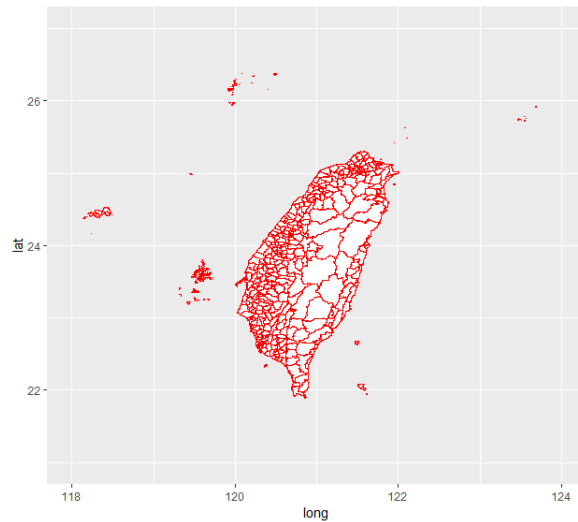Name:黃子瑋   Student ID:410475001

Part I: Create a town-level Taiwan map
Attach your picture here:

Source codes for Part I:

```
library(tidyverse)
library(rgdal)
library(broom)

#建立工作目錄
setwd(getwd())

#資料讀入
tw_map<-readOGR(dsn='mapdata201905210454',layer='TOWN_MOI_1080509')%>%
  tidy()

#畫圖
ggplot(tw_map,aes(x=long,y=lat,group=group))+
  geom_polygon(color='red',fill='white')+
  scale_x_continuous(limits=c(118,124))+
  scale_y_continuous(limits=c(21,27))
```

Part II: Utilizing Google Map API

(II-a) Find the longitude and latitude of 臺北火車站

Longitude (經度)：122.0
Latitude (緯度)：25.0

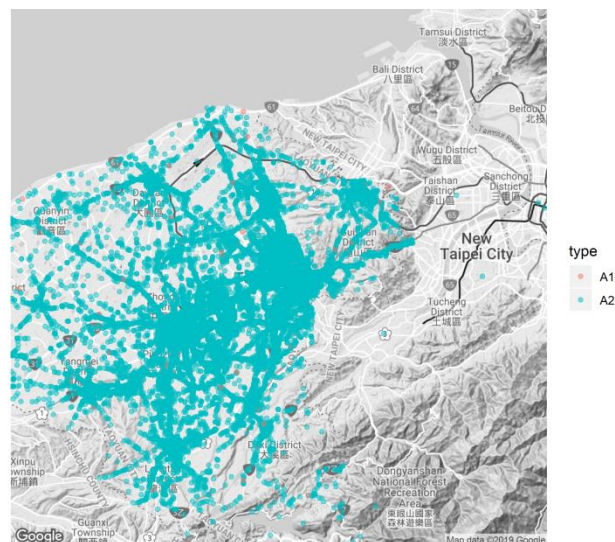Source Code:

```
library(ggmap)

#此處借用別人的 key
```
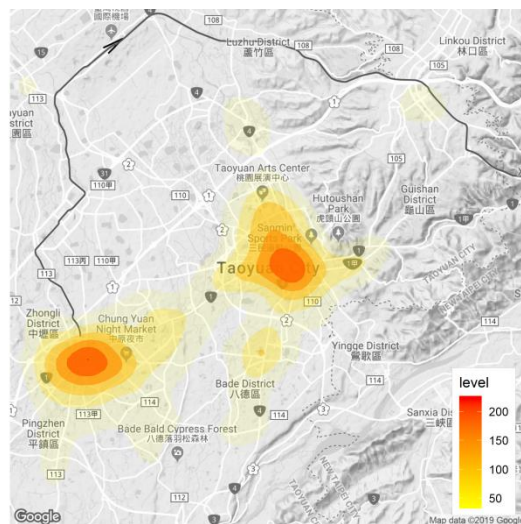
```
register_google(key='xxx')
```

```
#查詢經緯度
geocode('臺北火車站')
```

(II-b) Draw a scatter plot and a heatmap on ggmap

Map 1: Scatter Plot

Map 2: Density Plot (Heat map)

Source Code:

```
library(tidyverse)
library(readxl)
library(ggmap)
```

```
#讀入檔案
acc<-read_excel('accident_s_106.xlsx')
```

```
#Map 1 畫圖

qmap('Taoyuan',zoom=11,color='bw')+

  geom_point(data=acc,aes(x=lon,y=lat,color=type),alpha=0.5)+

  ggsave('map1.png',width=30,height=14,units='cm')


#Map 2 畫圖

qmap('Taoyuan',zoom=12,color='bw',legend='bottomright')+

  stat_density2d(data=acc,aes(x=lon,y=lat,fill=..level..,alpha=..level..),

          bins=6,geom='polygon')+

  scale_fill_gradient(low='yellow',high='red')+

  scale_alpha_continuous(guide=FALSE)+

  ggsave('map2.png',width=30,height=14,units='cm')
```