Εργαστηριακή Άσκηση 6

Θέμα: Ανάλυση Παλινδρόμησης

1.

```
> Y<-c(64,71,53,67,55,58,77,57,56,51,76,68)
> X<-c(57,59,49,62,51,50,55,48,52,42,61,57)
> Z<-c(8,10,6,11,8,7,10,9,10,6,12,9)
> data<-cbind(Y,X,Z)
> data<-as.data.frame(data)
```

2.

```
> summary(data$Y)
> summary(data$X)
> summary(data$Z)
> sd(data$Y)
> sd(data$X)
> sd(data$Z)
> hist(data$Y)
> hist(data$X)
> hist(data$Z)
```

3.

```
> result<-lm(data$Y~data$X)
> plot(data$X,data$Y)
> abline(result)
```

4.
```
> result
> confint(result)
> summary(result)
```

5.
```
> cor(data$Y,data$X)
> cor.test(data$Y,data$X)
> cor.test(data$Y,data$X, method="spearman")
```

6.

```
#linearity
> plot(data$X,data$Y)
> abline(result)

#normality of residuals
> qqnorm(result$res)
> qqline(result$res)
> hist(result$res)

#homoskedasticity
> plot(result$res, result$fitted)

#independence
> plot(1:12,result$res)
```

7.

```
> Y<-data$Y
> X<-data$X
> result1<-lm(Y~X)
> predict(result1,list(X=60), int="c")
```

8.

```
> result2<-lm(data$Y~data$X+data$Z)
```

9.

```
> result2
> confint(result2)
> summary(result2)
```

10.

```
#linearity
> plot(residuals(result2, "partial")[,1],data$X)
> plot(residuals(result2, "partial")[,2],data$Z)

#normality of residuals
> qqnorm(result2$res)
> qqline(result2$res)

> hist(result2$res)

#homoskedasticity
> plot(result2$res, result2$fitted)

#independence
> plot(1:12,result2$res)
```

11.

```
> Y<-data$Y
```

```
> X<-data$X
> Z<-data$Z
> result3<-lm(Y~X+Z)
> predict(result3,list(X=60, Z=10), int="c")
```

12.
```
> A<-rep(1, 12)
> A[data$Z<10]<-0
> A<-as.factor(A)
> table(A)
> result4<-lm(data$Y~data$X+A)
> result4
> confint(result4)
> model.matrix(result4)

#linearity
> plot(residuals(result4, "partial")[,1],data$X)

#normality of residuals
> qqnorm(result4$res)
> qqline(result4$res)

> hist(result4$res)


#homoskedasticity
> plot(result4$res, result4$fitted)

#independence
> plot(1:12,result4$res)
```