```
# R doce for ex 1.28 p37
crime=read.table("C:/Users/Mihinda/Desktop/CH01PR28.txt",
header=0) #the data file
y <- crime[,1]
x <- crime[,2]
par(mfrow=c(3,1))
plot(x, y)
fit = lm(y ~x)
summary(fit)
yhat = predict.lm(fit)
lines(x,yhat)
anova(fit)
plot(fitted(fit),residuals(fit))
qqnorm(residuals(fit))
#prdicting EY at a given value x0
x0 <- data.frame(x=74)
predict(fit, x0)
#CI for the mean of Y at x=x0
predict(fit, x0, interval="confidence", level=0.95)
# prediction interval for a new Y at x = x0
predict(fit, x0, interval="prediction", level=0.95)
#Bonferroni simultaneous PI at k given points
x0 <- data.frame(x=c(75, 80))
k <- dim(x0)[1]
alpha <- 0.05
predict(fit, x0, interval="prediction", level=1-alpha/k)
```

```
> # R doce for ex 1.28 p37
> crime=read.table("C:/Users/Mihinda/Desktop/CH01PR28.txt",
header=0) #the data file
> y <- crime[,1]
> x <- crime[,2]
> par(mfrow=c(3,1))
> plot(x, y)
> fit = lm(y ~x)
> summary(fit)

Call:
lm(formula = y ~ x)

Residuals:
```

```
    Min      1Q  Median      3Q     Max
-5278.3 -1757.5  -210.5  1575.3  6803.3

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 20517.60    3277.64   6.260 1.67e-08 ***
x            -170.58      41.57  -4.103 9.57e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 2356 on 82 degrees of freedom
Multiple R-squared: 0.1703,     Adjusted R-squared: 0.1602
F-statistic: 16.83 on 1 and 82 DF,  p-value: 9.571e-05

> yhat = predict.lm(fit)
> lines(x,yhat)
> anova(fit)
Analysis of Variance Table

Response: y
          Df    Sum Sq  Mean Sq F value    Pr(>F)
x          1  93462942 93462942  16.834 9.571e-05 ***
Residuals 82 455273165  5552112
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> plot(fitted(fit),residuals(fit))
> qqnorm(residuals(fit))
> #prdicting EY at a given value x0
> x0 <- data.frame(x=74)
> predict(fit, x0)
       1
7895.036
> #CI for the mean of Y at x=x0
> predict(fit, x0, interval="confidence", level=0.95)
       fit      lwr      upr
1 7895.036 7257.85 8532.222
> # prediction interval for a new Y at x = x0
> predict(fit, x0, interval="prediction", level=0.95)
       fit      lwr      upr
1 7895.036 3164.511 12625.56
> #Bonferroni simultaneous PI at k given points
> x0 <- data.frame(x=c(75, 80))
> k <- dim(x0)[1]
> alpha <- 0.05
> predict(fit, x0, interval="prediction", level=1-alpha/k)
       fit      lwr      upr
```

```
1 7724.461 2301.648 13147.27
2 6871.585 1457.879 12285.29
```