

ACSE-5: Advanced Programming

Homework One

Implement a numerical model to predict global temperature increase by January 2020, 2030 and 2050 for a specific city. Incorporate any variables you may like into your model (current data, CO2 emissions, solar storms, whatever you like!). Do use methods that you have learned as part of this or previous courses. Please consider at least 50 data points in your analysis. Be as elaborate as possible, while remaining succinct. The sky is the limit.

Make sure to also incorporate programming techniques that you learned in class. Namely `std::cin`, `cout`, `string`, `vector`, `map`, `ifstream`, `ofstream`, and others. Feel free to use techniques that are more advanced than those covered in class (!). Document your code (explain in the code what the different blocks of code are supposed to do). Do not copy code from the internet or other sources.

Use any data you can find on the internet, but make sure to reference your sources, and always pick high-quality sources (journal papers, government websites, international agencies, etc). Publicly available datasets include, for example, UK data @ <https://www.metoffice.gov.uk/public/weather/climate-historic/#?tab=climateHistoric>; and Australian data @ <http://www.bom.gov.au/climate/data/>. Many countries have this type of data published in the internet.

Define your approach to predict temperature increase, design your code, and implement your solution. Your code should cover loading, processing, and outputting data for your city.

Think about the strengths and/or weaknesses of your chosen design of methods and code structure.