The attached dataset (***airlines_delay***) has information related to aircraft delays of airlines operating within the United States. The variable description is as follows:

arr_flights: Number of aircraft arriving

arr_del15: Number of aircraft that were delayed beyond 15 minutes. A delay incident is recorded if an aircraft gets delayed beyond 15 mins

carrier_delay (in mins): The cause of the cancellation or delay was due to circumstances within the airline's control (e.g. maintenance or crew problems, aircraft cleaning, baggage loading, fueling, etc.)

weather_delay (in mins): Significant meteorological conditions (actual or forecasted) that, in the judgment of the carrier, delays or prevents the operation of a flight such as tornado, blizzard or hurricane

nas_delay (in mins): Delays and cancellations attributable to the national aviation system that refer to a broad set of conditions, such as non-extreme weather conditions, airport operations, heavy traffic volume, and air traffic control

late_aircraft_delay: A previous flight with same aircraft arrived late, causing the present flight to depart late

security_delay (mins): Delays or cancellations caused by evacuation of a terminal or concourse, re-boarding of aircraft because of security breach, inoperative screening equipment and/or long lines in excess of 29 minutes at screening areas

arr_delay (in mins): Sum of all the aforementioned delays

**From the dataset answer the following questions**

Question 1 (20 points):
Compute the total number of arrival delays (in mins) for each carrier. Use a bar plot to show the top 10 carriers by arrival delays.
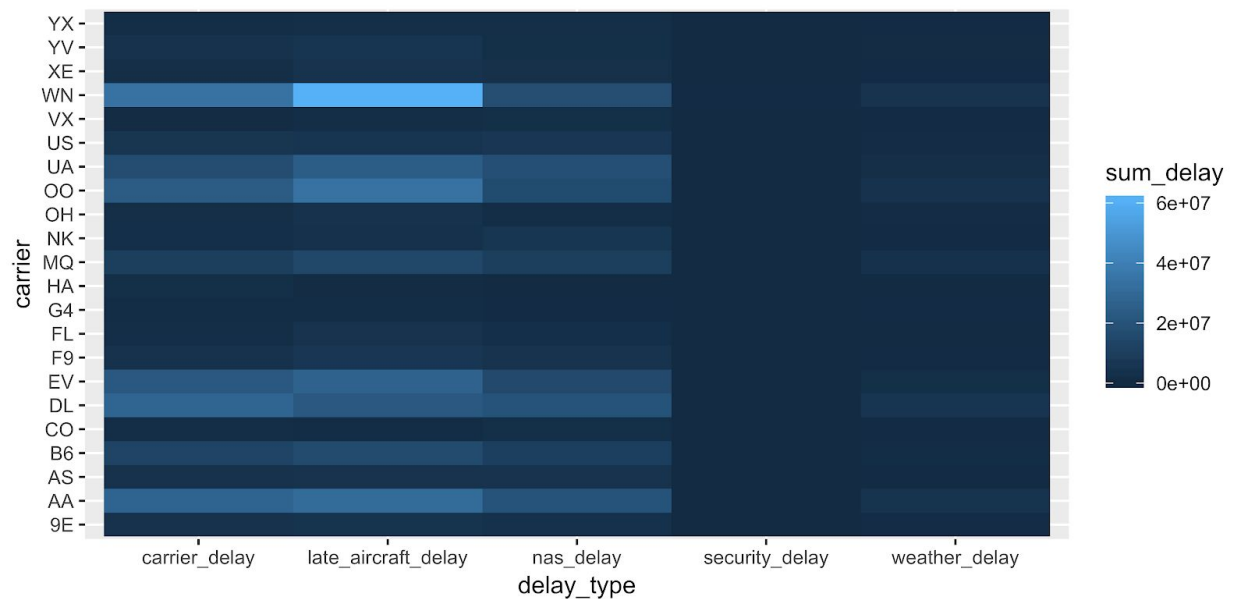
Question 2 (20 points):
Use solution for question 1 and create a stacked bar plot by adding additional variable "*year*" to the bar plot

Question 3 (20 points):

Generate the density plot as shown in the figure below.
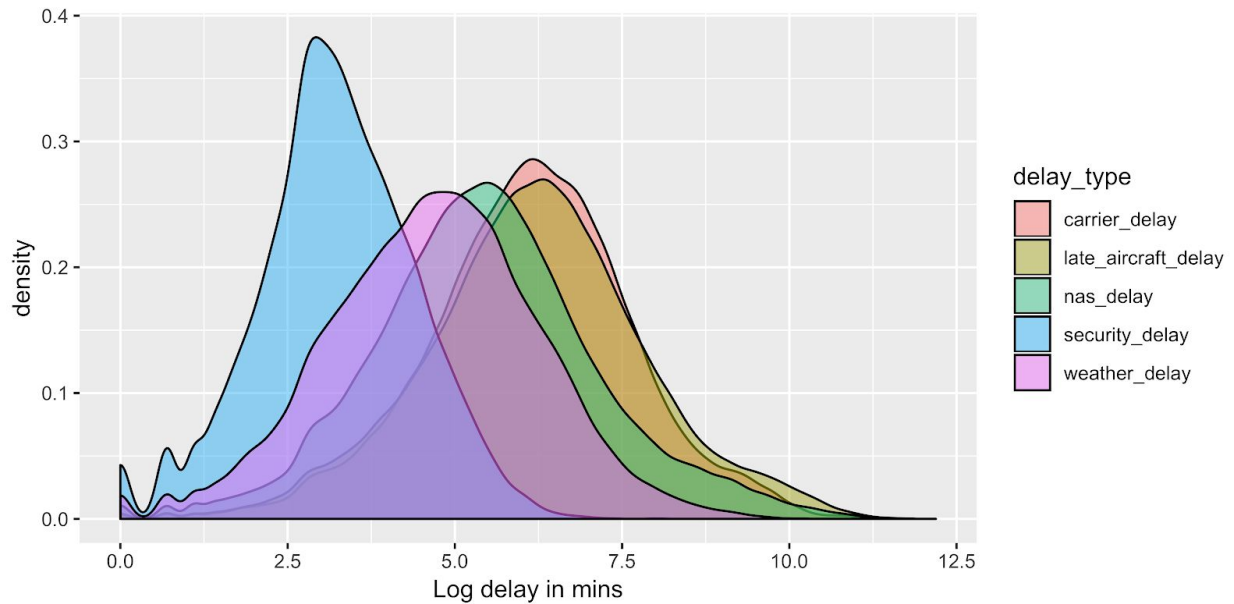
Question 4 (20 points):

Generate the heatmap shown below. Each combination of carrier and type of delay is filled by sum of the delay in mins. For example the cell corresponding to *YX* and *carrier_delay* is filled by total *carrier_delay* in minutes for the airline carrier *YX*

Question 5 (20 points):

Generate a line plot with the x-axis representing year, the y-axis representing total delay in minutes, and fill with 5 lines of different colors each representing carrier_delay, late_aircraft_delay, nas_delay, security_delay, and weather_delay