

Linear Regression

Zeynep Büşra KILIÇ

20200205005

Pseudocode for read() function

- 1) Create function read
- 2) Take 2D coordinates array and *count variable as arguments
- 3) Create variable i and initialize it to 0.
- 4) Try to open data file
 - If it cannot be opened, give an error and exit program with code 1.
 - If not, continue.
- 5) Check if the end of file is reached
 - If reached, go to line 10.
 - If not, continue.
- 6) Assign the value that is in the i^{th} row and 1st column in the file to the $[i][0]^{\text{th}}$ element of the coordinates.
- 7) Assign the value that is in the i^{th} row and 2nd column in the file to the $[i][1]^{\text{st}}$ element of the coordinates.
- 8) Increase i by 1.
- 9) Go to line 5.
- 10) Check if file is empty.
 - If it is empty, give an error and exit program with code 2.
 - If not, continue.
- 11) Assign i to *count.
- 12) Close data file.

Pseudocode for calc() function

- 1) Create function calc.
- 2) Take count, *slope, *y_intercept and coordinates array as arguments.
- 3) Create square_sum, xy_sum, x_sum, y_sum and i variables and initialize them to 0.
- 4) Check if i is smaller than count.
 - If not, go to line 11.
 - If it is smaller, continue.
- 5) Add the square of the $[i][0]^{\text{th}}$ element of the coordinates and square_sum, then assign that value to square_sum.
- 6) Multiply $[i][0]^{\text{th}}$ and $[i][1]^{\text{th}}$ elements, then add the xy_sum to the result and then assign that value to xy_sum.
- 7) Add the $[i][0]^{\text{th}}$ element and x_sum together and assign it to x_sum.
- 8) Add $[i][1]^{\text{th}}$ element and y_sum together and assign it to y_sum.
- 9) Increase i by 1.
- 10) Go to line 4.
- 11) Make necessary calculations for slope and assign it to *slope.
- 12) Make necessary calculations for y intercept and assign it to *y_intercept.

Pseudocode for write() function

- 1) Create write function
- 2) Take slope and y_intercept variables as arguments.
- 3) Write slope and y_intercept to screen.

Pseudocode for main() function

- 1) Create main function
- 2) Create 2D coordinates array, count, slope and y_intercept variables.
- 3) Send &count and coordinates to read() function.
- 4) Send count, &slope, &y_intercept and coordinates to calc() function.
- 5) Send slope and y_intercept to write() function.
- 6) Return 0.

Graph of linear regression for given dataset

