**7.1 Maps and Data**

Ggplot library can be used to plot the data in maps. Mashups are integrating different types of data onto a single place, in this case a map.

* map\_data  
  Get date on the region mapped
* geom\_map  
  How to render the map
* coord\_map

Makes sure the map is not stretched

* map\_id  
  Logical way to describe data
* Longitude and latitude  
  Coordinates can be hard-coded or via a conversion from logical to physical.

**7.2 Maps and Data- 2**

Building up a map from real example

* ggplot(data-frame, aes(map\_id=column))  
  Creates the map id information
* geom\_map(map = map\_name, aes(fill=column))  
  Here the map attribute takes the previously stored map data and fills color according to the column given in the attribute.
* geom\_point(aes(x=latvalue, y= longvalue))  
  This adds a point on the coordinates given in the x and y parameters.
* xlim( , ) +ylim( , ) + coord\_map  
  This allows zooming into the values given in x and y limit parameters and the coord\_map() function ensures that the map won’t be stretched out.

**7.3 R Code for visualization in Map**

* ggplot(data-frame, aes(map\_id=column))  
  Creates the map id information
* geom\_map(map = map\_name, aes(fill=column))  
  Here the map attribute takes the previously stored map data and fills color according to the column given in the attribute.
* geocode(“city, state, country”)  
  Gives the geographical coordinates for the given city.
* We can write a function such that geocode can be called for every data entry in the dataframe.
* If there are outliers which are clearly not within the area of allowed region, the data can be cleaned using a boolean expression  
  Dataframe[columnname > value, ]  
  Here any operation can be used.
* A boundary for a radius can be given and stored in a variable and then later subtracted and added for the lower and limits for the coordinates respectively.  
  xlimit <- c(centre - boundaryvalue, centre + boundaryvalue)  
  ylimit <- c(centre - boundaryvalue, centre + boundaryvalue)  
  map.zoom() + expand\_limits(x = xlimit, y= ylimit)

**Questions from the videos**

* Is the visualization useful? If so, how?
* The San Francisco one gives a clear idea of which neighborhoods have higher frequency of crimes and the by introducing different colors for different types of crime, the map gives an overall idea of what are the types of crimes happening in which part of the city. The filtering of the types of crime gives the user an option to only look at particular types of crimes.  
  For the New York map the interactive aspect and the spotlight to cover the relevant parts on the map throws more attention to the parts on the map the user is looking for. This aspect, according to me, makes the visualization an effective one.

**Question**

* Which command gives the outline of the borders for the state?