Use an html file to prepare at least 20 input fields for getting an array of numbers from users. You may also need a button for the users to start your calculation and to show results to users. Please read the following instructions for our programming.

Given an by array of short integers with values from 0 to 255 as image data. We often use the linear least square fitting to obtain a plane (). If the original data value is , we use the plane to normalize the original data as .

Let’s simplify the problem and start to solve it step by step. In the beginning, you need to find the line between two data points. For example, you get an array of data of 100 and 200. You can find out a fitting line of to fit the data of and you obtain . You can normalize your data by using .

As a second step, you need to find the best fitting line to an array of data. In this case, you have more than two points. The best fitting will give you . Here you have two unknown parameters so you need one more equation to solve it. The additional equation is . You see that it is just a simple multiplication of on the first equation. Now you can obtain the two parameters by using the two equations. After you get the parameters, you can normalize your original data by .

As a third step, you can use parabola curve functions to fit the data. The best fitting will give you . To find the solutions of the parameters, you need to have two more equations: and . Please find the three parameters and normalize the data by:

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**Input:** You need to read an array () of unsigned short integers (0-255) from the input fields.

**Output:** You need to check if is larger than two or not. Use the innerHTML property to show results. The output gives:

1. For all values of you have to show linear least square fitting. Please show and the normalized data of .
2. If , you have to additionally show the results of parabolic fitting. Please show with the normalized data .

Please present the parameters in numbers with 5 digits. Remember to transform the normalized data back to unsigned integers in the range from 0 to 255.

**Sample Input**

Example1:

100 200

Example2:

20 32 38 45 70 75 79 93 99

**Sample Output**

Example1:

a = 100.00, b = 100.00, normalized data: 128 128

Example2:

a = 20.4889, b = 10.1833, normalized data: 127 129 125 121 136 131 125 129 125

a = 18.7818, b = 11.6465, c = -0.1829, normalized data: 129 129 124 120 135 130 124 129 126