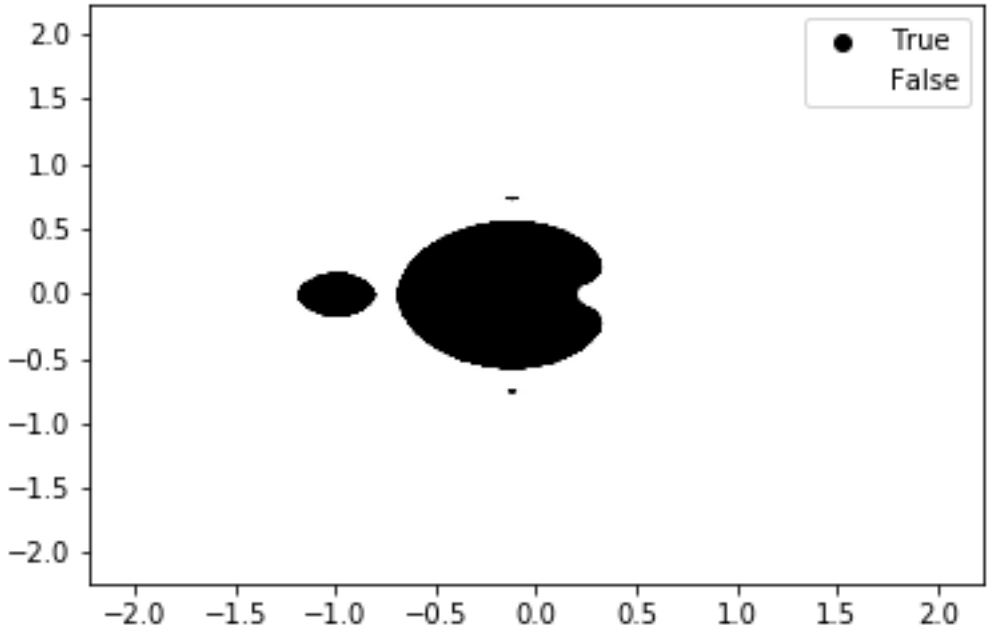
HM1-Anupam

Mandelbrot Set

Mandelbrot Set is basically a fractal, a mathematical structure that repeats itself over and over within itself.

In this exercise a simple procedure involving complex numbers was used to find the coordinates inside a square of size 4x4 units $(-2 < x < 2\ ;\ -2 < y < 2)$ that were part of Mandelbrot Set.

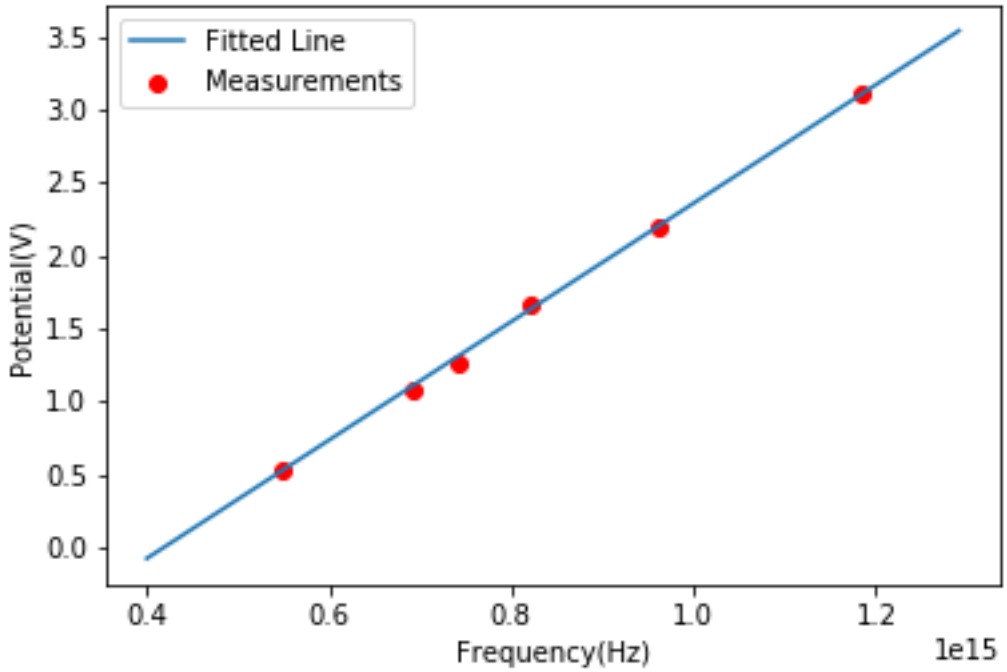
The image created is shown below.(2000x2000 grid)



The image formed is that of a fractal. When one zooms in on the image, the subsequent image resembles our initial image.

Millikan Experiment

The graph obtained using the data provided is shown below:



The red dots represent the experimental measurements obtained for photo-electric effect.

Using the method given in the book excerpt, a straight line fit was obtained shown as the blue line.

The slope of this line by theory is equal to the term:
$(\frac{h}{e})$; where h is planck constant and e is charge of electron i.e 1.602×10^{-19}

As per my fit h $(slope * e)$ equals $6.501\,231\,02 \times 10^{-34}$ units.

Whereas actual value of h is $6.626\,070\,04 \times 10^{-34}$ units.

An error of only 1.88405820839%.