Lab2

Joshua Jansen-Montoya

2022-09-27

Problem

We can construct the following function to produce a simple linear regression with our desired pulled off
values as follows. This function produces the linear model coefficients, fitted values, residuals, RSS, and a
plot containing the scatter plot of values, regression line, and our fitted values.

```
library(MASS)
data(phones)
linear.regression <- function(x,y) {
  reg <- lm(y~x)
  coeficients <- summary(reg)$coef[,1]
  print('Coefficients')
  print(coeficients)
  fit1 <- fitted(reg)
  print('fitted values')
  print(head(fit1))
  print('residuals')
  residuals <- residuals(reg)
  print(residuals)
  print('RSS')
  RSS <- deviance(reg)
  print(RSS)
  print("Here are the plots")
  plot(x,y, pch = 17, col = 'blue')
  abline(reg)
  points(fit1, col = 'red')
}
x <- linear.regression(phones$calls, phones$year)
```

```
## [1] "Coefficients"
## (Intercept)            x
##  58.5656141    0.0586975
## [1] "fitted values"
##        1        2        3        4        5        6
## 58.82388 58.84149 58.84149 58.91193 58.95302 58.99411
## [1] "residuals"
##          1          2          3          4          5          6          7
## -8.8238831 -7.8414923 -6.8414923 -5.9119293 -4.9530176 -3.9941059 -3.0410639
##          8          9         10         11         12         13         14
## -2.0821521 -1.1878076 -0.2699841  0.6419696  1.5597931  2.4893561  3.1899989
##         15         16         17         18         19         20         21
## -1.5506167 -0.8441042 -0.9006592 -0.8985168 -1.2485593 -2.0094843  8.9103934
##         22         23         24
```

```
## 11.0256459 11.8495534 12.7321584
## [1] "RSS"
## [1] 809.6895
## [1] "Here are the plots"
```