Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

School of Computer Science and Statistics

Assessment Submission Form

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Module Title	Data Visualization
Lecturer(s)	Assistant Professor John Dingliana
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I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at: http://www.tcd.ie/calendar

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I declare that the assignment being submitted represents my own work and has not been taken from the work of others save where appropriately referenced in the body of the assignment.

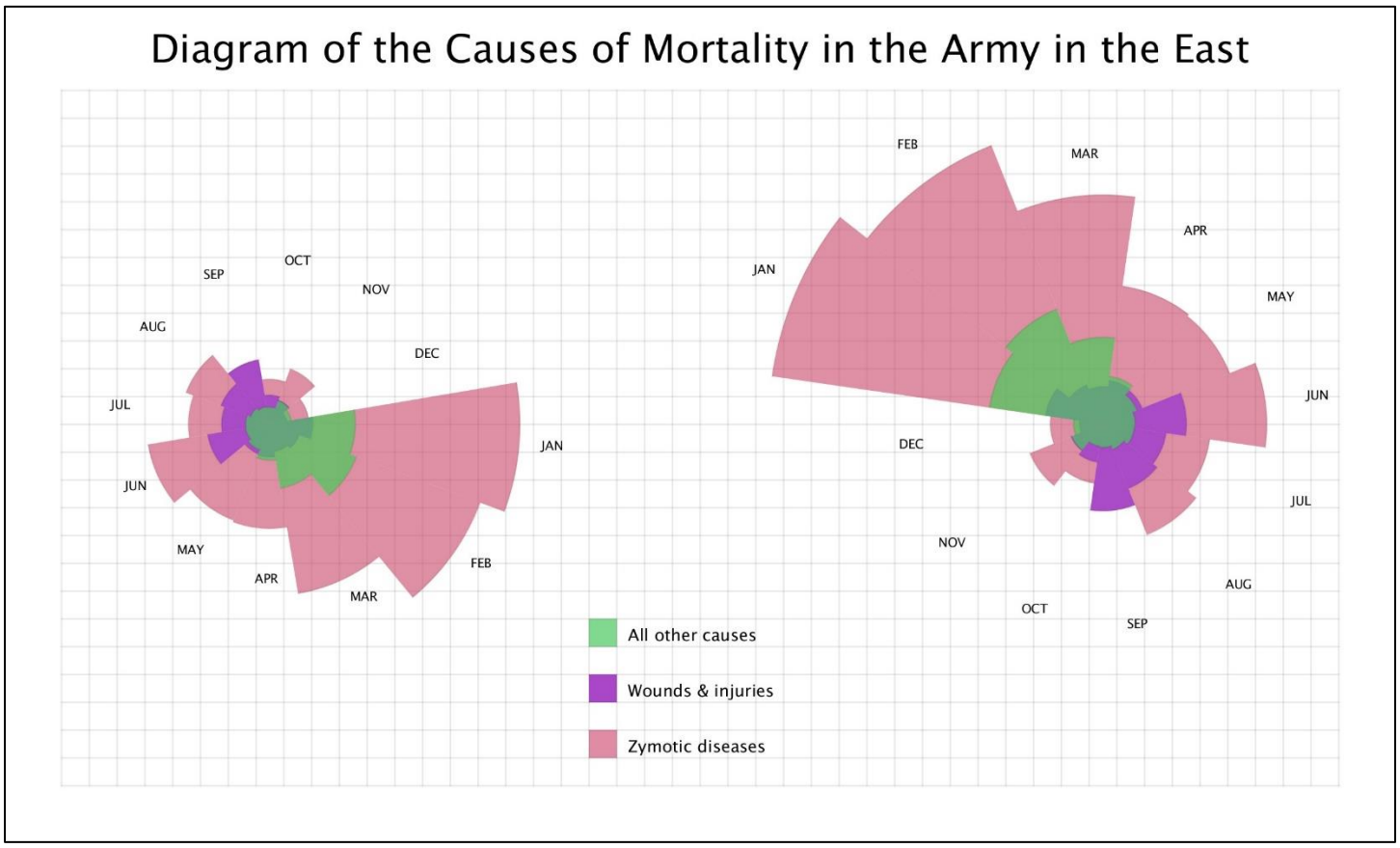
Signed: 

Date: 22 February 2020

NIGHTINGALE'S ROSE CHART

This "Diagram of the causes of mortality in the army in the East" was published in Notes on Matters Affecting the Health, Efficiency, and Hospital Administration of the British Army and sent to Queen Victoria in 1858.

This graphic indicates the number of deaths that occurred from preventable diseases (in red), those that were the results of wounds (in purple), and those due to other causes (in green). The graphic is created using Processing 3 and uses java. The data consists of reasons of mortality and the number of deaths by month. A Static version of the visualization is shown below



EXTRA FEATURES

1. Data filtering: The code provides the option of selecting the starting month from which 12 months will be selected to create the chart.

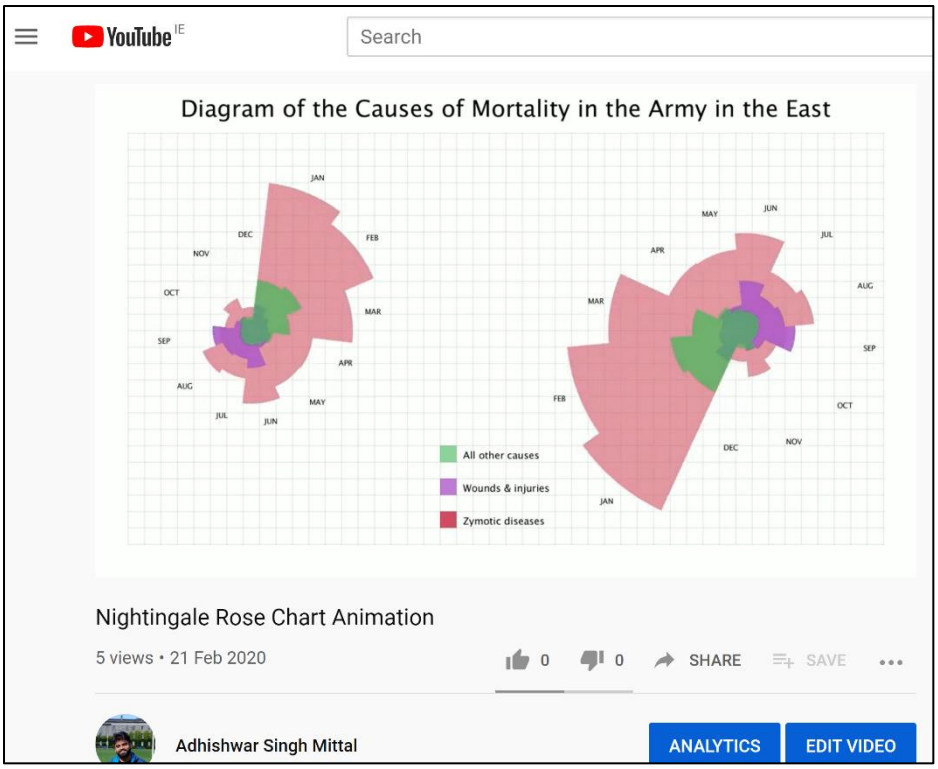
```
//Initialise Code
Random rand = new Random();
Table table;
String[] l_month = new String[12];
float[] l_zd = new float[12];
float[] l_wi = new float[12];
float[] l_aoc = new float[12];
int cnt = 0;
double d;
int sf = 25; // Sclaing factor
String start_month = "Jan 1855"; //Starting month
float lastAngle;
float la = -3;
float sf2 = 10;
int ra = 60; //rand.nextInt(180);
```

2. Parametrized scaling: In case the data isn't clear in the chart, the chart can be zoomed by changing a single parameter.
3. Animations:
    a. Clockwork: The chart rotates either by a key input or automatically
    b. Zoom: The chart zooms in and out
    c. Can be controlled by the user or can be automatic

    Examples as shown on the animation link below

IMPORTANT LINKS

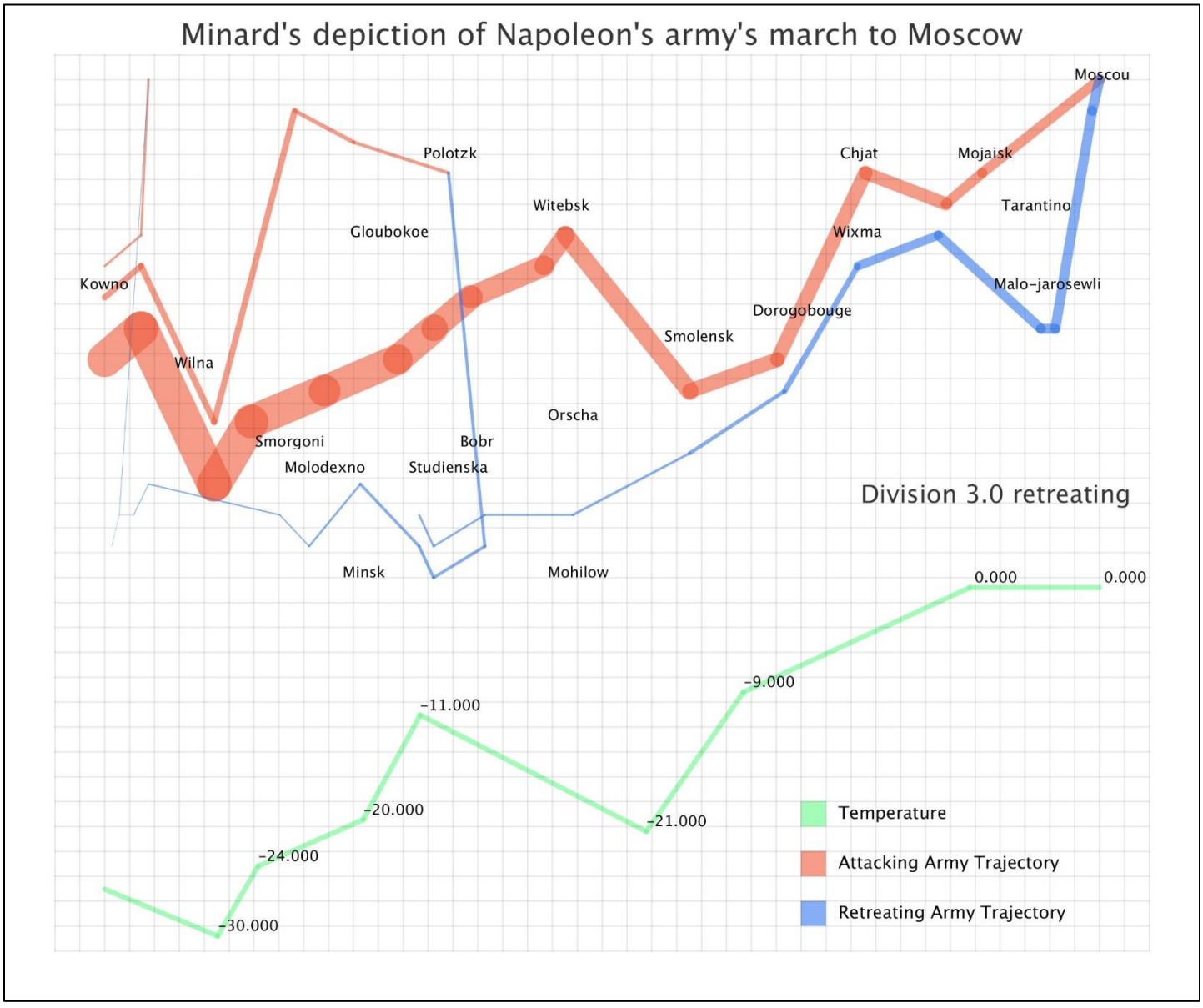
4. GitHub Folder: Nightingale's Rose Chart of Causes of Mortality
5. Source Code: nightingale-rose.java
6. Animated Visualisation: https://youtu.be/dpMYmpjY65c



MINARD'S MAP

Minard is best known for his cartographic depiction of numerical data on a map of Napoleon's disastrous losses suffered during the Russian campaign of 1812. The illustration depicts Napoleon's army departing the Polish-Russian border. A thick band illustrates the size of his army at specific geographic points during their advance and retreat. It displays six types of data in two dimensions: the number of Napoleon's troops; the distance traveled; temperature; latitude and longitude; direction of travel; and location relative to specific dates without making mention of Napoleon; Minard's interest lay with the travails and sacrifices of the soldiers.

A Static version of the visualization created in Processing 3's java mode is shown below



CODE FEATURES

- Animation: Stepwise progression of the army
- Dynamic army direction annotation: The sketch depicts the current state of the army (attacking or retreating) along with the division

THE CHART HAS BEEN RECONSTRUCTED IN PROCESSING 3

The data consists of 3 different sets of information which have been broken in 3 different csv files for ease of use.

- Path of the army along with the strength, division and direction (attacking or retreating)
- Temperature recorded along specific co-ordinates
- City names and co-ordinates of their centers

IMPORTANT LINKS

- GitHub Folder - Minard's depiction of Napoleon's Campaign
- Source Code - Minard.java
- Animation - https://youtu.be/OOnjghqfK4c