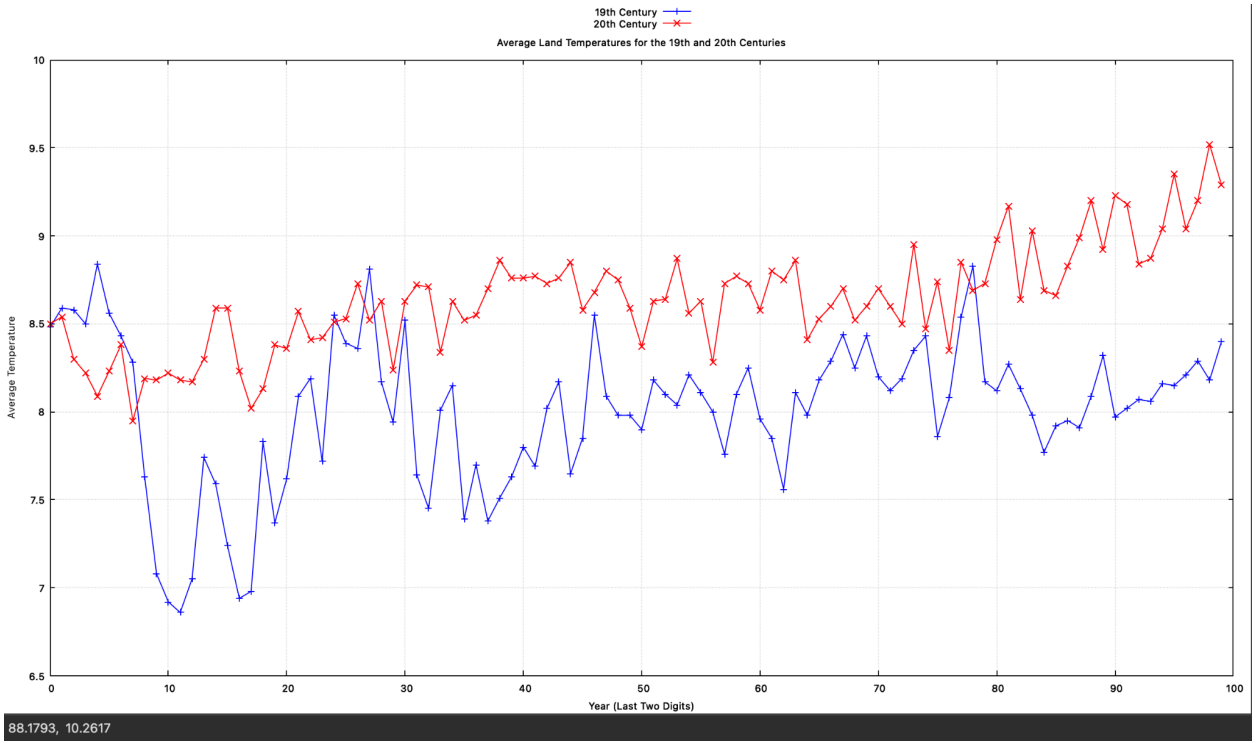
Graphs

Problem 7

Generate a GNUPlot data file and use GNUPlot to make a graph (line plots) of the average land temperatures for the 19th and 20th centuries. Put both lines on the same figure. Ensure that you have the same x-axis scale (for example 1852 and 1952 would both have an x-value of 52). Have your two line plots with different colours. Label the axes clearly and add a title and legend to your graph.

Plot **(screenshot of the plot)**



GNU PLOT SCRIPT FOR QUESTION 7:

```
gnuplot> set datafile separator '\t'
gnuplot> set title "Average Land Temperatures for the 19th and 20th Centuries"
gnuplot> set xlabel "Year (Last Two Digits)"
gnuplot> set ylabel "Average Temperature"
gnuplot> set key outside top center
gnuplot> set grid
gnuplot> plot 'Q7avgTemp.txt' using (int($1)%100):2 with linespoints lt rgb "blue" title '19th Century', 'Q7avgTemp.txt' using (int($3)%100):4 with linespoints lt rgb "red" title '20th Century'
```

Purpose: The linear graph plot aims to provide a representation of the average land temperatures, in the 19th and 20th centuries. Upon reviewing the multiple line plots graph it is apparent that there is a positive correlation between the land temperature and the century as both show a gradual increase with an alternating pattern, in temperature fluctuations.	**Conflicts:** The major challenge with this task was revisiting the process of reading the string data from the GlobalTemperatures.csv file and transforming it into data for plotting in GNUplot. It became particularly challenging given that the code from tasks was left incomplete. Another hurdle was setting up multiple line plots that intersect with each other along, with determining the range to ensure the graph is visually pleasing and easily understandable.	**Outputs/Analysis:** Upon analyzing the two different line plots, we can observe the positive correlation between the land temperatures of the 19th and 20th centuries. From the representation provided it is evident that during the century there is a more consistent trend in average land temperature with minimal fluctuations. In contrast, the 19th century exhibits a fluctuating pattern resulting in surpassing average land temperatures from the 20th century. In essence, this multiple-line plot graph illustrates the relationship, between the land temperatures of both periods.	**How we would approach next time:** Ultimately, when approaching this question the steps to consider would remain unchanged as it is a query, with options to explore.