#

# Week 8 Synchronous Code v3

#

library(ggplot2)

attach(mtcars)

#

mpg.lm=lm(formula = mpg~wt,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

plot(wt,mpg)

abline(mpg.lm)

#

mpg.lm=lm(formula = mpg~hp,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

plot(hp,mpg)

abline(mpg.lm)

#

mpg.lm=lm(formula = mpg~wt+hp,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

#

mpg.lm=lm(formula = mpg~wt+cyl,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

#

mpg.lm=lm(formula = mpg~wt+hp+cyl,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

#

mpg.lm=lm(formula = mpg~.,data=mtcars)

summary(mpg.lm)

summary(mpg.lm)$r.squared

summary(mpg.lm)$adj.r.squared

#

#

#

mpg.lm=lm(formula = mpg~wt+cyl,data=mtcars)

summary(mpg.lm)

#

range(wt)

newdata<-data.frame(cyl=4,wt=2.8)

predict(mpg.lm,newdata,type="response")

#

newdata<-data.frame(cyl=4,wt=1.8)

predict(mpg.lm,newdata,type="response")

#

#

g<-ggplot(mtcars,aes(x=hp,y=wt))+geom\_point(aes(size=mpg,color=mpg))

g

g+geom\_smooth(method="lm")

#

#

#

#Stepwise Selection based on AIC - parsimonious analysis

#

#### Backward elimination ...

#

mpg.lm=lm(formula = mpg~.,data=mtcars)

step(mpg.lm, data=mtcars, direction="backward")

#

parsimonious<-lm(formula = mpg ~ wt + qsec + am, data = mtcars)

summary(parsimonious)

#

# compare to model with all variables

#

mpg.lm=lm(formula = mpg~.,data=mtcars)

summary(mpg.lm)