

## Tut-7, CLL113

Q1. Write a C program to fit a linear regression line through Least Square Method that fits the following data points.

(A)

(1) Use Summation Method

(2) Use Matrix Method

(3) Find the correlation coefficient in both cases.

(B) Repeat procedure (A) for  $y$  being the dependant variable.

Comment whether the regression lines obtained in both the cases (A) and (B) are same or not.

No of Data Point	$x_i$	$y_i$
1	1	0.5
2	2	2.5
3	3	2.0
4	4	4.0
5	5	3.5
6	6	6.0
7	7	5.5

Q2. Write a C program to fit regression planes through Least Square Method that fit the following data points.

(1) Use Summation Method

(2) Use Matrix Method

	Polymer-cement ratio ( $x_1$ )	Water-cement ratio ( $x_2$ )	Compressive Strength (MPa) ( $y_1$ )	Flexural Strength (MPa) ( $y_2$ )
Pure cement mortar	0	0.4	50.63	7.39
50/50-5	5	0.4	45.31	8.59
50/50-10	10	0.4	35.63	9.30
50/50-15	15	0.4	22.21	7.30
50/50-20	20	0.4	27.18	6.40
Pure cement mortar	0	0.5	42.40	7.11
50/50-5	5	0.5	27.87	7.37
50/50-10	10	0.5	26.30	6.90
50/50-15	15	0.5	29.60	6.70
50/50-20	20	0.5	24.27	5.10