**ENSF 592 Project Report**

1. Reading the Calgary boundary

Boundary coordinates of the Calgary city are read from the file 'City\_Boundary\_layer.csv', based on which a rectangle is drawn around the Calgary city.

1. Screenshot of the map with plotted boundary

Output obtained is as follows:

A picture containing text, map

Description automatically generated

Figure 1: Calgary map with boundary

1. Divide calgary to a 10x10 matrix of areas.

Based on the boundary coordinates obtained, Calgary city is divided into 10\*10 grids which are displayed below. For drawing the grids, the maximum and minimum latitudes and longitudes are divided into ten groups each, based on which the horizontal and vertical lines are plotted.

A close up of a map

Description automatically generated

Figure 2: Calgary map divided into grids

1. For Each grid area finding the various features for the year 2018.

The various feature calculated are along with their column names in data:

Feature Column name

1. Average speed limit – avg\_speed
2. Average Traffic volume – avg\_volume
3. Average number of traffic cameras – num\_cameras
4. Number of Traffic Signals – num\_signal
5. Number of Traffic Signs – num\_signs

Sample set of data frame is as follows:

A screenshot of a cell phone

Description automatically generated

Figure 3: Data Frame with various features calculated

The daily visibility and temp is calculated by sampling the hourly data and getting the average of hourly visibility and temp values. The data so obtained is then merged with the accident count info, based on the date column present in both the data sets.

Sample set of data frame for daily weather conditions:

Count – Accident count

A screenshot of a cell phone

Description automatically generated

Figure 4: Sample set of daily weather