

Perform at least 5 data transformation and/or cleansing steps to your API data. Examples:  
Replace Headers Format data into a more readable format Identify outliers and bad data Find  
duplicates Fix casing or inconsistent values Conduct Fuzzy Matching Add data

earthquakes (1).csv

```
In [4]: #replace headers

#load pd
import pandas as pd

#earthquakes (1).csv
df = pd.read_csv('earthquakes (1).csv')

#new headers
new_headers = ['Mag', 'MagType', 'Time', 'Place', 'Tsunami', 'Parsed_Place']
df.columns = new_headers
df.to_csv('earthquakes (2).csv', index=False)
```

```
In [5]: #add data

import csv

#add daa
new_data = ['Earthquakes', 'Severity', 1]

# use earthquakes (2).csv, not used for actual data
csv_file = 'earthquakes (2).csv'

#append
with open(csv_file, mode='a', newline='') as file:
    #csv_writer
    csv_writer = csv.writer(file)

    #add new data
    csv_writer.writerow(new_data)

print('new data added.')
#it worked, populates on last line
```

new data added.

```
In [6]: #find duplicates

import csv

# use earthquakes (2).csv, not used for actual data
csv_file = 'earthquakes (2).csv'
column_to_check = 'Mag'

#unique values
unique_values = set()

#duplicate values list
duplicate_values = []
```

```
#open and read csv
with open(csv_file, mode='r') as file:
    csv_reader = csv.DictReader(file)
    for row in csv_reader:
        value = row[column_to_check]
        if value in unique_values:
            duplicate_values.append(value)
        else:
            unique_values.add(value)

print('duplicate values: ', column_to_check, 'column:', duplicate_values)
```

duplicate values: Mag column: ['0.5', '2.0', '0.92', '1.7', '1.7', '1.9', '-0.1', '2.2', '0.2', '2.1', '0.86', '2.0', '4.6', '1.14', '0.7', '1.7', '0.5', '0.1', '1.7', '1.1', '1.4', '1.4', '1.8', '2.0', '4.7', '4.6', '1.9', '0.9', '1.3', '1.8', '1.6', '1.44', '2.2', '1.1', '1.9', '0.9', '0.1', '2.3', '2.16', '2.01', '0.83', '1.6', '2.6', '1', '2.2', '0.62', '1.9', '2.0', '0.72', '1.7', '1.5', '1.57', '2.2', '1.4', '1.83', '2.1', '0.73', '1.6', '0.61', '0.1', '1.38', '2.2', '1.1', '0.75', '1.4', '1.6', '2.3', '1.2', '0.35', '1.3', '0.6', '1.7', '1.1', '4.5', '0.5', '2.1', '0.67', '1.9', '2.16', '1.9', '2.3', '0.7', '0.4', '3.0', '1.9', '-0.1', '0.9', '-0.1', '2.4', '1.9', '1.9', '0.5', '2.24', '1.8', '1.6', '2.4', '2.0', '1.4', '1.6', '0.92', '1.8', '2.5', '5.2', '1.5', '2.1', '1.6', '1.9', '2.4', '1.14', '0.87', '0.67', '0.7', '2.9', '2.3', '1.1', '4.9', '1.9', '2.0', '1.9', '1.4', '1.6', '1.9', '0.7', '1.6', '2.8', '5.7', '0.87', '1.7', '0.5', '0.1', '2.9', '1.9', '3.0', '1.8', '1.2', 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'1.3', '1', '0.09', '5.8', '1.3', '0.74', '0.71', '0.13', '1.0', '0.32', '1.6', '1.6', '4.9', '1.3', '1.6', '2.0', '0.16', '0.24', '0.43', '1.6', '0.8', '1.03', '1.27', '1.6', '0.6', '2.88', '0.51', '0.8', '1.03', '1.1', '0.4', '1.32', '0.73', '5.2', '5.2', '3.3', '0.03', '1.5', '0.18', '0.54', '0.0', '0.85', '1.94', '0.86', '2.9', '0.77', '1.1', '1.2', '0.2', '0.2', '0.86', '3.07', '1.16', '0.3', '1.7', '0.91', '4.6', '0.0', '0.4', '3', '1.23', '-0.11', '0.52', '0.9', '0.3', '0.69', '0.28', '0.9', '4.7', '4.7', '6.0', '4.7', '5.1', '0.77', '1.0', '0.53', '1.4', '1.6', '0.41', '0.7', '2.5', '0.73', '1.0', '1.1', '0.02', '1.01', '1.6', '2.3', '1.02', '0.36', '1.47', '0.66', '1.3', '1.0', '0.0', '1.1', '1.2', '1.0', '0.9', '1.1', '-0.69', '1.6', '2.84', '2.0', '0.4', '1.4', '2.96', '1.14', '1.9', '0.93', '0.11', '0.89', '0.8', '4.5', '4.4', '0.6', '6', '2.7', '1.4', '1.6', '0.46', '-0.02', '1.26', '1.05', '1.8', '1.5', '0.2', '-0.3', '2', '1.1', '0.64', '3.36', '2.34', '0.9', '0.88', '2.57', '3.0', '1.4', '0.51', '1.5', '0.5', '0.11', '1.2', '4.4', '1.5', '1.5', '0.62', '0.67', '2.3', '1.1', '0.25',

```
'0.85', '1.0', '1.3', '0.44', '0.7', '0.22', '2.01', '4.2', '1.1', '0.47', '1.83',  
'1.0', '1.42', '1.3', '5.1', '-0.27', '2.44', '2.1', '4.8', '1.1', '3.27', '2.5', '1.  
5', '2.0', '2.74', '3.08', '2.64', '1.1', '4.4', '2.81', '4.3', '0.4', '0.6', '1.06',  
'0.51', '1.82', '0.62', '1.0', '2.4', '1.1', '0.66']
```

In [11]: *#remove duplicates*

```
import csv  
  
#earthquakes (2).csv  
input_csv_file = 'earthquakes (2).csv'  
output_csv_file = 'earthquakes (2).csv'  
  
#seen_rows  
seen_rows = set()  
  
#open files  
with open(input_csv_file, mode='r') as infile, open(output_csv_file, mode='w', newline='') as outfile:  
    csv_reader = csv.reader(infile)  
    csv_writer = csv.writer(outfile)  
  
    #read first row  
    header = next(csv_reader, None)  
    if header:  
        csv_writer.writerow(header)  
  
    # iterate rows  
    for row in csv_reader:  
        #change row to a tuple to make it hashable  
        row_tuple = tuple(row)  
  
        #check if the row is not seen already  
        if row_tuple not in seen_rows:  
            seen_rows.add(row_tuple)  
            csv_writer.writerow(row)  
  
print('duplicates removed. unique rows saved to', output_csv_file)
```

Duplicates removed. Unique rows saved to earthquakes (2).csv

In [ ]: