**Assignment 2: The Black Death Project**

Software Intention and Development

The programme intends to investigate the relationship between known rat populations and the population densities of 16 different parishes infected with the Great Plague of 1665. These factors have been used to calculate a weekly death rate which has been saved as a txt file. Then sliders have been added to enable users to change the parameters of these factors to see if these alter the death rate. Maps of the initial rat populations and parish population densities have been generated, alongside the final map of the death rate.

The initial issue of the software is that users may need to alter the base path of the original rat and parish txt files to have them run from a known saved directory. This is easily fixed but annoying to have the alter the hard code.

The main issue during development is the output maps that have been generated. As they have been designed from an array, they appear to be just coloured blocks. A legend may be more of use to highlight what the colour shows; however, the code couldn’t identify any labels or handles when this was attempted. With further adaption to the software, it may be ideal to explore better ways these ‘maps’ could be displayed rather than just shown within an environment. A line graph with rat parameters on one axis and parish population parameters on another could be a potential to show a greater correlation between the factors, however, it was difficult to understand how to do this with the initial data files.

General Sources

The programme is better viewed and explained within the Jupyter notebook it is written. As Jupyter notebook uses python, the python and matplotlib webpages were utilised a lot when generating this code. Stack overflow was another source to understand how to use certain functions within python and the correct documentation of certain code with the new variables that have been integrated e.g. sliders.

GitHub Repository

The entire code and correlating files can be viewed at: <https://github.com/AGreen0/BlackDeathProject>

Flowchart/UML to Programme

END

Show updated results in an environment with the new calculated weekly death rate and save as an image

Alter the parameters via corresponding sliders

Continue using the original parameters?

Integrate the files via the death rate equation with the original 0.8 and 1.3 parameters; save the results as a txt file

Insert the Rat Populations txt file

START

Show both files within different environments

Insert the Parish Population Densities txt file