Practical 11

Linear Least Square Regression

Ex.1.

Enter the following table in Excel which shows the first two grades (denoted by First Quiz X and Second Quiz Y, respectively) of 10 students on two short quizzes in biology.

X : 6 5 8 8 7 6 10 4 9 7
Y : 8 7 7 10 5 10 8 6 8 6

Import the data in R and write programs for the following:
(a) Find the least-squares regression line of Y on X.
(b) Find the least-squares regression line of X on Y.

CODE:

```
x=c(6, 5, 8, 8, 7, 6, 10, 4, 9, 7)
y=c(8, 7, 7, 10, 5, 10, 8, 6, 8, 6)
plot(x,y)
cor(x,y)
fit1 = lm(x ~ y)
fit1
fit2 = lm(y ~ x)
fit2
attributes(fit1)
residuals(fit1)
fit1$residuals
plot(x,fit1$residuals)
plot(x,y)
abline(fit1)
summary(fit1)
```

```
attributes(fit2)

residuals(fit2)

fit2$residuals

plot(x,fit2$residuals)

plot(x,y)

abline(fit2)

summary(fit2)
```

Ex.2.

Enter the following table in Excel , Import the data in R and write programs for the following:

(a) Find the least-squares regression line of Y on X.

(b) Find the least-squares regression line of X on Y.

X :	1	3	4	6	8	9	11	14
Y :	1	2	4	4	5	7	8	9