1)

**Y=b0 +b1 X**

**Y= 1577.201 + 2.134 X**

**# Calories = 1577.201 + 2.134 Weight**

#PVALUE IS less than 0.05 so we can use B0 and B1

Multiple R-squared(coefficient of Determination) :

**Confidence interval =95%**

confint(reg,level = 0.95)

**2.5 % 97.5 %**

**(Intercept) 1358.141455 1796.259949**

**weight1 1.678994 2.589852**

**Prediction :**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | | fit lwr upr  1 1807.718 1229.249 2386.187  2 2004.085 1432.376 2575.795  3 3498.181 2879.564 4116.799  4 2004.085 1432.376 2575.795  5 2217.528 1649.740 2785.316  6 1811.987 1233.697 2390.278  7 1850.407 1273.660 2427.154  8 1709.535 1126.585 2292.485  9 2857.854 2280.041 3435.668  10 3925.066 3264.781 4585.351  11 1790.643 1211.447 2369.839  12 1897.364 1322.350 2472.378  13 2324.249 1757.059 2891.439  14 3071.297 2483.085 3659.509 | |  | | |  | | --- | |  | | | |

2)Delivery Time :

Y=b0 +b1 X

Delivery time= 10.186334 + 2.189367Sorting Time

fit lwr upr

1 23.072933 16.457161 29.68870

2 13.178814 6.780993 19.57663

3 16.476853 10.188630 22.76508

4 21.423913 14.955850 27.89198

5 23.072933 16.457161 29.68870

6 16.476853 10.188630 22.76508

7 18.125873 11.823294 24.42845

8 11.529794 5.010345 18.04924

9 23.072933 16.457161 29.68870

10 21.423913 14.955850 27.89198

11 19.774893 13.411938 26.13785

12 13.178814 6.780993 19.57663

13 18.125873 11.823294 24.42845

14 11.529794 5.010345 18.04924

15 11.529794 5.010345 18.04924

16 13.178814 6.780993 19.57663

17 16.476853 10.188630 22.76508

18 18.125873 11.823294 24.42845

19 9.880774 3.198090 16.56346

20 18.125873 11.823294 24.42845

21 14.827833 8.507631 21.14804

3)

mp1<-read.csv("C:/DATA ANALYTICS/ASSIGNMENTS/Assg4(SLR)/emp\_data.csv")

> View(emp1)

> plot(emp1$Churn\_out\_rate,emp1$Salary\_hike)

>

> #correlation

> cor(emp1$Churn\_out\_rate,emp1$Salary\_hike)

[1] -0.9117216

>

> #regression

> reg <- lm(emp1$Churn\_out\_rate ~ emp1$Salary\_hike) #lm(y~x)

> reg

lm(formula = emp1$Churn\_out\_rate ~ emp1$Salary\_hike)

Coefficients:

(Intercept) emp1$Salary\_hike

244.3649 -0.1015

>

> a<- confint(reg,level = 0.95)

> a

2.5 % 97.5 %

(Intercept) 181.2912317 307.4385905

emp1$Salary\_hike -0.1388454 -0.0642399

>

> pred <- predict(reg,interval = "predict")

Warning message:

In predict.lm(reg, interval = "predict") :

predictions on current data refer to \_future\_ responses

> pred

fit lwr upr

1 83.92753 72.38391 95.47115

2 81.89668 70.59327 93.20009

3 80.88125 69.68123 92.08127

4 77.83497 66.87456 88.79538

5 75.80412 64.94216 86.66607

6 72.75784 61.94828 83.56740

7 71.13316 60.30425 81.96206

8 68.69613 57.77694 79.61533

9 61.58815 50.00746 73.16884

10 54.48016 41.72742 67.23290

4) a1<-read.csv("C:/DATA ANALYTICS/ASSIGNMENTS/Assg4(SLR)/Salary\_Data.csv")

View(a1)

**Code:**

plot(a1$Salary,a1$YearsExperience)

cor(a1$Salary,a1$YearsExperience) #r=1

reg <- lm(a1$Salary ~ a1$YearsExperience)

summary(reg)

#y=b0 +b1X 25792.2 + 9450.0 v

#Salary= 25792.2 + 9450 \*Years Experience

pred <- predict(reg,interval = "predict")

pred

**Ans:**

**Coefficients:**

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

**(Intercept) 25792.2 2273.1 11.35 5.51e-12 \*\*\***

**a1$YearsExperience 9450.0 378.8 24.95 < 2e-16 \*\*\***

|  |
| --- |
| pred  fit lwr upr  1 36187.16 23698.92 48675.40  2 38077.15 25628.63 50525.67  3 39967.14 27556.52 52377.76  4 44692.12 32368.22 57016.03  5 46582.12 34289.64 58874.59  6 53197.09 40999.70 65394.48  7 54142.09 41956.37 66327.80  8 56032.08 43868.25 68195.91  9 56032.08 43868.25 68195.91  10 60757.06 48639.42 72874.70  11 62647.05 50544.46 74749.65  12 63592.05 51496.24 75687.86  13 63592.05 51496.24 75687.86  14 64537.05 52447.52 76626.57  15 68317.03 56247.70 80386.36  16 72097.02 60039.93 84154.10  17 73987.01 61933.05 86040.96  18 75877.00 63824.18 87929.82  19 81546.98 69485.57 93608.39  20 82491.97 70427.39 94556.56  21 90051.94 77944.06 102159.83  22 92886.93 80754.66 105019.20  23 100446.90 88228.15 112665.65  24 103281.89 91022.76 115541.02  25 108006.87 95670.98 120342.77  26 110841.86 98454.30 123229.42  27 115566.84 103084.00 128049.68  28 116511.84 104008.59 129015.09  29 123126.81 110468.27 135785.35  30 125016.80 112309.98 137723.63 |
|  |
| |  | | --- | |  | |