**Lab 2**

1. The data below corresponds to one year of marketing spend (y) and company sales (x) by month.

|  |  |  |
| --- | --- | --- |
| Month | Spend | sales |
| 1  2  3  4  5  6  7  8  9  10  11  12 | 1000  4000  5000  4500  3000  4000  9000  11000  15000  12000  7000  3000 | 9914  40487  54324  50044  34719  42551  94871  118914  158484  131348  78504  36284 |

Fit a simple linear regression to the data that involving the following steps by using R.

1. Plot the scatter diagram for the data .
2. Estimate the parameters of a simple linear regression model.
3. Obtain the fitted values of the model.
4. Test the significance of the model parameters and interpret the results.
5. Obtain the coefficient of determination and interpret the results.
6. Obtain the 95 percent and 99 percent confidence interval for the slope and intercept parameters.
7. Check whether the assumptions of the residuals are satisfied or not by using a suitable statistical test.

The evaluation pattern is as follows:

|  |  |  |
| --- | --- | --- |
| Section | Parameters | Marks |
| A | Objective/Aim | 2 |
| B | Analysis | 3 |
| C | Interpretation | 3 |
| D | Timely submission | 2 |
| Total |  | 10 |