Project on using gradient descent algorithm to do linear regression

Note: jyputer notebook is required to run this file. You may view any online tutorial on how to install and run python on jupyter notebook.

The attached file Gradient_descent.ipynb contains a gradient descent code implementation for the following example feature values X, with corresponding Y values (labels):
X = [1,1,2,3,4,5,6,7,8,9,10,11]
Y = [1,2,3,1,4,5,6,4,7,10,15,9]

Part 1: The algorithm implements a linear hypothesis h(x) = theta0 + theta1*x
Remember that theta0 represents the vertical axis intercept while theta1 represents the slope of the hypothesis.
Make sure you understand the implementation of the algorithm given in the file Gradient_descent.ipynb.

Part 2 (3 points): What are the values of the model parameters (i.e. theta0 and theta1) after the algorithm converges.

Part 3 (3 points): Change the code given such that the regressed lines are plotted in each iteration. This way you can visualize the convergence steps of the algorithm.

Part 4 (3 points): What is the predicted value of y if x was 15?

Part 5 (3 points): Use the real training data set found in file chirps.csv to find a regressed linear model between rate of chirps in a minute and the temp (given in Fahrenheit). Find the values of the model parameters. (Note: you will have to import pandas package and replace x_points and y_points in the given implementation with the lists you will read, using pandas, from chirps.csv).

Part 6 (3 points): Use the real training data set found in file realestatetransactions.csv to find a regressed linear model to predict the price of a property based on its area (given in square foot) and the number of the bedrooms within the property. Find the values of the model parameters. Find the expected value of the price of the house if the number of bedrooms was 4 and the area was 2000 sq. ft. (Note: this part requires more changes in the code. Remember that the model to be regressed is a plane. Also, you have an theta2 that you have to count for).