Program Design

The program has 3 files with .cs extension. The 3 files are Program.cs, Forecast.cs, and Facts.cs. The Forecast.cs contains the Json class files that specify the structure of the API call from openweather.org. The Forecast.cs contains decrypted information from the JSON results from the API call. The Facts.cs contains the Json class files that specify the structure of the API call from geonames.org. The Facts.cs contains decrypted information from the JSON results from the API call. The Program.cs contains the main method, printing methods, and API call methods.

Main Method:

It calls the printWeatherData and printGeoData methods. It also checks that user enters a city without space in between or a city with space like New York. It will combine the args[0] and args[1] into a string so that we can use it.
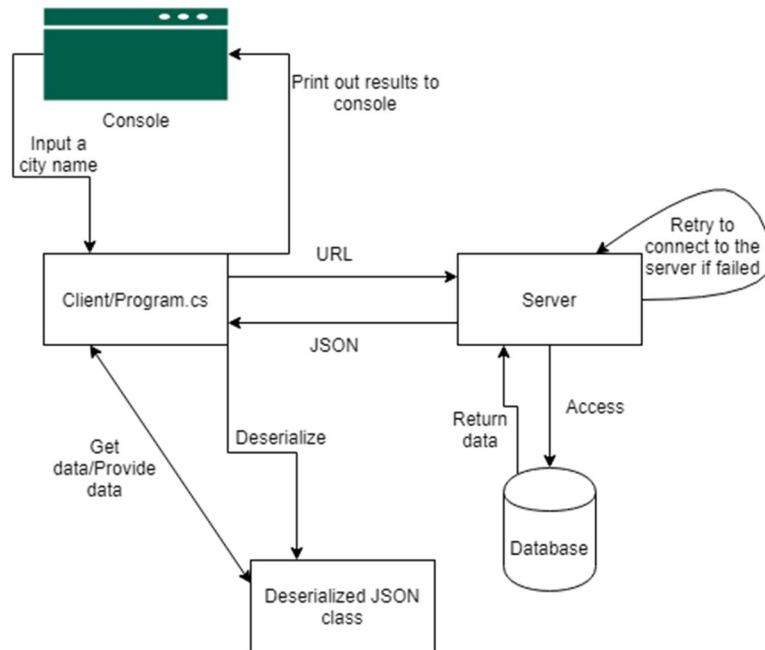
Print Out

printWeatherData calls the initWeather method to construct the url from the city, the key, and replacing the city with spaces from " " to "%20". The "%20" is a special character for space. It then calls the getData method, parsing in the url and the number of retries. If the program successfully connects to the API, deserialize the JSON then print out the desired data to the console.

printGeoData calls the initFact method to construct the url from the city, the key, and the country code from the weather JSON file. It then calls the getData method, parsing in the url and the number of retries. If the program successfully connects to the API, deserialize the JSON then print out the desired data to the console. It also checks for city that does not exist and handle that case.

Retry Logic

getData method tries to connect to the website and get the result. If it doesn't work, it retries again if the program has not retried over the limit the user gives it. It also increases the delay time by a factor of 2 every time. Then it calls the delay for a specific amount of time then the thread will wait for it.

MakeFile instruction

Click the MakeFile.bat file to compile and run the program.

Content of the MakeFile.bat file:

// Display the executed commands
@echo on

// Set variable p to contains the path that contains all the files.
set p=%cd%

// Set the path to Framework to be able to use csc
path=C:\Windows\Microsoft.NET\Framework\v4.0.30319

// Utilize csc to compile c# .cs file with reference to the libraries provided alongside the compiler into prog2.exe
csc /r:"%p%\System.Net.Http.dll","%p%\Newtonsoft.Json.dll","%p%\System.Threading.Tasks.dll" /out:prog2.exe *.cs

// Start a new command console for executing the created .exe file
start cmd /k echo Enter command: prog2.exe "city name". (Example: prog2.exe New York)