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ASSIGNMENT 4

Problem statement:

Perform linear regression on the Iris dataset and multiple regression on the Obesity dataset.

1)Linear Regression for Sepal Length v Sepal Width:

```r
# Simple Linear Regression

# Importing the iris
library(datasets)
data("iris")

# Splitting the iris into the Training set and Test set
# install.packages('caTools')
library(caTools)
set.seed(123)
split = sample.split(iris$Petal.Length, SplitRatio = 2/3)
training_set = subset(iris, split == TRUE)
test_set = subset(iris, split == FALSE)

# Feature Scaling
# training_set = scale(training_set)
# test_set = scale(test_set)

# Fitting Simple Linear Regression to the Training set
regressor = lm(formula = Petal.Length ~ Petal.Width,
               data = training_set)

# Predicting the Test set results
y_pred = predict(regressor, newdata = test_set)

# Visualising the Training set results
#install.packages('caTools')
library(ggplot2)
ggplot() +
  geom_point(aes(x = training_set$Petal.Length, y = training_set$Petal.Width),
             colour = 'red') +
  geom_line(aes(x = training_set$Petal.Length, y = predict(regressor, newdata = training_set)),
            colour = 'blue') +
  ggtitle('Petal Length vs Petal Width (Training set)') +
  xlab('Petal Length') +
  ylab('Petal Width')

# Visualising the Test set results
library(ggplot2)
ggplot() +
  geom_point(aes(x = test_set$Petal.Length, y = test_set$Petal.Width),
             colour = 'red') +
  geom_line(aes(x = training_set$Petal.Length, y = predict(regressor, newdata = training_set)),
            colour = 'blue') +
  ggtitle('Petal Length v Petal Width (Test set)') +
  xlab('Petal Length') +
  ylab('Petal Width')
```
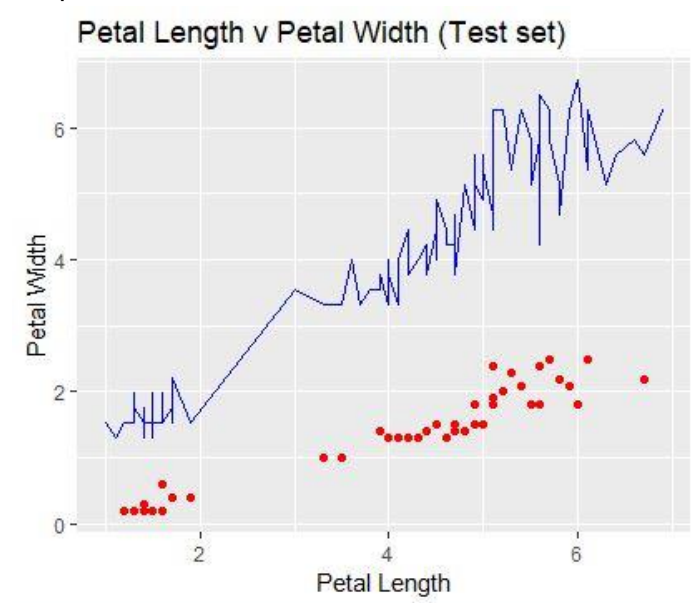
Code in R

Output Plot:

Petal Length v Petal Width (Test set)

2)Multiple Regression for Petal Length v Petal Width :

```r
# Multiple Linear Regression

# Importing the dataset
# Importing the iris
library(datasets)
data("iris")

# Splitting the iris into the Training set and Test set
# install.packages('caTools')
library(caTools)
set.seed(123)
split = sample.split(iris$Petal.Length, SplitRatio = 2/3)
training_set = subset(iris, split == TRUE)
test_set = subset(iris, split == FALSE)


# Feature Scaling
# training_set = scale(training_set)
# test_set = scale(test_set)

# Fitting Multiple Linear Regression to the Training set
regressor = lm(formula = Petal.Length~.,
               data = training_set)

# Predicting the Test set results
y_pred = predict(regressor, newdata = test_set)

# Visualising the Training set results
library(ggplot2)
ggplot() +
  geom_point(aes(x = training_set$Petal.Length, y = training_set$Petal.Width),
             colour = 'red') +
  geom_line(aes(x = training_set$Petal.Length, y = predict(regressor, newdata = training_set)),
            colour = 'blue') +
  ggtitle('Petal Length vs Petal Width (Training set)') +
```

```
  xlab('Petal Length') +
  ylab('Petal Width')

# Visualising the Test set results
library(ggplot2)
ggplot() +
  geom_point(aes(x = test_set$Petal.Length, y = test_set$Petal.Width),
             colour = 'red') +
  geom_line(aes(x = training_set$Petal.Length, y = predict(regressor, newdata = training_set)),
            colour = 'blue') +
  ggtitle('Petal Length v Petal Width (Test set)') +
  xlab('Petal Length') +
  ylab('Petal Width')
```

Output Plot: