regresi_linear_berganda.R

user

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```r
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# nomor 1
data1 <- data.frame(penjualan <- c(72,76,78,70,68,80,82,65,62,90),
                    jumlah_iklan <- c(12,11,15,10,11,16,14,8,8,18),
                    jumlah_endorse <- c(5,8,6,5,3,9,12,14,3,10))

model1 <- lm(penjualan ~ jumlah_iklan + jumlah_endorse,data1)
summary(model1)
```

```
##
## Call:
## lm(formula = penjualan ~ jumlah_iklan + jumlah_endorse, data = data1)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.3551 -1.6237 -0.5034  1.7708  4.4144
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     43.0547     3.6105  11.925 6.63e-06 ***
## jumlah_iklan     2.2630     0.2788   8.116 8.31e-05 ***
## jumlah_endorse   0.4548     0.2505   1.816    0.112
## ---
## Signif. codes:
## 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.74 on 7 degrees of freedom
## Multiple R-squared:  0.9199, Adjusted R-squared:  0.897
## F-statistic: 40.21 on 2 and 7 DF,  p-value: 0.0001453
```

```r
# nomor 2
library(readr)
concrete <- read_csv("D:/UNAIR/SEMESTER 2/METSTAT/PRAK METSTAT AFTER UTS/concrete.csv")
```

```
## Rows: 1030 Columns: 9
## -- Column specification --------------------------------
## Delimiter: ","
## dbl (9): cement, slag, ash, water, superplastic, coar...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```r
head(concrete)
```

```
## # A tibble: 6 x 9
##   cement  slag   ash water superplastic coarseagg fineagg
##    <dbl> <dbl> <dbl> <dbl>        <dbl>     <dbl>   <dbl>
## 1   141. 212      0   204.          0        972.    748.
## 2   169.  42.2 124.   158.         10.8     1081.    796.
## 3   250     0    95.7 187.          5.5      957.    861.
## 4   266   114     0   228           0        932     670
## 5   155.  183.    0   193.          9.1     1047.    697.
## 6   255     0     0   192           0        890.    945
## # i 2 more variables: age <dbl>, strength <dbl>
```

```r
model2 <- lm(strength ~ cement + slag + ash + water + superplastic + coarseagg + fineagg + age, data = c
summary(model2)
```

```
##
## Call:
## lm(formula = strength ~ cement + slag + ash + water + superplastic +
##     coarseagg + fineagg + age, data = concrete)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -28.654  -6.302   0.703   6.569  34.450
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -23.331214  26.585504  -0.878 0.380372
## cement         0.119804   0.008489  14.113  < 2e-16 ***
## slag           0.103866   0.010136  10.247  < 2e-16 ***
## ash            0.087934   0.012583   6.988 5.02e-12 ***
## water         -0.149918   0.040177  -3.731 0.000201 ***
## superplastic   0.292225   0.093424   3.128 0.001810 **
## coarseagg      0.018086   0.009392   1.926 0.054425 .
## fineagg        0.020190   0.010702   1.887 0.059491 .
## age            0.114222   0.005427  21.046  < 2e-16 ***
## ---
## Signif. codes:
## 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.4 on 1021 degrees of freedom
## Multiple R-squared:  0.6155, Adjusted R-squared:  0.6125
## F-statistic: 204.3 on 8 and 1021 DF,  p-value: < 2.2e-16
```

```r
# nomor 3
library(tidyverse)
library(datarium)
data("marketing", package = "datarium")
head(marketing, 4)
```

```
##   youtube facebook newspaper sales
## 1  276.12    45.36     83.04 26.52
```

```
## 2   53.40    47.16     54.12 12.48
## 3   20.64    55.08     83.16 11.16
## 4  181.80    49.56     70.20 22.20
```

```r
Y = marketing$sales
X1 = marketing$youtube
X2 = marketing$newspaper
X3 = marketing$facebook

#Building Model
model3 <- lm(Y ~ X1 + X2 + X3, data = marketing)
summary(model3)
```

```
##
## Call:
## lm(formula = Y ~ X1 + X2 + X3, data = marketing)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -10.5932  -1.0690   0.2902   1.4272   3.3951
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  3.526667   0.374290   9.422   <2e-16 ***
## X1           0.045765   0.001395  32.809   <2e-16 ***
## X2          -0.001037   0.005871  -0.177     0.86
## X3           0.188530   0.008611  21.893   <2e-16 ***
## ---
## Signif. codes:
## 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.023 on 196 degrees of freedom
## Multiple R-squared:  0.8972, Adjusted R-squared:  0.8956
## F-statistic: 570.3 on 3 and 196 DF,  p-value: < 2.2e-16
```

```r
#Delete variabel newspaper
model3b <- lm(Y ~ X1 + X3, data = marketing)
summary(model3b)
```

```
##
## Call:
## lm(formula = Y ~ X1 + X3, data = marketing)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -10.5572  -1.0502   0.2906   1.4049   3.3994
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  3.50532    0.35339   9.919   <2e-16 ***
## X1           0.04575    0.00139  32.909   <2e-16 ***
## X3           0.18799    0.00804  23.382   <2e-16 ***
## ---
```

```
## Signif. codes:
## 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.018 on 197 degrees of freedom
## Multiple R-squared:  0.8972, Adjusted R-squared:  0.8962
## F-statistic: 859.6 on 2 and 197 DF,  p-value: < 2.2e-16
```

```r
# nomor 4
data4 <- data.frame(y <- c(1.45, 1.93, 0.81, 0.61, 1.55, 0.95, 0.45, 1.14, 0.74, 0.98, 1.41, 0.81, 0.89
                    x1 <- c(0.58, 0.86, 0.29, 0.2, 0.56, 0.28, 0.08, 0.41, 0.22, 0.35, 0.59, 0.22, 0.26
                    x2 <- c(0.71, 0.13, 0.79, 0.2, 0.56, 0.92, 0.01, 0.6, 0.7, 0.73, 0.13, 0.96, 0.27,

model4 <- lm(y ~ x1 + x2, data = data4)
summary(model4)
```

```
##
## Call:
## lm(formula = y ~ x1 + x2, data = data4)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.15493 -0.07801 -0.02004  0.04999  0.30112
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.433547   0.065983   6.571 1.31e-06 ***
## x1          1.652993   0.095245  17.355 2.53e-14 ***
## x2          0.003945   0.074854   0.053    0.958
## ---
## Signif. codes:
## 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1127 on 22 degrees of freedom
## Multiple R-squared:  0.9399, Adjusted R-squared:  0.9344
## F-statistic:   172 on 2 and 22 DF,  p-value: 3.699e-14
```