**MULTI LINEAR REGRESSION**

1. Computers Data:

summary(Computer\_Data.1)

price speed hd ram Screen

Min. : 949 Min. : 25.00 Min. : 80.0 Min. : 2.000 Min. :14.00

1st Qu.:1794 1st Qu.: 33.00 1st Qu.: 214.0 1st Qu.: 4.000 1st Qu.:14.00

Median :2144 Median : 50.00 Median : 340.0 Median : 8.000 Median :14.00

Mean :2220 Mean : 52.01 Mean : 416.6 Mean : 8.287 Mean :14.61

3rd Qu.:2595 3rd Qu.: 66.00 3rd Qu.: 528.0 3rd Qu.: 8.000 3rd Qu.:15.00

Max. :5399 Max. :100.00 Max. :2100.0 Max. :32.000 Max. :17.00

cd multi premium ads trend

no :3351 no :5386 no : 612 Min. : 39.0 Min. : 1.00

yes:2908 yes: 873 yes:5647 1st Qu.:162.5 1st Qu.:10.00

Median :246.0 Median :16.00

Mean :221.3 Mean :15.93

3rd Qu.:275.0 3rd Qu.:21.50

Max. :339.0 Max. :35.00

reg\_price<-lm(price~.,data = Computer\_Data.1)

summary(reg\_price)

Result:

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| --- |
| > summary(Computer\_Data)  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 307.98798 60.35341 5.103 3.44e-07 \*\*\*  speed 9.32028 0.18506 50.364 < 2e-16 \*\*\*  hd 0.78178 0.02761 28.311 < 2e-16 \*\*\*  ram 48.25596 1.06608 45.265 < 2e-16 \*\*\*  screen 123.08904 3.99950 30.776 < 2e-16 \*\*\*  cdyes 60.91671 9.51559 6.402 1.65e-10 \*\*\*  multiyes 104.32382 11.41268 9.141 < 2e-16 \*\*\*  premiumyes -509.22473 12.34225 -41.259 < 2e-16 \*\*\*  ads 0.65729 0.05132 12.809 < 2e-16 \*\*\*  trend -51.84958 0.62871 -82.470 < 2e-16 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 275.3 on 6249 degrees of freedom  Multiple R-squared: 0.7756, Adjusted R-squared: 0.7752  F-statistic: 2399 on 9 and 6249 DF, p-value: < 2.2e-16 |
|  |
| 1. 50 Startups:   Profit(y) = dependent variable  Independent Variables = R&D spend, Administration, Marketing spend, state  Codes:  summary(`50\_Startups`)  pairs(`50\_Startups`)  reg\_Profit<-lm(Profit~.,data = `50\_Startups`)  summary(reg\_Profit)  #R&D  reg\_Profit<-lm(Profit~R.D.Spend,data = `50\_Startups`)  summary(reg\_Profit)  #Administration  reg\_Profit<-lm(Profit~Administration,data = `50\_Startups`)  summary(reg\_Profit)  #Marketing spend  reg\_Profit<-lm(Profit~Marketing.Spend,data = `50\_Startups`)  summary(reg\_Profit)  #STATE  reg\_Profit<-lm(Profit~State,data = `50\_Startups`)  summary(reg\_Profit)   |  |  |  | | --- | --- | --- | | Variables | R^2 | Adjusted R^2 | | All independent Var | 0.9508 | 0.9452 | | R&D | 0.9465 | 0.9454 | | Administration | 0.0402 | 0.0202 | | Marketing spend | 0.5592 | 0.55 | | State | 0.0238 | -0.017 | |

1. TOYOTA COROLLA:

Consider only the below columns and prepare a prediction model for predicting Price.

Corolla<-Corolla[c("Price","Age\_08\_04","KM","HP","cc","Doors","Gears","Quarterly\_Tax","Weight")]

Soln: summary(ToyotaCorolla)

Corolla<-ToyotaCorolla[c("Price","Age\_08\_04","KM",

"HP","cc","Doors","Gears","Quarterly\_Tax","Weight")]

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -5.573e+03 1.411e+03 -3.949 8.24e-05 \*\*\*

Age\_08\_04 -1.217e+02 2.616e+00 -46.512 < 2e-16 \*\*\*

KM -2.082e-02 1.252e-03 -16.622 < 2e-16 \*\*\*

HP 3.168e+01 2.818e+00 11.241 < 2e-16 \*\*\*

cc -1.211e-01 9.009e-02 -1.344 0.17909

Doors -1.617e+00 4.001e+01 -0.040 0.96777

Gears 5.943e+02 1.971e+02 3.016 0.00261 \*\*

Quarterly\_Tax 3.949e+00 1.310e+00 3.015 0.00262 \*\*

Weight 1.696e+01 1.068e+00 15.880 < 2e-16 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1342 on 1427 degrees of freedom

Multiple R-squared: 0.8638, Adjusted R-squared: 0.863

F-statistic: 1131 on 8 and 1427 DF, p-value: < 2.2e-16