library(gdata) ##cbindX -> merge different number of rows

library(datarium)

data=marketing;head(data)

x=data[,1:3]

y=data[,4]

a=0.05

regresi=function(y,x,a)

{

n=nrow(x)

k=ncol(x)

nx=as.matrix(cbind(rep(1,n),x))

beta=solve(t(nx)%\*%nx)%\*%t(nx)%\*%y

c=solve(t(nx)%\*%nx)

cjj=diag(c)

error=y-(nx%\*%beta)

ssr=(t(beta)%\*%t(nx)%\*%y)-((sum(y)^2)/n)

sse=(t(y)%\*%y)-(t(beta)%\*%t(nx)%\*%y)

sst=ssr+sse

dfr=k

dfe=n-k-1

dft=dfr+dfe

msr=ssr/dfr

mse=sse/dfe

f=msr/mse

p=1-pf(f,dfr,dfe)

ss=rbind(ssr,sse,sst)

df=rbind(dfr,dfe,dft)

ms=rbind(msr,mse)

library(gdata)

table=cbindX(df,ss,ms,f,p)

rownames(table)=c("Regression","Error","Total")

colnames(table)=c("df","SS","MS","F","p")

list(beta=beta,ANOVA=table)

#####SE

z=k+1

se=matrix(nrow=z,ncol=1)

t=matrix(nrow=z,ncol=1)

pval=matrix(nrow=z,ncol=1)

for (i in 1:z)

{

se[i,1]=sqrt(mse\*c[i,i])

t[i]=beta[i]/se[i]

if (t[i]<0)

{

pval[i]=2\*(pt(t[i],n-k-1))

}else

{

pval[i]=2\*(1-pt(t[i],n-k-1))

}

}

table1=cbind(beta,se,t,pval)

nama=matrix(k,1)

for (i in 1:k)

{

nama[i]=paste("X",i,sep="")

}

rownames(table1)=c("Intercept",nama)

colnames(table1)=c("Estimate","Std. Error","t value","P-value")

list(beta=beta,ANOVA=table,PartialTest=table1)

}

regresi(data[,4],data[,1:3],0.05)

summary(lm(sales~.,data=marketing))

x <- as.matrix(c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131))

y <- as.matrix(c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48))

regresi(y,x,0.05)

summary(lm(y~x))