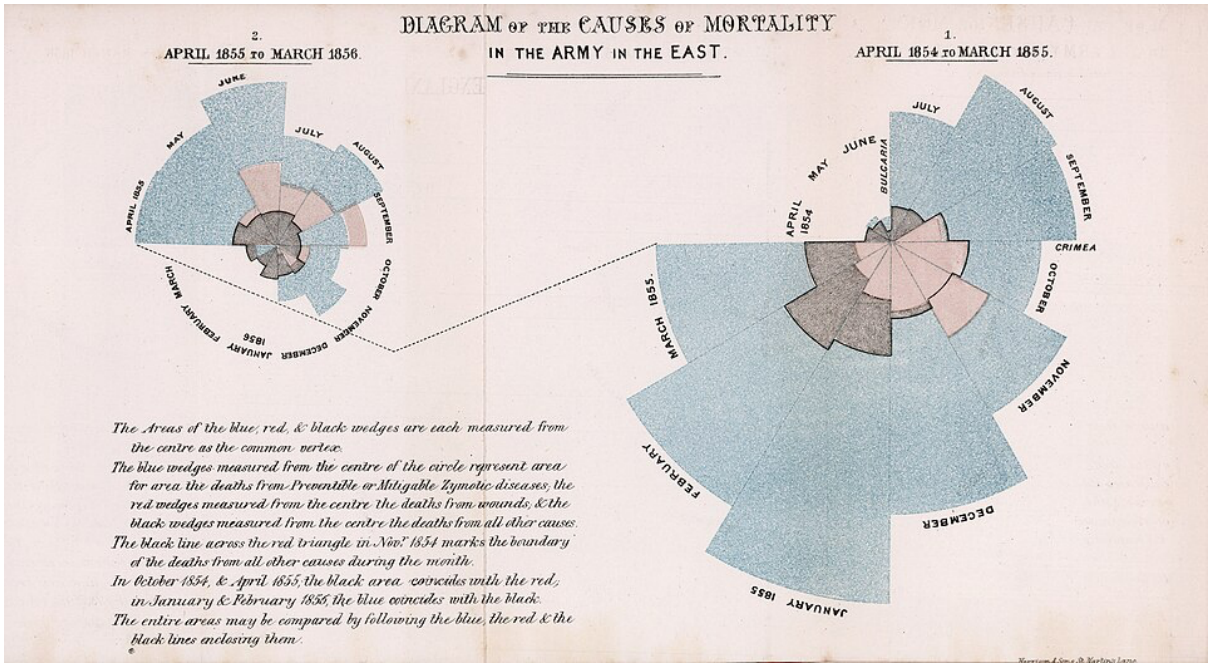
The following is a sample analysis of a visualisation in a form similar to what you are expected to complete for Assignment 2. While there may be multiple correct solutions an answer such as below should score above 70%.

The visualisation being analysed is shown below, and is available in higher resolution at the following link https://commons.wikimedia.org/wiki/File:Nightingale-mortality.jpg.



Analysis of "Diagram of the Causes of Mortality in the Army in the East" by Florence Nightingale (1858)

Encoding

The visualisation features two facets of a radial idiom (referred to as a coxcomb chart, similar to a polar area chart). Within each facet, arrangement by angular position is used to encode month. Size (area of wedges/sectors) encodes the total number of deaths due to three different causes in a particular month. Colour is used to distinguish causes of death, with blue, red and black indicating "Preventable and Mitigatable Zymotic Diseases", "Wounds", and "Other Causes" respectively. High-level arrangement separates two calendar years of data ("April 1854-March 1855" and "April 1855-March 1856") represented by an individual coxcomb and connected by a dotted line. Two of the wedges are annotated with text ("Bulgaria" and "Crimea" respectively), seemingly highlighting a significant point of interest.

Data

We can assume, without loss of generality, that the data could be organised as a table dataset, with a key attribute *date* (month of a particular year), an ordinal attribute; three quantitative, sequential, measurement attributes, namely the counts of deaths due to three classified causes. While it might be assumed that "cause of death" would be an attribute, in order to plot the data as it appears in the visualization, there must be an attribute (or derived attribute) for total number of deaths due to each of the three causes respectively.

Task

Some key tasks that can be carried out based on the visualisation include:

- lookup or compare the number of deaths due to different causes in specific months;
- explore trends over time in deaths due to specific causes
- summarise distribution of deaths during a year
- From the context and description, a high-level objective may be to *present/identify* the main causes of deaths in the army (i.e., that this is apparently due to preventable infections and not the actual wounds that soldiers suffer in war).

Analysis

Radial layout idioms are typically less effective than rectilinear layouts such as bar charts for encoding quantitative values, therefore the chart may not be the most accurate for precise comparison or lookup. However, the chart is reasonably effective for high level tasks such as exploring trends and identifying extremes such as the leading cause of deaths. The chart seems to effectively show some features/trends, e.g., spikes at certain points including July 1854 that is annotated with the text "Bulgaria", which we might assume refers to some significant battle or event. Furthermore, the cyclic nature of the data (i.e., months in a year) provides some justification/exception for use of a radial layout. The radial layout makes it easier to compare distributions across the two years and arguably also makes the chart aesthetically more interesting than a standard rectilinear chart, potentially impacting its ability to engage viewers and how well it presents its intended message.

It is notable that the *area* of wedges is used for encoding the quantitative values, instead of merely radial length, as is typical in polar area charts. This mitigates a known perceptual bias in radial charts where larger radii are disproportionally over emphasized as area increases quadratically with radius. On the other hand, encoding by 2D area, is less intuitive and may be cognitively more difficult to process than simple length. There is no legend nor explanation in the caption to indicate how many deaths is represented by a particular area thus only relative comparisons can be made. The wedges appear to be sorted from 'front to back' by order of magnitude to avoid occlusion but the inconsistent ordering may cause a bit of extra mental load to decode.