl": "product",
      "applicationUrl": "https://localhost:7014;http://localhost:5014",
      "environmentVariables": {
        "ASPNETCORE_ENVIRONMENT": "Development"
      }
    },
    "IIS Express": {
      "commandName": "IISExpress",
      "launchBrowser": true,
      "launchUrl": "product",
      "environmentVariables": {
        "ASPNETCORE_ENVIRONMENT": "Development"
      }
    }
  }
}
```

2.7. Supply screenshots of successful and invalid requests and responses in the client (e.g. Postman) pertaining to the Products Service.





2.8. Supply text copies of any DTO's or other classes not already included in the Products Service.

```
namespace Products.DTO
{
    public class OrderDTO
    {
        public string Item { get; set; }
        public decimal Price { get; set; }
        public int Qty { get; set; }
    }
}
```

Question-2.3

3.1. Supply text copies of any Costing Service controller actions.

```
using Costing.Database;
using Costing.Database.Modals;
using Costing.DTO;
using Microsoft.AspNetCore.Mvc;
using Microsoft.EntityFrameworkCore;
using static Costing.Helpers.HtmlList;

namespace Costing.Controllers
{
    [ApiController]
    [Route("[controller]")]
    public class CostingController : ControllerBase
    {
        private readonly InventoryDBContext _dbContext;
        private List<Message> balanceList;

        public CostingController(InventoryDBContext dbContext)
        {
            _dbContext = dbContext;
        }


        [HttpGet]
        public async Task<IActionResult> List()
        {
            List<CostRecords> transactionList = await
_dbContext.Cost.ToListAsync();
            string htmlTable = Html.TransactionListHTML(transactionList,
balanceList);

            return new ContentResult()
            {
                Content = htmlTable,
                ContentType = "text/html",
            };
        }
    }
}
```

3.2. Supply text copies of any Costing Service background services and any other services that you might have used to consume events/messages from the Ordered queue on RabbitMQ.

```
using Microsoft.Extensions.DependencyInjection;
using Microsoft.Extensions.Hosting;
using Newtonsoft.Json;
using Costing.Database;
using RabbitMQ.Client;
using RabbitMQ.Client.Events;
using System;
using System.Text;
using System.Threading;
using System.Threading.Tasks;
using Costing.DTO;
using Costing.Database.Modals;
using System.Collections.Generic;
using Microsoft.EntityFrameworkCore;
using System.Diagnostics;

namespace Costing.BackGroundService
{
    public class CostingBackgroundService :BackgroundService
    {
        private ConnectionFactory _connectionFactory;
        private IConnection _connection;
        private IModel _channel;
        private readonly IServiceScopeFactory _scopeFactory;

        private const string QueueName = "Order-Placed";


        public CostingBackgroundService(IServiceScopeFactory scopeFactory)
        {
            _scopeFactory = scopeFactory;
        }



        public override Task StartAsync(CancellationToken cancellationToken)
        {

            _connectionFactory = new ConnectionFactory
            {
                UserName = "guest",
                Password = "guest"
            };
            _connection = _connectionFactory.CreateConnection();
            _channel = _connection.CreateModel();
            _channel.QueueDeclare(QueueName,
                exclusive: false,
                autoDelete: false,
                arguments: null);
            _channel.BasicQos(0, 1, false);


            return base.StartAsync(cancellationToken);
```

```
        }


        protected override Task ExecuteAsync(CancellationToken stoppingToken)
        {
            stoppingToken.ThrowIfCancellationRequested();


            var timer = new Timer(CheckMessages, null, TimeSpan.Zero,
TimeSpan.FromSeconds(5));

            return Task.CompletedTask;
        }



        private async void CheckMessages(object state)
        {

            var consumer = new EventingBasicConsumer(_channel);


            consumer.Received += async (sender, evnt) =>
            {

                var body = evnt.Body.ToArray();
                var priceMovedEventData =
JsonConvert.DeserializeObject<Message>(Encoding.UTF8.GetString(body));
                using var scope = _scopeFactory.CreateScope();
                var dbContext =
scope.ServiceProvider.GetService<InventoryDBContext>();


                List<CostRecords> CostList = await dbContext.Cost.ToListAsync();

               CostRecords tRec = new CostRecords();
               var costprice = ((float)priceMovedEventData.Price) * 70 / 100;
                {
                    tRec.Item = priceMovedEventData.Item;
                    tRec.Price = ((float)priceMovedEventData.Price);
                    tRec.Qty = priceMovedEventData.Qty;
                    tRec.cost_price = costprice;
                };



                Debug.WriteLine(priceMovedEventData.Item);
                dbContext.Add(tRec);
                await dbContext.SaveChangesAsync();
            };

            _channel.BasicConsume(QueueName, true, consumer);
        }


    }
}
```

3.3. No Handler was necessary

3.4. No mapper Was necessary

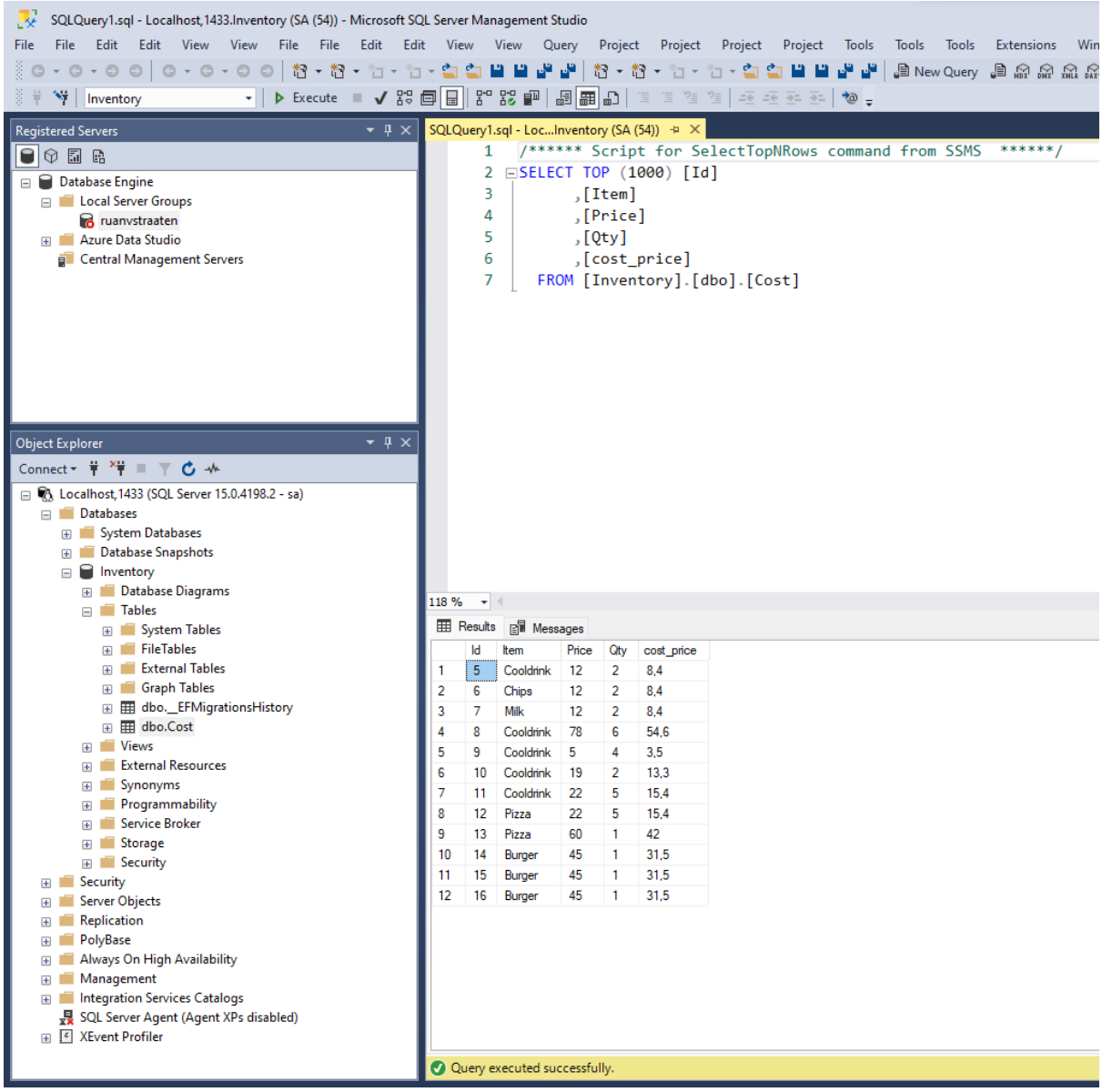
3.5. Supply text copies of your startup.cs file in the Costing Service.

```
using Microsoft.AspNetCore.Builder;
using Microsoft.AspNetCore.Hosting;
using Microsoft.Extensions.Configuration;
using Microsoft.Extensions.DependencyInjection;
using Microsoft.Extensions.Hosting;
using Costing.Database;
using Costing.BackGroundService;


namespace Costing {

public class Startup
{

    public Startup(IConfiguration configuration)
    {
        Configuration = configuration;
    }

    public IConfiguration Configuration { get; }

    // This method gets called by the runtime. Use this method to add services to
the container.
    public void ConfigureServices(IServiceCollection services)
    {
        services.AddControllers();
        services.AddDbContext<InventoryDBContext>();
        services.AddHostedService<CostingBackgroundService>();
    }

    // This method gets called by the runtime. Use this method to configure the
HTTP request pipeline.
    public void Configure(IApplicationBuilder app, IWebHostEnvironment env)
    {
        if (env.IsDevelopment())
        {
            app.UseDeveloperExceptionPage();
        }

        app.UseHttpsRedirection();

        app.UseRouting();

        app.UseAuthorization();

        app.UseEndpoints(endpoints =>
        {
            endpoints.MapControllers();
        });
    }
}
}
```

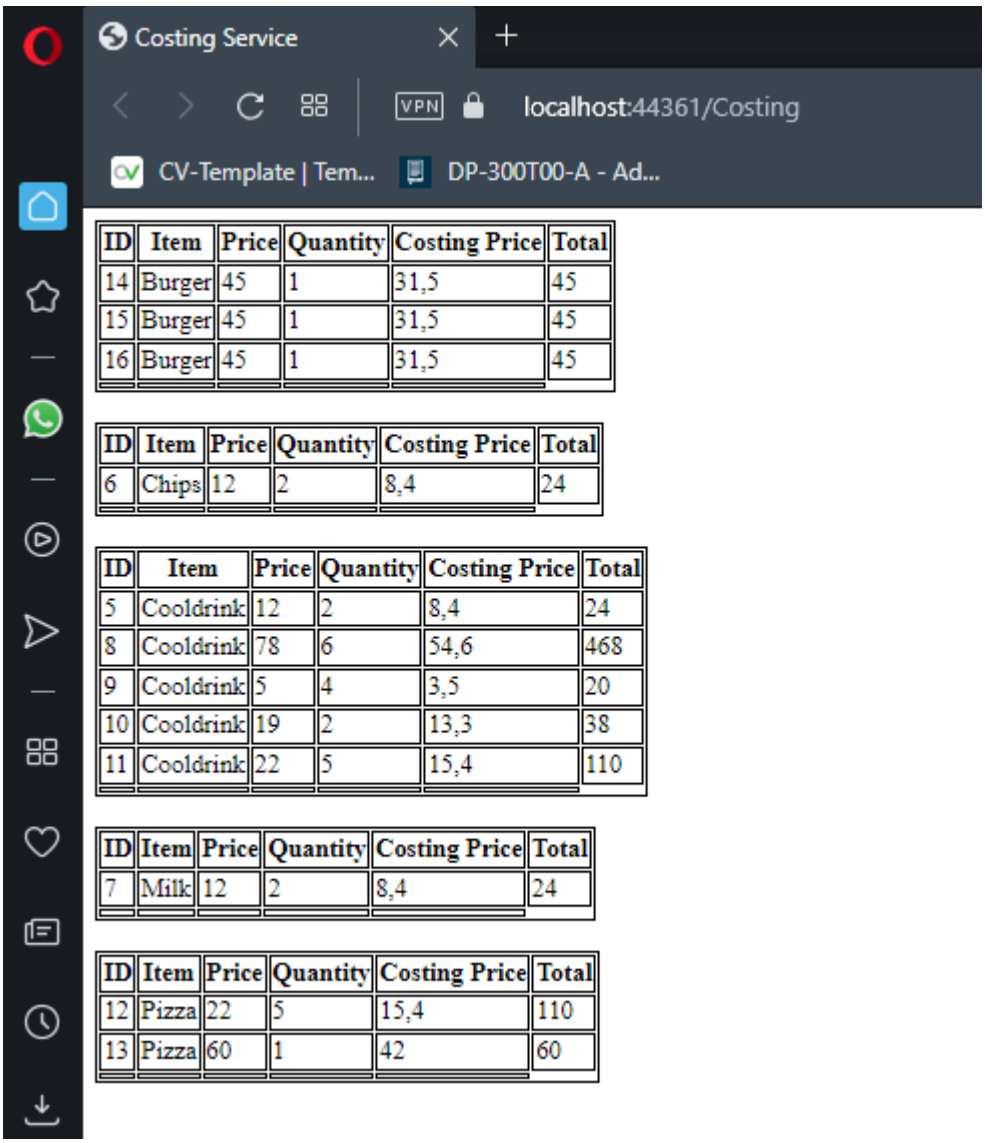
3.6. Supply text copies of your launchSettings.json file in the Costing Service.

```
{
  "$schema": "https://json.schemastore.org/launchsettings.json",
  "iisSettings": {
    "windowsAuthentication": false,
    "anonymousAuthentication": true,
    "iisExpress": {
      "applicationUrl": "http://localhost:40861",
      "sslPort": 44361
    }
  },
  "profiles": {
    "Costing": {
      "commandName": "Project",
      "dotnetRunMessages": true,
      "launchBrowser": true,
      "launchUrl": "Costing",
      "applicationUrl": "https://localhost:7185;http://localhost:5185",
      "environmentVariables": {
        "ASPNETCORE_ENVIRONMENT": "Development"
      }
    },
    "IIS Express": {
      "commandName": "IISExpress",
      "launchBrowser": true,
      "launchUrl": "Costing",
      "environmentVariables": {
        "ASPNETCORE_ENVIRONMENT": "Development"
      }
    }
  }
}
```

3.7. Supply screenshots of your Cost table's records displayed in SSMS (Total_Amount should not be a column in the table).



3.8. Supply screenshots of the Costing service's HTML output (Total_Amount should be included in the HTML table).



ID	Item	Price	Quantity	Costing Price	Total
14	Burger	45	1	31,5	45
15	Burger	45	1	31,5	45
16	Burger	45	1	31,5	45

ID	Item	Price	Quantity	Costing Price	Total
6	Chips	12	2	8,4	24

ID	Item	Price	Quantity	Costing Price	Total
5	Cooldrink	12	2	8,4	24
8	Cooldrink	78	6	54,6	468
9	Cooldrink	5	4	3,5	20
10	Cooldrink	19	2	13,3	38
11	Cooldrink	22	5	15,4	110

ID	Item	Price	Quantity	Costing Price	Total
7	Milk	12	2	8,4	24

ID	Item	Price	Quantity	Costing Price	Total
12	Pizza	22	5	15,4	110
13	Pizza	60	1	42	60

3.9. Supply text copies of your model and context classes.

Cost Records

```
using System;
using System.Collections.Generic;
using System.ComponentModel.DataAnnotations;
using System.ComponentModel.DataAnnotations.Schema;
using System.Linq;
using System.Threading.Tasks;


namespace Costing.Database.Modals

{
    public class CostRecords
    {
            public int Id { get; set; }
            public string Item { get; set; }
            public float Price { get; set; }
            public int Qty { get; set; }
            public float cost_price { get; set; }
    }
}
```

DB Context

```
using Microsoft.EntityFrameworkCore;
using Costing.Database.Modals;

namespace Costing.Database
{
    public class InventoryDBContext : DbContext
    {
        public DbSet<CostRecords> Cost { get; set; }

        protected override void OnConfiguring(DbContextOptionsBuilder options)
            => options.UseSqlServer(
                "Data Source=localhost,1433;" +
                "Persist Security Info=True;" +
                "User ID=sa;" +
                "Password=Password01;" +
                "Database=Inventory"
            );
    }
}
```

3.10. Supply text copies of any DTO's or other classes not already included.

DTO

```
namespace Costing.DTO
{
    public class Message
    {
        public string Item { get; set; }
        public decimal Price { get; set; }
        public int Qty { get; set; }
    }
}
```

HTML LIST

```
using Costing.Database.Modals;
using Costing.DTO;

namespace Costing.Helpers
{
    public class HtmlList
    {

        public static class Html
        {
            public static string previousSymbol = "";

            public static string TransactionListHTML(List<CostRecords> CostList,
                                                     List<Message> ItemList)
            {
                // Sort the transactions on Symbol
                List<CostRecords> SortedList = CostList.OrderBy(o =>
o.Item).ToList();


                    string testHTML =
                "<html><head>" +
                "<title>Costing Service </title>" +
                "<style>table, th, td {border: 1px solid black;}</style></head>"
+
                "<body>";

                testHTML += buildTableHeading();

                // Table rows
                previousSymbol = "";
                foreach (CostRecords t in SortedList)
                {
                    // Test if symbol change and total should be printed - before
the current symbol's data is printed
                    if (previousSymbol != "" && t.Item != previousSymbol)
                    {
                        // Symbol changed. Print total. Then close off the table
and start a new table.
```

```
                        testHTML += buildTableTotal();
                        testHTML += buildTableHeading();
                    }

                    // Print current symbol's data
                    testHTML += "<tr><td>" + t.Id + "</td><td>" + t.Item +
"</td><td>" + t.Price + "</td><td>" + t.Qty + "</td><td>" + t.cost_price +
"</td><td>"+(t.Price*t.Qty)+"</td></tr>";

                    // Store the current symbol as previous symbol for the next
round
                    previousSymbol = t.Item;
                }

                // After all the data printed, print the last currency's (which
is now stored in previousSymbol) total
                testHTML += buildTableTotal();

                testHTML += "</body></html>";

                return testHTML;
            }

            internal static string TransactionListHTML(List<CostRecords>
transactionList, object balanceList)
            {
                throw new NotImplementedException();
            }

            //th = table header
            public static string buildTableHeading()
            {
                return
("<table><tr><th>ID</th><th>Item</th><th>Price</th><th>Quantity</th><th>Costing
Price</th><th>Total</th></tr>");
            }

            public static string buildTableTotal()
            {
                CostRecords t = new CostRecords();
                float balance = t.Price * t.Qty;

                return ("<tr><td>" + "</td><td>" + "</td><td>" + "</td><td>" +
"</td><td>" + "</tr>" +
                        "</table></br>");
            }

        }
    }
}
```

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ANNEXURE-B

DECLARATION OF AUTHENTICITY

Module:	ADP631
Assignment:	Summative

I Ruan van straaten (FULL NAME) hereby declare that the contents of this assignment is entirely my own work with the exception of the following items:

(List the items and page numbers of work in this portfolio that are not your own work)

Document/Activity/Section	Page Number

I declare that I am familiar with and will abide to the Examination rules of CTU.

Signature

2022/06/20
Date