LINEAR REGRESSION ANALYSIS IN R

Exercise

1. Using linear regression analysis establish a relationship between height and weight of a person using the input vector given below.

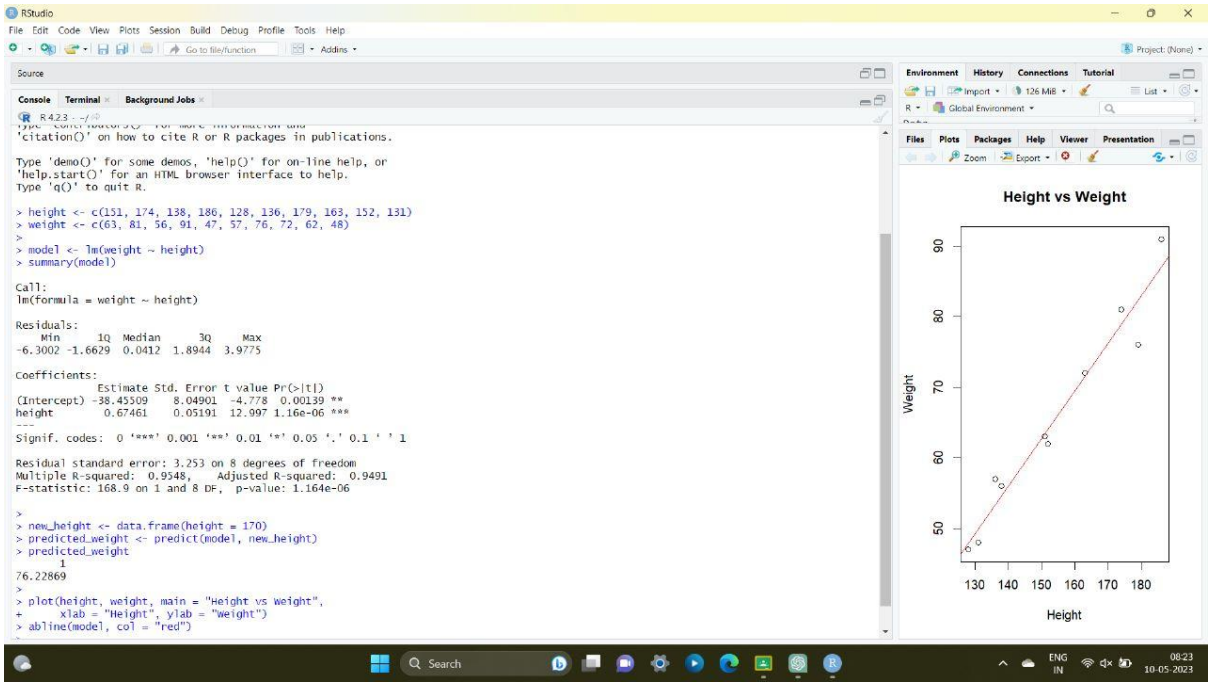
Values of height

151, 174, 138, 186, 128, 136, 179, 163, 152, 131

Values of weight.

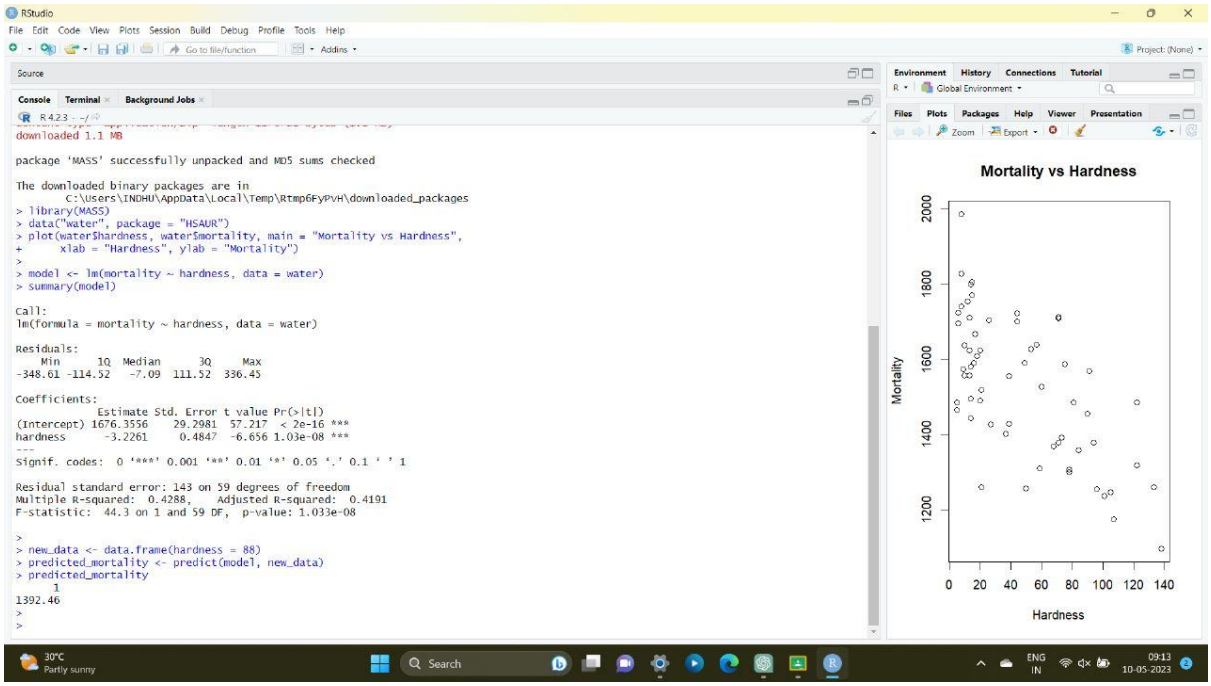
63, 81, 56, 91, 47, 57, 76, 72, 62, 48

Predict the weight of a person with height 170. Visualize the regression graphically.



2. Download the Dataset "water" From Rdataset Link.Find out whether there is a linear relation between attributes"mortality" and"hardness" by plot function.Fit the Data into the

Linear Regression model.Predict the mortality for the hardness=88



MULTIPLE REGRESSION ANALYSIS IN R

Exercise:

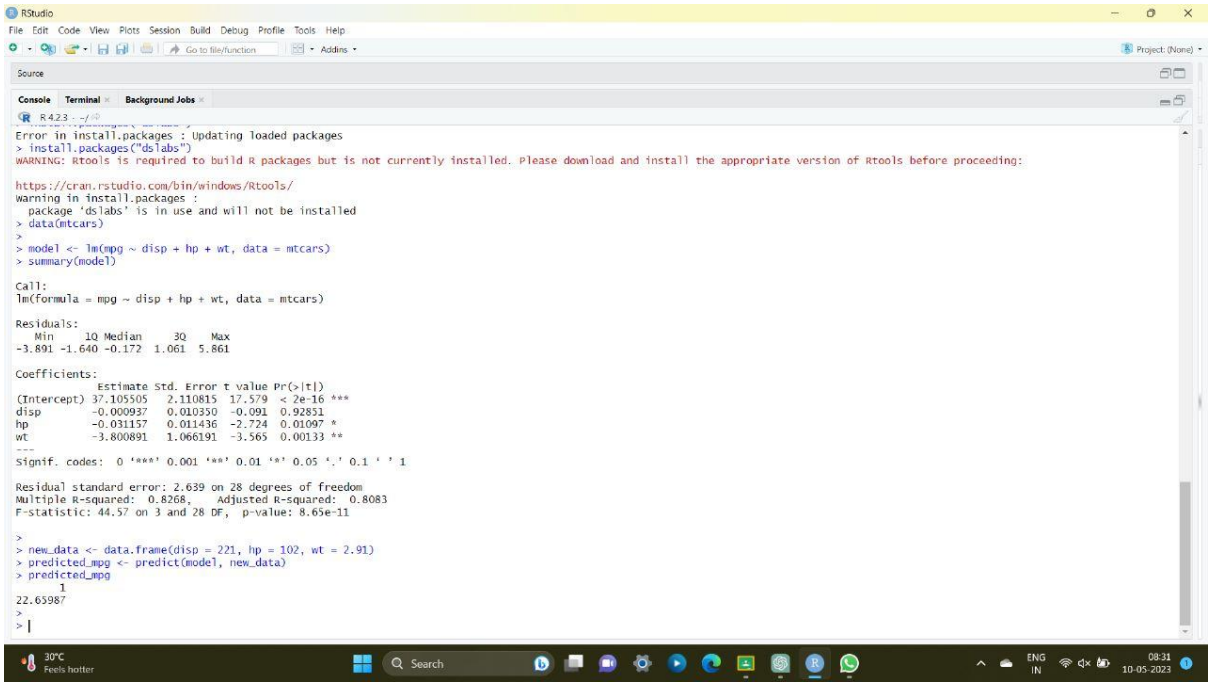
3.Generate a multiple regression model using the built in dataset mtcars.It gives a comparison

between different car models in terms of mileage per gallon (mpg), cylinder

displacement("disp"), horse power("hp"), weight of the car("wt") and some more parameters.

Establish the relationship between "mpg" as a response variable with "disp","hp" and "wt" as

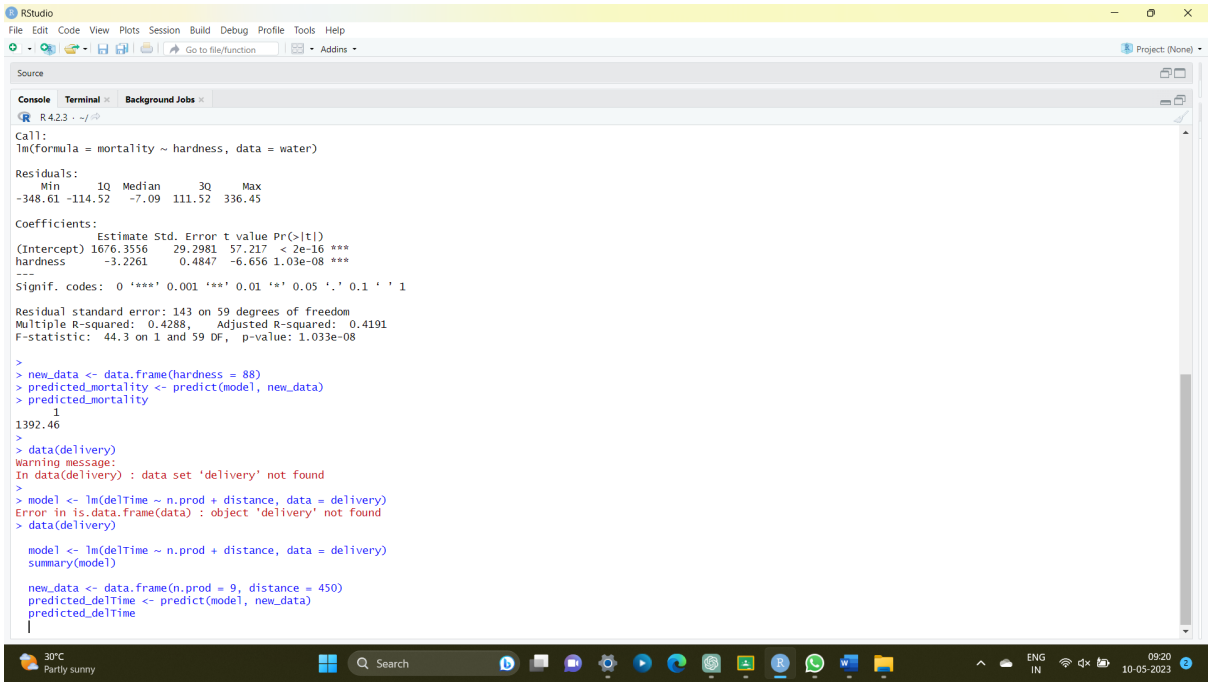
predictor variables. Predict the mileage of the car with dsp=221,hp=102 and wt=2.91.



4. Consider the data set "delivery" available in the R environment. It gives a deliverytime (“delTime”)of production materials(number of productions “n.prod”) with the given distance(“distance”) to reach the destination place.

a)Create the model to establish the relationship between "delTime" as a response variable with "n.prod" and "distance" as predictor variables.

b)Predict the delTime for the given number of production(“n.prod”)=9 and distance(“distance”)=450


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal Background Jobs
R 4.2.3 · ~/
Call:
lm(formula = mortality ~ hardness, data = water)
Residuals:
Min 1Q Median 3Q Max
-348.61 -114.52 -7.09 111.52 336.45
Coefficients:
Estimate Std. Error t value Pr(>|t|)
(Intercept) 1676.3556 29.2981 57.217 < 2e-16 ***
hardness -3.2261 0.4847 -6.656 1.03e-08 ***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 143 on 59 degrees of freedom
Multiple R-squared: 0.4288, Adjusted R-squared: 0.4191
F-statistic: 44.3 on 1 and 59 DF, p-value: 1.033e-08
> new_data <- data.frame(hardness = 88)
> predicted_mortality <- predict(model, new_data)
> predicted_mortality
1
1392.46
> data(delivery)
Warning message:
In data(delivery) : data set 'delivery' not found
> model <- lm(delTime ~ n.prod + distance, data = delivery)
Error in is.data.frame(data) : object 'delivery' not found
> data(delivery)
model <- lm(delTime ~ n.prod + distance, data = delivery)
summary(model)
new_data <- data.frame(n.prod = 9, distance = 450)
predicted_delTime <- predict(model, new_data)
predicted_delTime
30°C
Partly sunny
Search
ENG
IN
09:20
10-05-2023