Next, we'll want to parse the latitude and longitude coordinates for each school. This will enable us to map the schools and uncover any geographic patterns in the data. The coordinates are currently in the text field Location 1 in the hs\_directory data set.

Let's take a look at the first few rows:



0    883 Classon Avenue\nBrooklyn, NY 11225\n(40.67...

1    1110 Boston Road\nBronx, NY 10456\n(40.8276026...

2    1501 Jerome Avenue\nBronx, NY 10452\n(40.84241...

3    411 Pearl Street\nNew York, NY 10038\n(40.7106...

4    160-20 Goethals Avenue\nJamaica, NY 11432\n(40...

As you can see, this field contains a lot of information we don't need. We want to extract the coordinates, which are in parentheses at the end of the field. Here's an example:



1110 Boston Road\nBronx, NY 10456\n(40.8276026690005, -73.90447525699966)

We want to extract the latitude, 40.8276026690005, and the longitude, -73.90447525699966. Taken together, latitude and longitude make up a pair of coordinates that allows us to pinpoint any location on Earth.

We can do the extraction with a regular expression. The following expression will pull out everything inside the parentheses:



import re

re.findall("\(.+\)", "1110 Boston Road\nBronx, NY 10456\n(40.8276026690005, -73.90447525699966)")

This command will return (40.8276026690005, -73.90447525699966). We'll need to process this result further using the string methods [split()](https://docs.python.org/3/library/stdtypes.html#str.split) and [replace()](https://docs.python.org/3/library/stdtypes.html#str.replace) methods to extract each coordinate.

Instructions

* Write a function that:
  + Takes in a string
  + Uses the regular expression above to extract the coordinates
  + Uses string manipulation functions to pull out the latitude
  + Returns the latitude
* Use the [Series.apply()](https://pandas.pydata.org/pandas-docs/stable/generated/pandas.Series.apply.html" \t "_blank) method to apply the function across the Location 1 column of hs\_directory. Assign the result to the lat column of hs\_directory.
* Display the first few rows of hs\_directory to verify the results.

import re

def find\_lat(loc):

coords = re.findall("\(.+\)", "1110 Boston Road\nBronx, NY 10456\n(40.8276026690005, -73.90447525699966)")

lat = coords[0].split(",")[0].replace("(", "")

return lat

data["hs\_directory"]["lat"] = data["hs\_directory"]["Location 1"].apply(find\_lat)

print(data["hs\_directory"].head())