DATA VISUALISATION APPLICATION

Report

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1. Description

This report is for an application that is used for the visualisation of population estimates of Northern Ireland. The application allows the visualisation of data supplied from the government in tabular form. It contains a webpage made using HTML, CSS and JavaScript and a REST API web service. It retrieves data from a database using phpMyAdmin and transfers it to the client webpage using JSON format. The visualisation is a line graph that is created with help from the Google Charts library, it can be changed depending on the age and gender you wish to view.

It allows for the population estimate for ages 0-90 of either males, females or both between the years of 1971 and 2019 to be shown on a line graph. When points are moused over on the graph it highlights the exact data.

2. URLS

The data I used is obtained opendatani.gov.uk and is part of the Population Estimates for Northern Ireland, specifically the Population Estimates for Northern Ireland by single year of age and gender (mid-1971 to mid-2019). It can be found at the following URL:
https://www.opendatani.gov.uk/dataset/population-estimates-for-northern-ireland/resource/dec6ac8b-fb34-4a5a-8f5b-252c1834b1f6
and downloaded as a .csv file at the following URL:
https://www.opendatani.gov.uk/dataset/62e7073f-e924-4d3f-81a5-ad45b5127682/resource/dec6ac8b-fb34-4a5a-8f5b-252c1834b1f6/download/northern-ireland-by-single-year-of-age-and-gender-mid-1971-to-mid-2019.csv

The web page can be accessed at the following URL:
http://nipopulationestimate.uksouth.cloudapp.azure.com/

The files for the project can be found and downloaded from my github at the following URL:
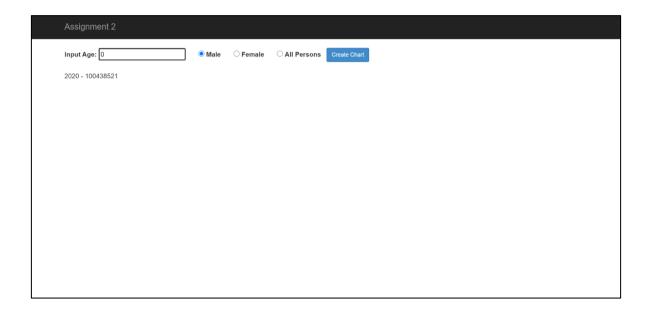https://github.com/DavidMorgan1999/NIPopEstimateGraph.git

The Google Charts library can be found at the following URL:
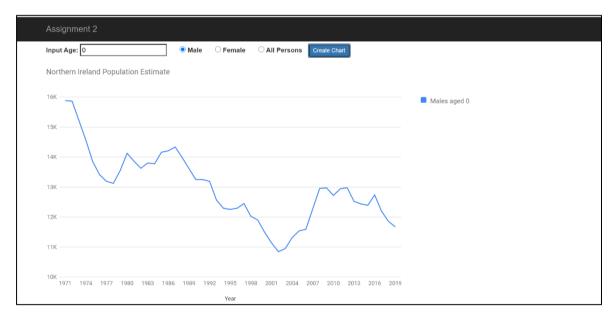https://developers.google.com/chart

3. Testing Plan

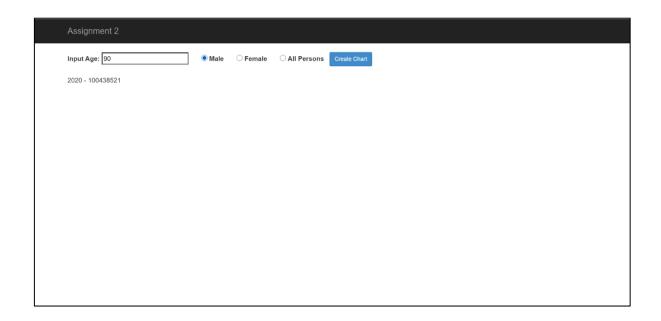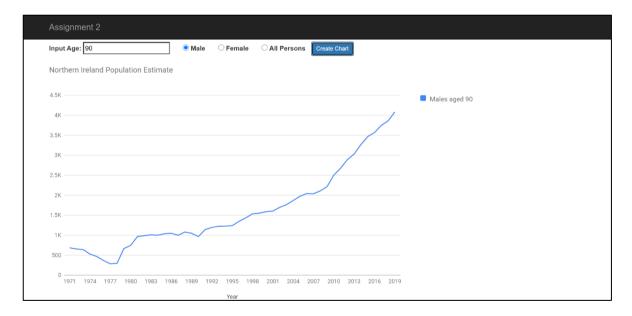| Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	**Age**			
Male	0	Display graph for Males aged 0		
Male	90	Display graph for Males aged 90		
Male	@	Error saying Age must be input as a number		
Male	Three	Error saying Age must be input as a number		
Male		Error saying No age has been input		
Male	-45	Error saying Information is only available for ages 0-90		
Male	145	Error saying Information is only available for ages 0-90		
Female	45	Display graph for Females aged 45		
All Persons	45	Display graph for All Persons aged 45		
	0	Error saying No gender has been selected		
	Three	Error saying Age must be input as a number and No gender has been selected		
		Error saying No gender has been input and No gender has been selected		
	145	Error saying Information is only available for ages 0-90 and No gender has been selected		

4. Testing

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	0	Display graph for Males aged 0	Display graph for Males aged 0	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	90	Display graph for Males aged 90	Display graph for Males aged 90	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	@	Error saying Age must be input as a number	Error saying Age must be input as a number	N/A

Assignment 2

Input Age: @   ● Male   ○ Female   ○ All Persons: Create Chart

2020 - 100438521

Assignment 2

Input Age: @   ● Male   ○ Female   ○ All Persons   Create Chart
Error: Age must be input as a number

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	Three	Error saying Age must be input as a number	Error saying Age must be input as a number	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male		Error saying No age has been input	Error saying No age has been input	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	-45	Error saying Information is only available for ages 0-90	Error saying Information is only available for ages 0-90	N/A

Assignment 2

Input Age: -45   ◉ Male   ○ Female   ○ All Persons   Create Chart

2020 - 100438521

Assignment 2

Input Age: -45   ◉ Male   ○ Female   ○ All Persons   Create Chart

Error: Information is only available for ages 0-90

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Male	145	Error saying Information is only available for ages 0-90	Error saying Information is only available for ages 0-90	N/A

Assignment 2

Input Age: 145   ● Male ○ Female ○ All Persons [Create Chart]

2020 - 100438521

Assignment 2

Input Age: 145   ● Male ○ Female ○ All Persons [Create Chart]
Error: Information is only available for ages 0-90

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
Female	45	Display graph for Females aged 45	Display graph for Females aged 45	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
All Persons	45	Display graph for All Persons aged 45	Display graph for All Persons aged 45	N/A

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
	0	Error saying No gender has been selected	Error saying No gender has been selected	N/A

Assignment 2

Input Age: 0   ○ Male   ○ Female   ○ All Persons   Create Chart

2020 - 100438521

Assignment 2

Input Age: 0   ○ Male   ○ Female   ○ All Persons   Create Chart
Error: No gender has been selected

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
	Three	Error saying Age must be input as a number and No gender has been selected	Error saying Age must be input as a number and No gender has been selected -But only on one line	Changed \n to + " "

Assignment 2

Input Age: three   ○ Male ○ Female ○ All Persons   Create Chart

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Assignment 2

Input Age: three   ○ Male ○ Female ○ All Persons   Create Chart

Error: No gender has been selected Age must be input as a number

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Fixed –

Input Age: three   ○ Male   ○ Female   ○ All Persons   Create Chart

Error: No gender has been selected
Age must be input as a number

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
		Error saying No gender has been selected and No age has been input	Error saying No gender has been selected and No age has been input	N/A

Assignment 2

Input Age: [   ] ○ Male   ○ Female   ○ All Persons   [Create Chart]

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Assignment 2

Input Age: [   ] ○ Male   ○ Female   ○ All Persons   [Create Chart]
Error: No gender has been selected
No age has been input

2020 - 100438521

Inputs		Expected Outcome	Actual Outcome	Fixes
Gender	Age			
	145	Error saying Information is only available for ages 0-90 and No gender has been selected		

Assignment 2

Input Age: 145   ○ Male   ○ Female   ○ All Persons   Create Chart

2020 - 100438521

Assignment 2

Input Age: 145   ○ Male   ○ Female   ○ All Persons   Create Chart
Error: No gender has been selected
Information is only available for ages 0-90

2020 - 100438521

5. Development

Session	Time Spent (Hrs)	Description
1	5	Set up REST web service that can read from phpMyAdmin and encode it in JSON format
2	4	Kept having 'object not found' error - fixed by recreating virtual machine and creating non-root user to access phpmyadmin
3	5	Got graph drawing library from google charts & learnt functionality, Put into HTML. Could not get to work in scripts folder, currently functions are in index.html
4	5	Got information from database to be displayed at URL /info. Problems preventing this is because I did not name database correctly. Database nipopulationdata changed to wsinfo
5	4	In poprestservice added ability to lookup data using age and gender at URL /info/(gender)/(age) Could not get SQL statement to work with both age and gender being input so created separate functions findmaleinfo(age) findfemaleinfo(age) and findallpersonsinfo(age) to circumnavigate this
6	6	Created getinfobyId function /info/(id) Created getyearsinfo function at /info/years to return list of years Getyearsinfo has SQL query 'select years from years from info group by years' but doesn't work and caused connection problem – commented out and re-planned
7	4	Tried to demo chart creation could not get to work – forgot .js on end of script filename when calling in index.html
8	6	Trying to get google chart to populate with data but running into issues, unsure as to what is causing this. Tried 3 different ways of populating dataTable. Created new php file for class GraphInfo After a few hours returned to original attempt of populating dataTable and troubleshooting discovered a missing comma in AJAX jQuery, this fixed main issue and continued troubleshooting dataTable population
9	4	Fixed population of Google Chart dataTable. Had accidentally used [] brackets for .addRows instead of () GraphInfo object is redundant returned to using popInfo object.
10	3	Added input textbox for age and radio buttons for gender Added functionality to change age displayed on graph Added functionality to change gender displayed in graph
11	4	Added comments and basic validation Deleted redundant GraphInfo class Added validation for gender & age inputs Fixed /info URL returning popestimate as null Had to comment out various validation as it was breaking. Fixed by correcting use of \n newline and discovering missing } Added further validation