###Workshop R Software###

library(car)

#simulasi code yang sudah ada di package car

#Scatter plot

scatterplot(prestige ~ income, data=Prestige, ellipse=TRUE)

scatterplot(prestige ~ income, data=Prestige)

scatterplot(prestige ~ income, data=Prestige, smooth=list(smoother=quantregLine))

# use quantile regression for median and quartile fits

scatterplot(prestige ~ income | type, data=Prestige,

smooth=list(smoother=quantregLine, var=TRUE, span=1, lwd=4, lwd.var=2))

scatterplot(prestige ~ income | type, data=Prestige, legend=list(coords="topleft"))

scatterplot(vocabulary ~ education, jitter=list(x=1, y=1),

data=Vocab, smooth=FALSE, lwd=3)

scatterplot(infantMortality ~ ppgdp, log="xy", data=UN, id=list(n=5))

#melihat data

View(Prestige)

View(Vocab)

head(Prestige)

head(Vocab)

tail(Prestige)

tail(Vocab)

#melihat summary data min, max, mean

summary(Prestige)

summary(Vocab)

#menyimpan file hasil summary

summaryprestige = summary(Prestige)

summaryvocab = summary(Vocab)

write.csv(summaryprestige, file = 'summaryprestige1.csv')

write.csv(summaryvocab, file = 'summaryvocab.csv')

####correlation test####

library(ggplot2)

library(ggpubr)

#Visual inspection of the data normality using Q-Q plots (quantile-quantile plots).

#Q-Q plot draws the correlation between a given sample and the normal distribution.

# income

ggqqplot(Prestige$income, ylab = "income")

# education

ggqqplot(Prestige$education, ylab = "education")

res <- cor.test(Prestige$income, Prestige$education,

method = "pearson")

res

ggscatter(Prestige, x = "income", y = "education",

add = "reg.line", conf.int = TRUE,

cor.coef = TRUE, cor.method = "pearson",

xlab = "income", ylab = "education")

####memanggil data#####

data2 <- read.csv("E:\\latihan.csv")

datalatihan <- read.csv("latihan.csv")

attach(datalatihan)

names(datalatihan)

head(datalatihan)

tail(datalatihan)

summary(datalatihan)

str(datalatihan)

ggqqplot(datalatihan$LPC, ylab = "LPC")

# education

ggqqplot(datalatihan$SLA, ylab = "SLA")

res <- cor.test(datalatihan$LPC, datalatihan$SLA,

method = "pearson")

res

ggscatter(datalatihan, x = "LPC", y = "SLA",

add = "reg.line", conf.int = TRUE,

cor.coef = TRUE, cor.method = "pearson",

xlab = "LPC", ylab = "SLA")

####membuat bar plot dengan SE####

library(Rmisc) #untuk memunculkan function SummarySE

lifestage = factor(LS, c("Sapling", "Adult"))

species = factor(Species, c("AM", "TA", "UL"))

databarplot = summarySE(datalatihan, measurevar="LPC", groupvars=c("lifestage", "species"))

databarplot

colors = c("#fc8d59", "#ffffbf", "#91cf60") # with CMYK format

ggplot(databarplot, aes(x=lifestage, y=LPC, fill=species)) +

geom\_bar(position=position\_dodge(), stat="identity",

colour="black", # Use black outlines,

size=.4) + # Thinner lines

geom\_errorbar(aes(ymin=LPC-se, ymax=LPC+se),

size=.8, # Thinner lines

width=.5,

position=position\_dodge(.9))+

xlab("Lifestage")+

ylab("LPC")+

scale\_fill\_manual(values = colors)+

theme\_classic()+

theme(legend.title = element\_text(colour = "black", size = 20, face = "bold"))+

theme(legend.text = element\_text(colour = "black", size = 20))+

theme(axis.text = element\_text(colour = "black", size = 20, face = "bold"))+

theme(axis.title.x = element\_text(colour = "black", size = 20))+

theme(axis.title.y = element\_text(colour = "black", size = 20, face = "bold"))+

theme(axis.title = element\_text(colour = "black", size = 20, face = "bold"))+

theme(legend.position = c(0.8, 0.9))+

theme(legend.background = element\_rect(size=0.5)) + ylim(0,2)

###### correlation dengan ggplot #######

#LPC VS SLA

datalatihan %>%

ggplot(aes(x=LPC, y=SLA, color=LS))+

geom\_point(size = 2)+

geom\_smooth(method = lm)+

theme\_classic()+

xlab("LPC")+

ylab("SLA")+

theme(legend.title = element\_text(colour = "black", size = 16, face = "bold"))+

theme(legend.text = element\_text(colour = "black", size = 16))+

theme(axis.text = element\_text(colour = "black", size = 14, face = "bold"))+

theme(axis.title.x = element\_text(colour = "black", size = 16))+

theme(axis.title.y = element\_text(colour = "black", size = 16))+

theme(plot.title = element\_text(colour = "black", size = 16))+

scale\_shape\_manual(values=c(3, 16, 17))+

scale\_color\_manual(values=c("#d7191c", "#fdae61", "#1a9641"))+

scale\_size\_manual(values=c(2,3,4))+

theme(legend.position = c(0.65, 0.9))+

theme(legend.background = element\_rect(size=0.5))

#####ANOVA dan Tukey#####

fit <- aov(SLA ~ Species, data = datalatihan) #berdasarkan species

summary(fit)

TukeyHSD(fit)

fit <- aov(SLA ~ Hab, data = datalatihan) #berdasarkan habitat

summary(fit)

TukeyHSD(fit)

#####membuat boxplot#####

ggplot(datalatihan, aes(LS, y=LPC, fill=Hab)) +

geom\_boxplot() +

facet\_wrap(~Species, scale="free")

ggplot(datalatihan, aes(Hab, y=LPC, fill=LS)) +

geom\_boxplot() +

facet\_wrap(Species, scale="free")