HOMEWORK 3

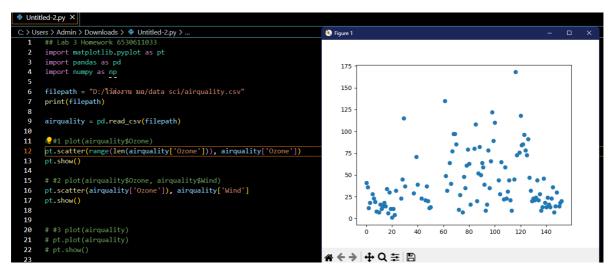
968-252 Data Science

Data Visualisation

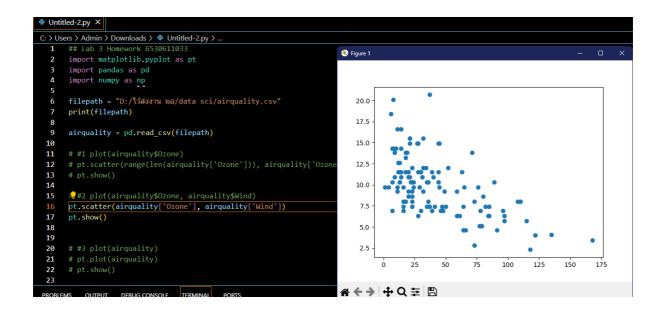
ชื่อ-นามสกุล นาย ธนวัฒน์ วิริยธรรมโสภณ รหัส 6530611033 สาขา COMP

จงเขียนคำสั่ง Python หรือภาษาอื่นที่ไม่ใช่เครื่องมือสำเร็จรูป (โปรดระบุภาษา) ที่ให้ผลลัพธ์ได้เช่นเดียวกับคำสั่ง R ต่อไปนี้

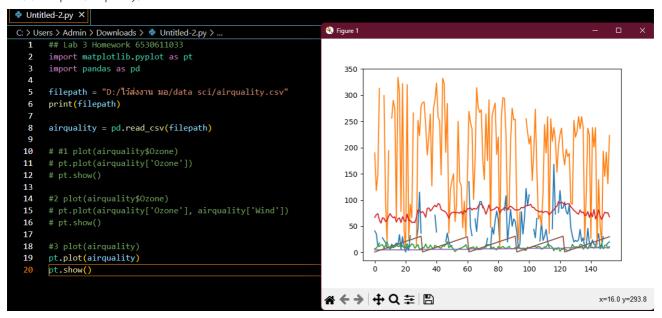
(1) plot(airquality\$Ozone)



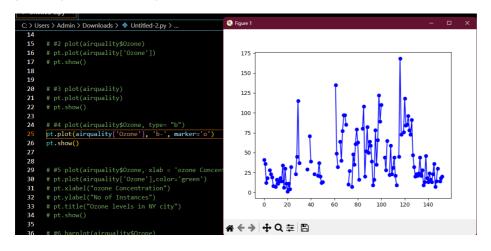
(2) plot(airquality\$Ozone, airquality\$Wind)



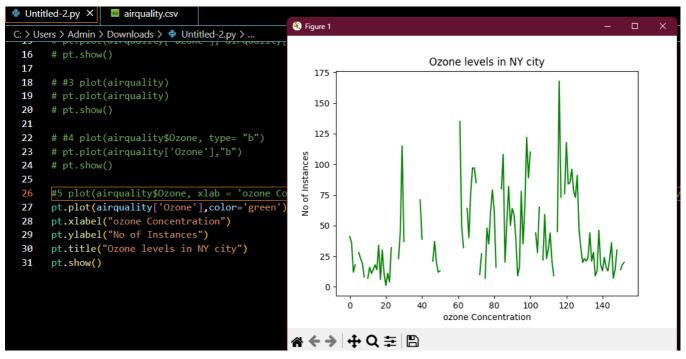
(3) plot(airquality)



(4) plot(airquality\$Ozone, type= "b")

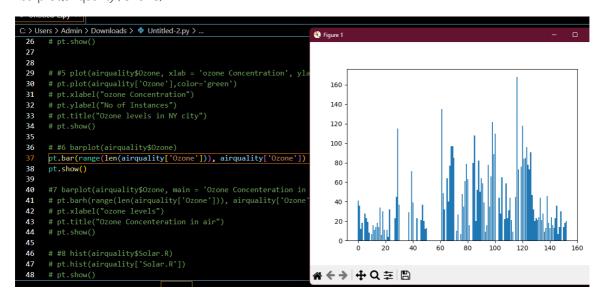


(5) plot(airquality\$Ozone, xlab = 'ozone Concentration', ylab = 'No of Instances', main = 'Ozone levels in NY city', col

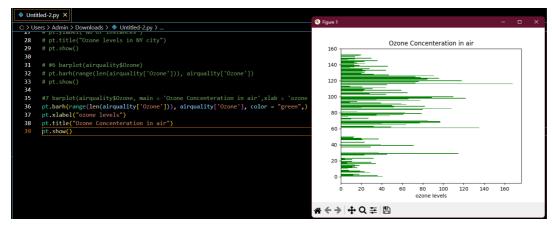


= 'green')

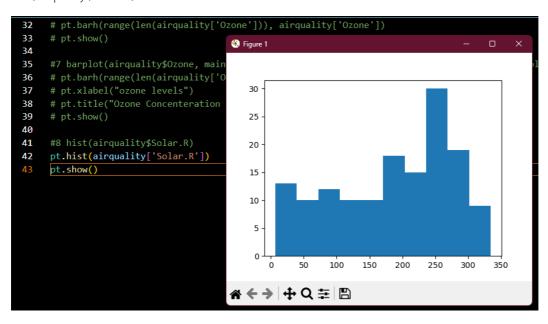
(6) barplot(airquality\$Ozone)



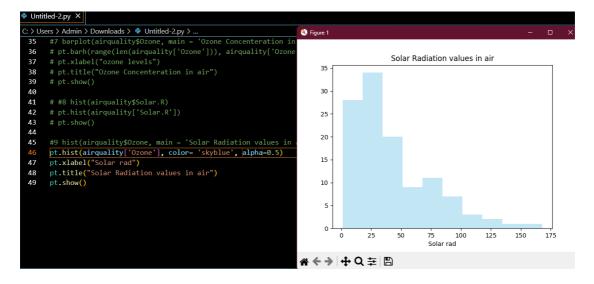
(7) barplot(airquality\$Ozone, main = 'Ozone Concenteration in air',xlab = 'ozone levels', col= 'green',horiz = TRUE)



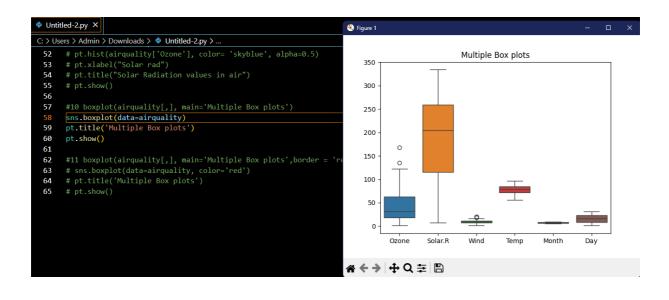
(8) hist(airquality\$Solar.R)



(9) hist(airquality\$Ozone, main = 'Solar Radiation values in air',xlab = 'Solar rad.', col=cm.colors(5))



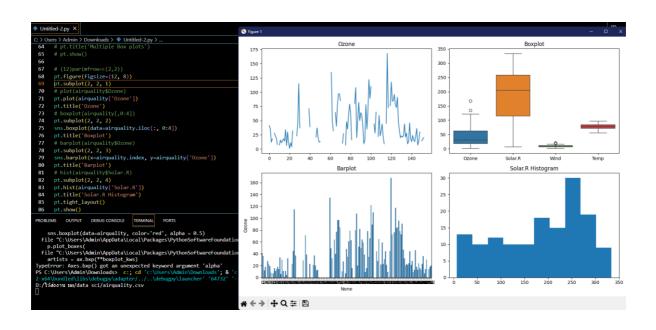
(10) boxplot(airquality[,], main='Multiple Box plots')



(11) boxplot(airquality[,], main='Multiple Box plots',border = 'red',col=terrain.colors(5))

```
C: > Users > Admin > Downloads > ♥ Untitled-2.py > ...
                                                                                                             Figure 1
          # pt.hist(airquality['Ozone'], color= 'skyblue', alpha
# pt.xlabel("Solar rad")
# pt.title("Solar Radiation values in air")
                                                                                                                                                            Multiple Box plots
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                                                                                                                    350
           # pt.show()
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                                                                                                                    300
          #10 boxplot(airquality[,], main='Multiple Box plots')
# pt.boxplot(airquality)
# pt.title("Multiple Box Plots")
                                                                                                                    250
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          #11 boxplot(airquality[,], main='Multiple Box plots',bo
sns.boxplot(data=airquality, color='red')
pt.title('Multiple Box plots')
pt.show()
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                                                                                                                    150
                                                                                                                     100
                                                                                                                               Ozone
                                                                                                                                              Solar R
                                                                                                                                                               Wind
                                                                                                                                                                              Temp
                                                                                                                                                                                             Month
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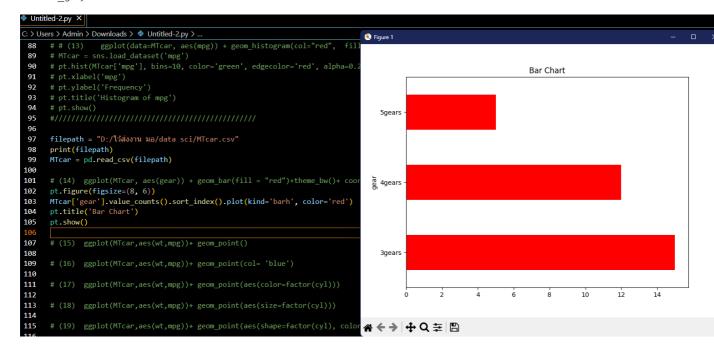
plot(airquality\$Ozone) boxplot(airquality[,0:4]) barplot(airquality\$Ozone) hist(airquality\$Solar.R)



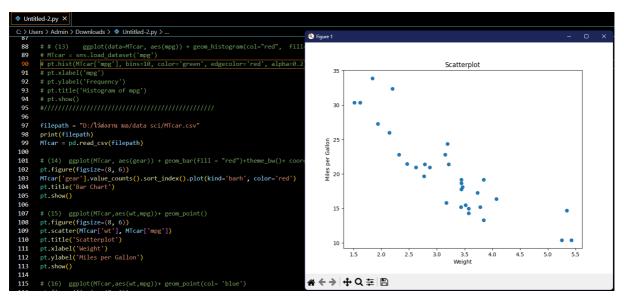
(13) ggplot(data=MTcar, aes(mpg)) + geom histogram(col="red", fill="green", alpha = .2, bins = 10)

```
C: > Users > Admin > Downloads > 🟺 Untitled-2.py >
             # boxplot(airquality[,0:4])
pt.subplot(2, 2, 2)
sns.boxplot(data=airquality.iloc[:, 0:4])
                                                                                                                                                                                                                                                   § Figure 1
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             pt.title('Boxplot')
# barplot(airquality$0zone)
                                                                                                                                                                                                                                                                                                                  Histogram of mpg
                                                                                                                                                                                                                                                               80
            # barplot(alrqualitysuzone)
pt.subplot(2, 2, 3)
sns.barplot(x=airquality.index, y=airquality['Ozone'])
pt.title('Barplot')
# hist(airquality$Solar.R)
                                                                                                                                                                                                                                                               70
                                                                                                                                                                                                                                                               60
            pt.subplot(2, 2, 4)
pt.hist(airquality['Solar.R'])
pt.title('Solar.R Histogram')
pt.tight_layout()
pt.show()
                                                                                                                                                                                                                                                               40
            # (13) ggplot(data=MTcar, aes(mpg)) + geom_histogram(col="red", fill="green", alpha = .2, bin:
MTcar = sns.load_dataset('mpg')
pt.hist(MTcar('mpg'), bins=10, color='green', edgecolor='red', alpha=0.2)
pt.xlabel('mpg')
pt.ylabel('Frequency')
pt.title('Histogram of mpg')
pt.show()
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             pt.show()
                                                                                                                                                                                                                                                                                                                                 mpa
```

(14) ggplot(MTcar, aes(gear)) + geom_bar(fill = "red")+theme_bw()+ coord_flip()+ labs(title = "Bar Chart") + theme gray()



(15) ggplot(MTcar,aes(wt,mpg))+ geom_point()



(16) ggplot(MTcar,aes(wt,mpg))+ geom_point(col= 'blue')

```
filepath = "D:/ไว้ส่งงาน มอ/data sci/MTcar.csv"
 97
           print(filepath)
MTcar = pd.read_csv(filepath)
                                                                                                                                                                                            Scatterplot with Blue Color
           # (14) ggplot(MTcar, aes(gear)) + geom_bar(fill = "red")+t
pt.figure(figsize=(8, 6))
MTcar['gear'].value_counts().sort_index().plot(kind='barh',
pt.title('Bar Chart')
103
                                                                                                                                             30
105
            pt.show()
           # (15) ggplot(MTcar,aes(wt,mpg))+ geom_point()
pt.figure(figsize=(8, 6))
pt.scatter(MTcar['wt'], MTcar['mpg'])
pt.title('Scatterplot')
pt.xlabel('Weight')
pt.xlabel('Weight')
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                                                                                                                                         Callon 25
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           pt.ylabel('Miles per Gallon')
pt.show()
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           # (10) ggp10('mtcar,aes(wt,mpg))+ geom_point(to
pt.figure(figsize=(8, 6))
pt.scatter(Mtcar('wt'), MTcar['mpg'], c='blue')
pt.title('Scatterplot with Blue Color')
pt.xlabel('Weight')
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           pt.ylabel('Miles per Gallon')
                                                                                                                                                                                                   3.0
                                                                                                                                                                                                                                 4.0
                                                                                                                                                                                                                                               4.5
                                                                                                                                                                                                                                                               5.0
            pt.show()
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           # (17) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(color=fac
pt.figure(figsize=(8, 6))
                                                                                                                                ☆◆ → + Q = □
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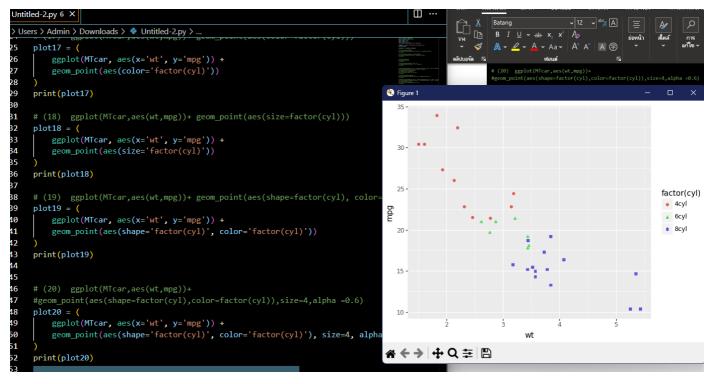
(17) ggplot(MTcar,aes(wt,mpg))+ geom point(aes(color=factor(cyl)))

```
pt.ylabel('Miles per Gallon')
# (17) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(color=factor(cyl)))
plot17 = (
    ggplot(MTcar, aes(x='wt', y='mpg')) +
geom_point(aes(color='factor(cyl)'))
                                                                                                                                                                        factor(cyl)
print(plot17)
                                                                                                                                                                        4cyl
 (18) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(size=factor(cyl)))
                                                                                                                                                                        6cvl
                                                                                                                                                                        8cyl
    ggplot(MTcar, aes(x='wt', y='mpg')) +
geom_point(aes(size='factor(cyl)'))
                                                                                                      15 -
 orint(plot18)
  (19) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(shape=factor(cyl), color=fac
 (20) ggplot(MTcar,aes(wt,mpg))+
 geom_point(aes(shape=factor(cyl),color=factor(cyl)),size=4,alpha =0.6)

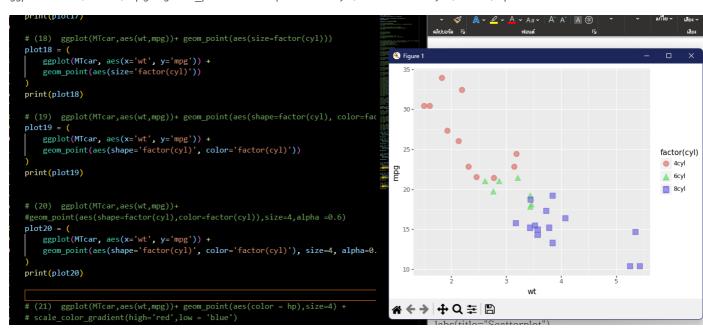
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(18) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(size=factor(cyl)))

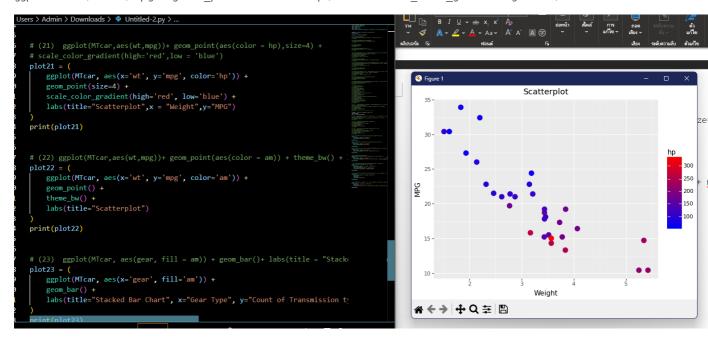
(19) ggplot(MTcar,aes(wt,mpg))+ geom point(aes(shape=factor(cyl)), color=factor(cyl)))



(20) ggplot(MTcar,aes(wt,mpg))+geom point(aes(shape=factor(cyl),color=factor(cyl)),size=4,alpha =0.6)



(21) ggplot(MTcar,aes(wt,mpg))+ geom point(aes(color = hp),size=4) +scale color gradient(high='red',low = 'blue')



(22) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(color = am)) + theme_bw() + labs(title="Scatterplot")

```
scare_color_gradient(nign= red , low= blue ) +
labs(title="Scatterplot",x = "Weight",y="MPG")
print(plot21)
                                                                                                       🕙 Figure 1
                                                                                                                                   Scatterplot
# (22) ggplot(MTcar,aes(wt,mpg))+ geom_point(aes(color = am)) + theme_bw() +
plot22 = (
    ggplot(MTcar, aes(x='wt', y='mpg', color='am')) +
    theme_bw() +
labs(title="Scatterplot")
print(plot22)
                                                                                                                                                                          am
                                                                                                       mpg

    Automatic

    Manual

plot23 = (
    ggplot(MTcar, aes(x='gear', fill='am')) +
     labs(title="Stacked Bar Chart", x="Gear Type", y="Count of Transmission ty
print(plot23)
```

(23) ggplot(MTcar, aes(gear, fill = am)) + geom_bar()+ labs(title = "Stacked Bar Chart", x = "Gear Type", y = "Count of Transmission types")

