CIS 41B – Lab 0: Review CIS 41A concepts

Write a program that works with the data of cities of Santa Clara County.

Input file  
The input file is scc.csv ([source](https://santaclaralafco.org/cities-and-special-districts/cities-information)). Each line of the file is data for 1 city in Santa Clara County.

Each line is in the format: city name, population, area (in sq mile)

Lab requirement

1. Start with the file lab0.py, which already has code to define a class named Cities, and code to create a Cities object and work with it.   
   The existing code in main should work as is, you should not have to change it. Your goal in this lab is to fill in the code for the Cities class such that the existing code in main can run successfully.
2. Add to the Cities class such that it will read in data from the input file and store data in the Cities class.  
   - The file should be read in one time only (don’t keep reading the file).  
   - Use exception handling to print an error message and end the program if the file can’t be opened   
    successfully.
3. Write the lookup method such that it will print the city name, population, and area if the city is found, and print an error message if the city is not found. Population should be printed with comma at the thousands places by using the formatting: f’{number:,d}’  
   See sample output.
4. Write the sortName method such that it will print all the city names, sorted in alphabetical order, one city name per line.  
   See sample output.

1. Write the sortPopulation method such that it will print all the city names and corresponding population, sorted in reverse order by population. Your code should not use lambda.  
   The population should be printed with comma at the thousands places. The city name and population should be printed as 2 columns by using Python formatting.  
   See sample output.
2. Write the densityHiLo method such that it will print the city name and population density of the city with highest and lowest population density. The population density is the result of population / square mile.   
   Print the 2 cities with text explanation to label the lowest and highest density.  
   See sample output.

Expected output when the code in main runs:

Enter city name: gilry

Gilry is not in Santa Clara

Enter city name: gilroy

Gilroy: 55,615, 17 sq mi

Enter city name: lOS altos HILLs

Los Altos Hills: 8,568, 9 sq mi

Campbell

Cupertino

Gilroy

Los Altos

Los Altos Hills

Los Gatos

Milpitas

Monte Sereno

Morgan Hill

Mountain View

Palo Alto

San Jose

Santa Clara

Saratoga

Sunnyvale

San Jose 1,051,316

Sunnyvale 153,389

Santa Clara 129,604

Mountain View 81,527

Milpitas 74,865

Palo Alto 69,712

Cupertino 60,091

Gilroy 55,615

Morgan Hill 44,513

Campbell 42,696

Saratoga 31,435

Los Altos 31,361

Los Gatos 30,601

Los Altos Hills 8,568

Monte Sereno 3,630

Lowest: Los Altos Hills at 952.00 persons/sq mi

Highest: Santa Clara at 7200.22 persons/sq mi