Hurricane Analysis

October 16, 2024

1 Hurricane Analysis

Overview This project is slightly different than others you have encountered thus far. Instead of a step-by-step tutorial, this project contains a series of open-ended requirements which describe the project you'll be building. There are many possible ways to correctly fulfill all of these requirements, and you should expect to use the internet, Codecademy, and other resources when you encounter a problem that you cannot easily solve.

Project Goals You will work to write several functions that organize and manipulate data about Category 5 Hurricanes, the strongest hurricanes as rated by their wind speed. Each one of these functions will use a number of parameters, conditionals, lists, dictionaries, string manipulation, and return statements.

Prerequisites In order to complete this project, you should have completed the Loops and Dictionaries sections of the Learn Python 3 Course. This content is also covered in the Data Scientist Career Path.

1.1 Project Requirements

1. Hurricanes, also known as cyclones or typhoons, are one of the most powerful forces of nature on Earth. Due to climate change caused by human activity, the number and intensity of hurricanes has risen, calling for better preparation by the many communities that are devastated by them. As a concerned environmentalist, you want to look at data about the most powerful hurricanes that have occured.

   Begin by looking at the `damages` list. The list contains strings representing the total cost in USD(`$`) caused by `34` category 5 hurricanes (wind speeds $\geq$ 157 mph (252 km/h)) in the Atlantic region. For some of the hurricanes, damage data was not recorded (`"Damages not recorded"`), while the rest are written in the format `"Prefix-B/M"`, where `B` stands for billions (`1000000000`) and `M` stands for millions (`1000000`).

   Write a function that returns a new list of updated damages where the recorded data is converted to float values and the missing data is retained as `"Damages not recorded"`.

   Test your function with the data stored in `damages`.

[2]:
```
# damages (USD($)) of hurricanes
damages = ['Damages not recorded', '100M', 'Damages not recorded', '40M',
           '27.9M', '5M', 'Damages not recorded', '306M', '2M', '65.8M',
           '326M', '60.3M', '208M', '1.42B', '25.4M', 'Damages not recorded',
```

```
          '1.54B', '1.24B', '7.1B', '10B', '26.5B', '6.2B', '5.37B', '23.3B',
          '1.01B', '125B', '12B', '29.4B', '1.76B', '720M', '15.1B', '64.8B',
          '91.6B', '25.1B']

# 1
# Update Recorded Damages
conversion = {"M": 1000000,
              "B": 1000000000}

# test function by updating damages
converted_damages = []

converted_damages = []
for num in damages:
    if num == 'Damages not recorded':
        converted_damages.append('Damages not recorded')
    else:
        factor = conversion[num[-1]]
        converted_damages.append(float(num[:-1]) * factor)

print(converted_damages)
```

```
['Damages not recorded', 100000000.0, 'Damages not recorded', 40000000.0,
27900000.0, 5000000.0, 'Damages not recorded', 306000000.0, 2000000.0,
65800000.0, 326000000.0, 60300000.0, 208000000.0, 1420000000.0, 25400000.0,
'Damages not recorded', 1540000000.0, 1240000000.0, 7100000000.0, 10000000000.0,
26500000000.0, 6200000000.0, 5370000000.0, 23300000000.0, 1010000000.0,
125000000000.0, 12000000000.0, 29400000000.0, 1760000000.0, 720000000.0,
15100000000.0, 64800000000.0, 91600000000.0, 25100000000.0]
```

2. Additional data collected on the `34` strongest Atlantic hurricanes are provided in a series of lists. The data includes:
   - `names`: names of the hurricanes
   - `months`: months in which the hurricanes occurred
   - `years`: years in which the hurricanes occurred
   - `max_sustained_winds`: maximum sustained winds (miles per hour) of the hurricanes
   - `areas_affected`: list of different areas affected by each of the hurricanes
   - `deaths`: total number of deaths caused by each of the hurricanes

   The data is organized such that the data at each index, from `0` to `33`, corresponds to the same hurricane.
   For example, `names[0]` yields the "Cuba I" hurricane, which occurred in `months[0]` (October) `years[0]` (1924).
   Write a function that constructs a dictionary made out of the lists, where the keys of the dictionary are the names of the hurricanes, and the values are dictionaries themselves containing a key for each piece of data (`Name`, `Month`, `Year`, `Max Sustained Wind`, `Areas Affected`, `Damage`, `Death`) about the hurricane.
   Thus the key `"Cuba I"` would have the value: `{'Name': 'Cuba I', 'Month': 'October', 'Year': 1924, 'Max Sustained Wind': 165, 'Areas Affected':`

['Central America', 'Mexico', 'Cuba', 'Florida', 'The Bahamas'], 'Damage': 'Damages not recorded', 'Deaths': 90}.

Test your function on the lists of data provided.

[4]:
```
# names of hurricanes
names = ['Cuba I', 'San Felipe II Okeechobee', 'Bahamas', 'Cuba II',␣
 ↪'CubaBrownsville', 'Tampico', 'Labor Day', 'New England', 'Carol', 'Janet',␣
 ↪'Carla', 'Hattie', 'Beulah', 'Camille', 'Edith', 'Anita', 'David', 'Allen',␣
 ↪'Gilbert', 'Hugo', 'Andrew', 'Mitch', 'Isabel', 'Ivan', 'Emily', 'Katrina',␣
 ↪'Rita', 'Wilma', 'Dean', 'Felix', 'Matthew', 'Irma', 'Maria', 'Michael']

# months of hurricanes
months = ['October', 'September', 'September', 'November', 'August',␣
 ↪'September', 'September', 'September', 'September', 'September',␣
 ↪'September', 'October', 'September', 'August', 'September', 'September',␣
 ↪'August', 'August', 'September', 'September', 'August', 'October',␣
 ↪'September', 'September', 'July', 'August', 'September', 'October',␣
 ↪'August', 'September', 'October', 'September', 'September', 'October']

# years of hurricanes
years = [1924, 1928, 1932, 1932, 1933, 1933, 1935, 1938, 1953, 1955, 1961,␣
 ↪1961, 1967, 1969, 1971, 1977, 1979, 1980, 1988, 1989, 1992, 1998, 2003,␣
 ↪2004, 2005, 2005, 2005, 2005, 2007, 2007, 2016, 2017, 2017, 2018]

# maximum sustained winds (mph) of hurricanes
max_sustained_winds = [165, 160, 160, 175, 160, 160, 185, 160, 160, 175, 175,␣
 ↪160, 160, 175, 160, 175, 175, 190, 185, 160, 175, 180, 165, 165, 160, 175,␣
 ↪180, 185, 175, 175, 165, 180, 175, 160]

# areas affected by each hurricane
```

```
areas_affected = [['Central America', 'Mexico', 'Cuba', 'Florida', 'The␣
 ↪Bahamas'], ['Lesser Antilles', 'The Bahamas', 'United States East Coast',␣
 ↪'Atlantic Canada'], ['The Bahamas', 'Northeastern United States'], ['Lesser␣
 ↪Antilles', 'Jamaica', 'Cayman Islands', 'Cuba', 'The Bahamas', 'Bermuda'],␣
 ↪['The Bahamas', 'Cuba', 'Florida', 'Texas', 'Tamaulipas'], ['Jamaica',␣
 ↪'Yucatn Peninsula'], ['The Bahamas', 'Florida', 'Georgia', 'The Carolinas',␣
 ↪'Virginia'], ['Southeastern United States', 'Northeastern United States',␣
 ↪'Southwestern Quebec'], ['Bermuda', 'New England', 'Atlantic Canada'],␣
 ↪['Lesser Antilles', 'Central America'], ['Texas', 'Louisiana', 'Midwestern␣
 ↪United States'], ['Central America'], ['The Caribbean', 'Mexico', 'Texas'],␣
 ↪['Cuba', 'United States Gulf Coast'], ['The Caribbean', 'Central America',␣
 ↪'Mexico', 'United States Gulf Coast'], ['Mexico'], ['The Caribbean', 'United␣
 ↪States East coast'], ['The Caribbean', 'Yucatn Peninsula', 'Mexico', 'South␣
 ↪Texas'], ['Jamaica', 'Venezuela', 'Central America', 'Hispaniola',␣
 ↪'Mexico'], ['The Caribbean', 'United States East Coast'], ['The Bahamas',␣
 ↪'Florida', 'United States Gulf Coast'], ['Central America', 'Yucatn␣
 ↪Peninsula', 'South Florida'], ['Greater Antilles', 'Bahamas', 'Eastern␣
 ↪United States', 'Ontario'], ['The Caribbean', 'Venezuela', 'United States␣
 ↪Gulf Coast'], ['Windward Islands', 'Jamaica', 'Mexico', 'Texas'],␣
 ↪['Bahamas', 'United States Gulf Coast'], ['Cuba', 'United States Gulf␣
 ↪Coast'], ['Greater Antilles', 'Central America', 'Florida'], ['The␣
 ↪Caribbean', 'Central America'], ['Nicaragua', 'Honduras'], ['Antilles',␣
 ↪'Venezuela', 'Colombia', 'United States East Coast', 'Atlantic Canada'],␣
 ↪['Cape Verde', 'The Caribbean', 'British Virgin Islands', 'U.S. Virgin␣
 ↪Islands', 'Cuba', 'Florida'], ['Lesser Antilles', 'Virgin Islands', 'Puerto␣
 ↪Rico', 'Dominican Republic', 'Turks and Caicos Islands'], ['Central␣
 ↪America', 'United States Gulf Coast (especially Florida Panhandle)']]

# damages (USD($)) of hurricanes
damages = ['Damages not recorded', '100M', 'Damages not recorded', '40M', '27.
 ↪9M', '5M', 'Damages not recorded', '306M', '2M', '65.8M', '326M', '60.3M',␣
 ↪'208M', '1.42B', '25.4M', 'Damages not recorded', '1.54B', '1.24B', '7.1B',␣
 ↪'10B', '26.5B', '6.2B', '5.37B', '23.3B', '1.01B', '125B', '12B', '29.4B',␣
 ↪'1.76B', '720M', '15.1B', '64.8B', '91.6B', '25.1B']

# deaths for each hurricane
deaths =␣
 ↪[90,4000,16,3103,179,184,408,682,5,1023,43,319,688,259,37,11,2068,269,318,107,65,19325,51,1

# 2
# Create and view the hurricanes dictionary
from pprint import pprint
combined_dict = {
    name: {
        'Month': month,
        'Year': year,
        'Maximum Sustained Wind': wind,
```

```
        'Areas Affected': areas,
        'Damage': damage,
        'Deaths': death
    }
    for name, month, year, wind, areas, damage, death in zip(names, months,␣
 ↪years, max_sustained_winds, areas_affected, damages, deaths)
}
pprint(combined_dict)
```

```
{'Allen': {'Areas Affected': ['The Caribbean',
                              'Yucatn Peninsula',
                              'Mexico',
                              'South Texas'],
           'Damage': '1.24B',
           'Deaths': 269,
           'Maximum Sustained Wind': 190,
           'Month': 'August',
           'Year': 1980},
 'Andrew': {'Areas Affected': ['The Bahamas',
                               'Florida',
                               'United States Gulf Coast'],
            'Damage': '26.5B',
            'Deaths': 65,
            'Maximum Sustained Wind': 175,
            'Month': 'August',
            'Year': 1992},
 'Anita': {'Areas Affected': ['Mexico'],
           'Damage': 'Damages not recorded',
           'Deaths': 11,
           'Maximum Sustained Wind': 175,
           'Month': 'September',
           'Year': 1977},
 'Bahamas': {'Areas Affected': ['The Bahamas', 'Northeastern United States'],
             'Damage': 'Damages not recorded',
             'Deaths': 16,
             'Maximum Sustained Wind': 160,
             'Month': 'September',
             'Year': 1932},
 'Beulah': {'Areas Affected': ['The Caribbean', 'Mexico', 'Texas'],
            'Damage': '208M',
            'Deaths': 688,
            'Maximum Sustained Wind': 160,
            'Month': 'September',
            'Year': 1967},
 'Camille': {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
             'Damage': '1.42B',
             'Deaths': 259,
```

```
            'Maximum Sustained Wind': 175,
            'Month': 'August',
            'Year': 1969},
'Carla': {'Areas Affected': ['Texas', 'Louisiana', 'Midwestern United States'],
          'Damage': '326M',
          'Deaths': 43,
          'Maximum Sustained Wind': 175,
          'Month': 'September',
          'Year': 1961},
'Carol': {'Areas Affected': ['Bermuda', 'New England', 'Atlantic Canada'],
          'Damage': '2M',
          'Deaths': 5,
          'Maximum Sustained Wind': 160,
          'Month': 'September',
          'Year': 1953},
'Cuba I': {'Areas Affected': ['Central America',
                              'Mexico',
                              'Cuba',
                              'Florida',
                              'The Bahamas'],
           'Damage': 'Damages not recorded',
           'Deaths': 90,
           'Maximum Sustained Wind': 165,
           'Month': 'October',
           'Year': 1924},
'Cuba II': {'Areas Affected': ['Lesser Antilles',
                               'Jamaica',
                               'Cayman Islands',
                               'Cuba',
                               'The Bahamas',
                               'Bermuda'],
            'Damage': '40M',
            'Deaths': 3103,
            'Maximum Sustained Wind': 175,
            'Month': 'November',
            'Year': 1932},
'CubaBrownsville': {'Areas Affected': ['The Bahamas',
                                       'Cuba',
                                       'Florida',
                                       'Texas',
                                       'Tamaulipas'],
                    'Damage': '27.9M',
                    'Deaths': 179,
                    'Maximum Sustained Wind': 160,
                    'Month': 'August',
                    'Year': 1933},
'David': {'Areas Affected': ['The Caribbean', 'United States East coast'],
          'Damage': '1.54B',
```

```
          'Deaths': 2068,
          'Maximum Sustained Wind': 175,
          'Month': 'August',
          'Year': 1979},
 'Dean': {'Areas Affected': ['The Caribbean', 'Central America'],
          'Damage': '1.76B',
          'Deaths': 45,
          'Maximum Sustained Wind': 175,
          'Month': 'August',
          'Year': 2007},
 'Edith': {'Areas Affected': ['The Caribbean',
                              'Central America',
                              'Mexico',
                              'United States Gulf Coast'],
           'Damage': '25.4M',
           'Deaths': 37,
           'Maximum Sustained Wind': 160,
           'Month': 'September',
           'Year': 1971},
 'Emily': {'Areas Affected': ['Windward Islands', 'Jamaica', 'Mexico', 'Texas'],
           'Damage': '1.01B',
           'Deaths': 17,
           'Maximum Sustained Wind': 160,
           'Month': 'July',
           'Year': 2005},
 'Felix': {'Areas Affected': ['Nicaragua', 'Honduras'],
           'Damage': '720M',
           'Deaths': 133,
           'Maximum Sustained Wind': 175,
           'Month': 'September',
           'Year': 2007},
 'Gilbert': {'Areas Affected': ['Jamaica',
                                'Venezuela',
                                'Central America',
                                'Hispaniola',
                                'Mexico'],
             'Damage': '7.1B',
             'Deaths': 318,
             'Maximum Sustained Wind': 185,
             'Month': 'September',
             'Year': 1988},
 'Hattie': {'Areas Affected': ['Central America'],
            'Damage': '60.3M',
            'Deaths': 319,
            'Maximum Sustained Wind': 160,
            'Month': 'October',
            'Year': 1961},
 'Hugo': {'Areas Affected': ['The Caribbean', 'United States East Coast'],
```

```
         'Damage': '10B',
         'Deaths': 107,
         'Maximum Sustained Wind': 160,
         'Month': 'September',
         'Year': 1989},
'Irma': {'Areas Affected': ['Cape Verde',
                            'The Caribbean',
                            'British Virgin Islands',
                            'U.S. Virgin Islands',
                            'Cuba',
                            'Florida'],
         'Damage': '64.8B',
         'Deaths': 138,
         'Maximum Sustained Wind': 180,
         'Month': 'September',
         'Year': 2017},
'Isabel': {'Areas Affected': ['Greater Antilles',
                              'Bahamas',
                              'Eastern United States',
                              'Ontario'],
           'Damage': '5.37B',
           'Deaths': 51,
           'Maximum Sustained Wind': 165,
           'Month': 'September',
           'Year': 2003},
'Ivan': {'Areas Affected': ['The Caribbean',
                            'Venezuela',
                            'United States Gulf Coast'],
         'Damage': '23.3B',
         'Deaths': 124,
         'Maximum Sustained Wind': 165,
         'Month': 'September',
         'Year': 2004},
'Janet': {'Areas Affected': ['Lesser Antilles', 'Central America'],
          'Damage': '65.8M',
          'Deaths': 1023,
          'Maximum Sustained Wind': 175,
          'Month': 'September',
          'Year': 1955},
'Katrina': {'Areas Affected': ['Bahamas', 'United States Gulf Coast'],
            'Damage': '125B',
            'Deaths': 1836,
            'Maximum Sustained Wind': 175,
            'Month': 'August',
            'Year': 2005},
'Labor Day': {'Areas Affected': ['The Bahamas',
                                 'Florida',
                                 'Georgia',
```

```
                                 'The Carolinas',
                                 'Virginia'],
              'Damage': 'Damages not recorded',
              'Deaths': 408,
              'Maximum Sustained Wind': 185,
              'Month': 'September',
              'Year': 1935},
 'Maria': {'Areas Affected': ['Lesser Antilles',
                              'Virgin Islands',
                              'Puerto Rico',
                              'Dominican Republic',
                              'Turks and Caicos Islands'],
           'Damage': '91.6B',
           'Deaths': 3057,
           'Maximum Sustained Wind': 175,
           'Month': 'September',
           'Year': 2017},
 'Matthew': {'Areas Affected': ['Antilles',
                                'Venezuela',
                                'Colombia',
                                'United States East Coast',
                                'Atlantic Canada'],
             'Damage': '15.1B',
             'Deaths': 603,
             'Maximum Sustained Wind': 165,
             'Month': 'October',
             'Year': 2016},
 'Michael': {'Areas Affected': ['Central America',
                                'United States Gulf Coast (especially Florida '
                                'Panhandle)'],
             'Damage': '25.1B',
             'Deaths': 74,
             'Maximum Sustained Wind': 160,
             'Month': 'October',
             'Year': 2018},
 'Mitch': {'Areas Affected': ['Central America',
                              'Yucatn Peninsula',
                              'South Florida'],
           'Damage': '6.2B',
           'Deaths': 19325,
           'Maximum Sustained Wind': 180,
           'Month': 'October',
           'Year': 1998},
 'New England': {'Areas Affected': ['Southeastern United States',
                                    'Northeastern United States',
                                    'Southwestern Quebec'],
                 'Damage': '306M',
                 'Deaths': 682,
```

```
                'Maximum Sustained Wind': 160,
                'Month': 'September',
                'Year': 1938},
'Rita': {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
         'Damage': '12B',
         'Deaths': 125,
         'Maximum Sustained Wind': 180,
         'Month': 'September',
         'Year': 2005},
'San Felipe II Okeechobee': {'Areas Affected': ['Lesser Antilles',
                                                'The Bahamas',
                                                'United States East Coast',
                                                'Atlantic Canada'],
                             'Damage': '100M',
                             'Deaths': 4000,
                             'Maximum Sustained Wind': 160,
                             'Month': 'September',
                             'Year': 1928},
'Tampico': {'Areas Affected': ['Jamaica', 'Yucatn Peninsula'],
            'Damage': '5M',
            'Deaths': 184,
            'Maximum Sustained Wind': 160,
            'Month': 'September',
            'Year': 1933},
'Wilma': {'Areas Affected': ['Greater Antilles', 'Central America', 'Florida'],
          'Damage': '29.4B',
          'Deaths': 87,
          'Maximum Sustained Wind': 185,
          'Month': 'October',
          'Year': 2005}}
```

3. In addition to organizing the hurricanes in a dictionary with names as the key, you want to be able to organize the hurricanes by year.

   Write a function that converts the current dictionary of hurricanes to a new dictionary, where the keys are years and the values are lists containing a dictionary for each hurricane that occurred in that year.

   For example, the key `1932` would yield the value: `[{'Name': 'Bahamas', 'Month': 'September', 'Year': 1932, 'Max Sustained Wind': 160, 'Areas Affected': ['The Bahamas', 'Northeastern United States'], 'Damage': 'Damage not recorded', 'Deaths': 16}, {'Name': 'Cuba II', 'Month': 'November', 'Year': 1932, 'Max Sustained Wind': 175, 'Areas Affected': ['Lesser Antilles', 'Jamaica', 'Cayman Islands', 'Cuba', 'The Bahamas', 'Bermuda'], 'Damage': 40000000.0, 'Deaths': 3103}]`.

   Test your function on your hurricane dictionary.

[6]:
```
# 3
# Organizing by Year

# create a new dictionary of hurricanes with year and key
from pprint import pprint

combined_dict_by_year = {}
for name, month, year, wind, areas, damage, death in zip(names, months, years,␣
 ↪max_sustained_winds, areas_affected, damages, deaths):
    if year not in combined_dict_by_year:
        combined_dict_by_year[year] = []
    combined_dict_by_year[year].append({
        'Name': name,
        'Month': month,
        'Maximum Sustained Wind': wind,
        'Areas Affected': areas,
        'Damage': damage,
        'Deaths': death
    })

pprint(combined_dict_by_year)
```

```
{1924: [{'Areas Affected': ['Central America',
                            'Mexico',
                            'Cuba',
                            'Florida',
                            'The Bahamas'],
         'Damage': 'Damages not recorded',
         'Deaths': 90,
         'Maximum Sustained Wind': 165,
         'Month': 'October',
         'Name': 'Cuba I'}],
 1928: [{'Areas Affected': ['Lesser Antilles',
                            'The Bahamas',
                            'United States East Coast',
                            'Atlantic Canada'],
         'Damage': '100M',
         'Deaths': 4000,
         'Maximum Sustained Wind': 160,
         'Month': 'September',
         'Name': 'San Felipe II Okeechobee'}],
 1932: [{'Areas Affected': ['The Bahamas', 'Northeastern United States'],
         'Damage': 'Damages not recorded',
         'Deaths': 16,
         'Maximum Sustained Wind': 160,
         'Month': 'September',
         'Name': 'Bahamas'},
```

```
       {'Areas Affected': ['Lesser Antilles',
                           'Jamaica',
                           'Cayman Islands',
                           'Cuba',
                           'The Bahamas',
                           'Bermuda'],
        'Damage': '40M',
        'Deaths': 3103,
        'Maximum Sustained Wind': 175,
        'Month': 'November',
        'Name': 'Cuba II'}],
1933: [{'Areas Affected': ['The Bahamas',
                           'Cuba',
                           'Florida',
                           'Texas',
                           'Tamaulipas'],
        'Damage': '27.9M',
        'Deaths': 179,
        'Maximum Sustained Wind': 160,
        'Month': 'August',
        'Name': 'CubaBrownsville'},
       {'Areas Affected': ['Jamaica', 'Yucatn Peninsula'],
        'Damage': '5M',
        'Deaths': 184,
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'Tampico'}],
1935: [{'Areas Affected': ['The Bahamas',
                           'Florida',
                           'Georgia',
                           'The Carolinas',
                           'Virginia'],
        'Damage': 'Damages not recorded',
        'Deaths': 408,
        'Maximum Sustained Wind': 185,
        'Month': 'September',
        'Name': 'Labor Day'}],
1938: [{'Areas Affected': ['Southeastern United States',
                           'Northeastern United States',
                           'Southwestern Quebec'],
        'Damage': '306M',
        'Deaths': 682,
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'New England'}],
1953: [{'Areas Affected': ['Bermuda', 'New England', 'Atlantic Canada'],
        'Damage': '2M',
        'Deaths': 5,
```

```
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'Carol'}],
1955: [{'Areas Affected': ['Lesser Antilles', 'Central America'],
        'Damage': '65.8M',
        'Deaths': 1023,
        'Maximum Sustained Wind': 175,
        'Month': 'September',
        'Name': 'Janet'}],
1961: [{'Areas Affected': ['Texas', 'Louisiana', 'Midwestern United States'],
        'Damage': '326M',
        'Deaths': 43,
        'Maximum Sustained Wind': 175,
        'Month': 'September',
        'Name': 'Carla'},
       {'Areas Affected': ['Central America'],
        'Damage': '60.3M',
        'Deaths': 319,
        'Maximum Sustained Wind': 160,
        'Month': 'October',
        'Name': 'Hattie'}],
1967: [{'Areas Affected': ['The Caribbean', 'Mexico', 'Texas'],
        'Damage': '208M',
        'Deaths': 688,
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'Beulah'}],
1969: [{'Areas Affected': ['Cuba', 'United States Gulf Coast'],
        'Damage': '1.42B',
        'Deaths': 259,
        'Maximum Sustained Wind': 175,
        'Month': 'August',
        'Name': 'Camille'}],
1971: [{'Areas Affected': ['The Caribbean',
                           'Central America',
                           'Mexico',
                           'United States Gulf Coast'],
        'Damage': '25.4M',
        'Deaths': 37,
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'Edith'}],
1977: [{'Areas Affected': ['Mexico'],
        'Damage': 'Damages not recorded',
        'Deaths': 11,
        'Maximum Sustained Wind': 175,
        'Month': 'September',
        'Name': 'Anita'}],
```

```
1979: [{'Areas Affected': ['The Caribbean', 'United States East coast'],
        'Damage': '1.54B',
        'Deaths': 2068,
        'Maximum Sustained Wind': 175,
        'Month': 'August',
        'Name': 'David'}],
1980: [{'Areas Affected': ['The Caribbean',
                           'Yucatn Peninsula',
                           'Mexico',
                           'South Texas'],
        'Damage': '1.24B',
        'Deaths': 269,
        'Maximum Sustained Wind': 190,
        'Month': 'August',
        'Name': 'Allen'}],
1988: [{'Areas Affected': ['Jamaica',
                           'Venezuela',
                           'Central America',
                           'Hispaniola',
                           'Mexico'],
        'Damage': '7.1B',
        'Deaths': 318,
        'Maximum Sustained Wind': 185,
        'Month': 'September',
        'Name': 'Gilbert'}],
1989: [{'Areas Affected': ['The Caribbean', 'United States East Coast'],
        'Damage': '10B',
        'Deaths': 107,
        'Maximum Sustained Wind': 160,
        'Month': 'September',
        'Name': 'Hugo'}],
1992: [{'Areas Affected': ['The Bahamas',
                           'Florida',
                           'United States Gulf Coast'],
        'Damage': '26.5B',
        'Deaths': 65,
        'Maximum Sustained Wind': 175,
        'Month': 'August',
        'Name': 'Andrew'}],
1998: [{'Areas Affected': ['Central America',
                           'Yucatn Peninsula',
                           'South Florida'],
        'Damage': '6.2B',
        'Deaths': 19325,
        'Maximum Sustained Wind': 180,
        'Month': 'October',
        'Name': 'Mitch'}],
2003: [{'Areas Affected': ['Greater Antilles',
```

```
                         'Bahamas',
                         'Eastern United States',
                         'Ontario'],
        'Damage': '5.37B',
        'Deaths': 51,
        'Maximum Sustained Wind': 165,
        'Month': 'September',
        'Name': 'Isabel'}],
2004: [{'Areas Affected': ['The Caribbean',
                         'Venezuela',
                         'United States Gulf Coast'],
        'Damage': '23.3B',
        'Deaths': 124,
        'Maximum Sustained Wind': 165,
        'Month': 'September',
        'Name': 'Ivan'}],
2005: [{'Areas Affected': ['Windward Islands', 'Jamaica', 'Mexico', 'Texas'],
        'Damage': '1.01B',
        'Deaths': 17,
        'Maximum Sustained Wind': 160,
        'Month': 'July',
        'Name': 'Emily'},
       {'Areas Affected': ['Bahamas', 'United States Gulf Coast'],
        'Damage': '125B',
        'Deaths': 1836,
        'Maximum Sustained Wind': 175,
        'Month': 'August',
        'Name': 'Katrina'},
       {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
        'Damage': '12B',
        'Deaths': 125,
        'Maximum Sustained Wind': 180,
        'Month': 'September',
        'Name': 'Rita'},
       {'Areas Affected': ['Greater Antilles', 'Central America', 'Florida'],
        'Damage': '29.4B',
        'Deaths': 87,
        'Maximum Sustained Wind': 185,
        'Month': 'October',
        'Name': 'Wilma'}],
2007: [{'Areas Affected': ['The Caribbean', 'Central America'],
        'Damage': '1.76B',
        'Deaths': 45,
        'Maximum Sustained Wind': 175,
        'Month': 'August',
        'Name': 'Dean'},
       {'Areas Affected': ['Nicaragua', 'Honduras'],
        'Damage': '720M',
```

```
        'Deaths': 133,
        'Maximum Sustained Wind': 175,
        'Month': 'September',
        'Name': 'Felix'}],
2016: [{'Areas Affected': ['Antilles',
                           'Venezuela',
                           'Colombia',
                           'United States East Coast',
                           'Atlantic Canada'],
        'Damage': '15.1B',
        'Deaths': 603,
        'Maximum Sustained Wind': 165,
        'Month': 'October',
        'Name': 'Matthew'}],
2017: [{'Areas Affected': ['Cape Verde',
                           'The Caribbean',
                           'British Virgin Islands',
                           'U.S. Virgin Islands',
                           'Cuba',
                           'Florida'],
        'Damage': '64.8B',
        'Deaths': 138,
        'Maximum Sustained Wind': 180,
        'Month': 'September',
        'Name': 'Irma'},
       {'Areas Affected': ['Lesser Antilles',
                           'Virgin Islands',
                           'Puerto Rico',
                           'Dominican Republic',
                           'Turks and Caicos Islands'],
        'Damage': '91.6B',
        'Deaths': 3057,
        'Maximum Sustained Wind': 175,
        'Month': 'September',
        'Name': 'Maria'}],
2018: [{'Areas Affected': ['Central America',
                           'United States Gulf Coast (especially Florida '
                           'Panhandle)'],
        'Damage': '25.1B',
        'Deaths': 74,
        'Maximum Sustained Wind': 160,
        'Month': 'October',
        'Name': 'Michael'}]}
```

4. You believe that knowing how often each of the areas of the Atlantic are affected by these strong hurricanes is important for making preparations for future hurricanes.

   Write a function that counts how often each area is listed as an affected area of a hurricane. Store and return the results in a dictionary where the keys are the affected areas and the

values are counts of how many times the areas were affected.

Test your function on your hurricane dictionary.

[10]:
```
# 4
# Counting Damaged Areas

# create dictionary of areas to store the number of hurricanes involved in
from pprint import pprint

def count_affected_areas(areas_affected):
    area_count = {}
    for areas in areas_affected:
        for area in areas:
            if area not in area_count:
                area_count[area] = 1
            else:
                area_count[area] += 1
    return area_count

affected_area_counts = count_affected_areas(areas_affected)
pprint(affected_area_counts)
```

```
{'Antilles': 1,
 'Atlantic Canada': 3,
 'Bahamas': 2,
 'Bermuda': 2,
 'British Virgin Islands': 1,
 'Cape Verde': 1,
 'Cayman Islands': 1,
 'Central America': 9,
 'Colombia': 1,
 'Cuba': 6,
 'Dominican Republic': 1,
 'Eastern United States': 1,
 'Florida': 6,
 'Georgia': 1,
 'Greater Antilles': 2,
 'Hispaniola': 1,
 'Honduras': 1,
 'Jamaica': 4,
 'Lesser Antilles': 4,
 'Louisiana': 1,
 'Mexico': 7,
 'Midwestern United States': 1,
 'New England': 1,
 'Nicaragua': 1,
 'Northeastern United States': 2,
```

```
'Ontario': 1,
'Puerto Rico': 1,
'South Florida': 1,
'South Texas': 1,
'Southeastern United States': 1,
'Southwestern Quebec': 1,
'Tamaulipas': 1,
'Texas': 4,
'The Bahamas': 7,
'The Caribbean': 8,
'The Carolinas': 1,
'Turks and Caicos Islands': 1,
'U.S. Virgin Islands': 1,
'United States East Coast': 3,
'United States East coast': 1,
'United States Gulf Coast': 6,
'United States Gulf Coast (especially Florida Panhandle)': 1,
'Venezuela': 3,
'Virgin Islands': 1,
'Virginia': 1,
'Windward Islands': 1,
'Yucatn Peninsula': 3}
```

5. Write a function that finds the area affected by the most hurricanes, and how often it was hit.

   Test your function on your affected area dictionary.

[12]:
```
# 5
# Calculating Maximum Hurricane Count

# find most frequently affected area and the number of hurricanes involved in
area_most_affected = max(affected_area_counts, key=affected_area_counts.get)
max_count = affected_area_counts[area_most_affected]

print(f"The area most affected is {area_most_affected} with {max_count}␣
 ↪occurrences.")
```

```
The area most affected is Central America with 9 occurrences.
```

6. Write a function that finds the hurricane that caused the greatest number of deaths, and how many deaths it caused.

   Test your function on your hurricane dictionary.

[14]:
```
# 6
# Calculating the Deadliest Hurricane

# find highest mortality hurricane and the number of deaths
```

```
hurricane_highest_mortality = max(combined_dict, key=lambda name:␣
 ↪combined_dict[name]['Deaths'])
max_count_deaths = combined_dict[hurricane_highest_mortality]['Deaths']

print(f"The hurricane with the highest mortality rate is␣
 ↪{hurricane_highest_mortality} with {max_count_deaths} deaths.")
```

```
The hurricane with the highest mortality rate is Mitch with 19325 deaths.
```

7. Just as hurricanes are rated by their windspeed, you want to try rating hurricanes based on other metrics.

   Write a function that rates hurricanes on a mortality scale according to the following ratings, where the key is the rating and the value is the upper bound of deaths for that rating.

   ```
   mortality_scale = {0: 0,
   1: 100,
   2: 500,
   3: 1000,
   4: 10000}
   ```

   For example, a hurricane with a `1` mortality rating would have resulted in greater than `0` but less than or equal to `100` deaths. A hurricane with a `5` mortality would have resulted in greater than `10000` deaths.

   Store the hurricanes in a new dictionary where the keys are the mortaility ratings and the values are lists containing a dictionary for each hurricane that falls into that mortality rating.

   Test your function on your hurricane dictionary.

[18]:
```
# 7
# Rating Hurricanes by Mortality
from pprint import pprint

mortality_scale = {0: 0,
1: 100,
2: 500,
3: 1000,
4: 10000}
# categorize hurricanes in new dictionary with mortality severity as key
def rate_hurricanes_by_mortality(combined_dict):
    hurricanes_by_mortality = {0: [], 1: [], 2: [], 3: [], 4: [], 5: []}
    for name, details in combined_dict.items():
        deaths = details['Deaths']
        for rating, upper_bound in mortality_scale.items():
            if deaths > upper_bound:
                continue
            hurricanes_by_mortality[rating].append(details)
            break
        else:
```

```
            hurricanes_by_mortality[5].append(details)
    return hurricanes_by_mortality

hurricanes_by_mortality = rate_hurricanes_by_mortality(combined_dict)
pprint(hurricanes_by_mortality)
```

```
{0: [],
 1: [{'Areas Affected': ['Central America',
                         'Mexico',
                         'Cuba',
                         'Florida',
                         'The Bahamas'],
      'Damage': 'Damages not recorded',
      'Deaths': 90,
      'Maximum Sustained Wind': 165,
      'Month': 'October',
      'Year': 1924},
     {'Areas Affected': ['The Bahamas', 'Northeastern United States'],
      'Damage': 'Damages not recorded',
      'Deaths': 16,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1932},
     {'Areas Affected': ['Bermuda', 'New England', 'Atlantic Canada'],
      'Damage': '2M',
      'Deaths': 5,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1953},
     {'Areas Affected': ['Texas', 'Louisiana', 'Midwestern United States'],
      'Damage': '326M',
      'Deaths': 43,
      'Maximum Sustained Wind': 175,
      'Month': 'September',
      'Year': 1961},
     {'Areas Affected': ['The Caribbean',
                         'Central America',
                         'Mexico',
                         'United States Gulf Coast'],
      'Damage': '25.4M',
      'Deaths': 37,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1971},
     {'Areas Affected': ['Mexico'],
      'Damage': 'Damages not recorded',
      'Deaths': 11,
```

```
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 1977},
    {'Areas Affected': ['The Bahamas', 'Florida', 'United States Gulf Coast'],
     'Damage': '26.5B',
     'Deaths': 65,
     'Maximum Sustained Wind': 175,
     'Month': 'August',
     'Year': 1992},
    {'Areas Affected': ['Greater Antilles',
                        'Bahamas',
                        'Eastern United States',
                        'Ontario'],
     'Damage': '5.37B',
     'Deaths': 51,
     'Maximum Sustained Wind': 165,
     'Month': 'September',
     'Year': 2003},
    {'Areas Affected': ['Windward Islands', 'Jamaica', 'Mexico', 'Texas'],
     'Damage': '1.01B',
     'Deaths': 17,
     'Maximum Sustained Wind': 160,
     'Month': 'July',
     'Year': 2005},
    {'Areas Affected': ['Greater Antilles', 'Central America', 'Florida'],
     'Damage': '29.4B',
     'Deaths': 87,
     'Maximum Sustained Wind': 185,
     'Month': 'October',
     'Year': 2005},
    {'Areas Affected': ['The Caribbean', 'Central America'],
     'Damage': '1.76B',
     'Deaths': 45,
     'Maximum Sustained Wind': 175,
     'Month': 'August',
     'Year': 2007},
    {'Areas Affected': ['Central America',
                        'United States Gulf Coast (especially Florida '
                        'Panhandle)'],
     'Damage': '25.1B',
     'Deaths': 74,
     'Maximum Sustained Wind': 160,
     'Month': 'October',
     'Year': 2018}],
2: [{'Areas Affected': ['The Bahamas',
                        'Cuba',
                        'Florida',
                        'Texas',
```

```
                   'Tamaulipas'],
  'Damage': '27.9M',
  'Deaths': 179,
  'Maximum Sustained Wind': 160,
  'Month': 'August',
  'Year': 1933},
 {'Areas Affected': ['Jamaica', 'Yucatn Peninsula'],
  'Damage': '5M',
  'Deaths': 184,
  'Maximum Sustained Wind': 160,
  'Month': 'September',
  'Year': 1933},
 {'Areas Affected': ['The Bahamas',
                     'Florida',
                     'Georgia',
                     'The Carolinas',
                     'Virginia'],
  'Damage': 'Damages not recorded',
  'Deaths': 408,
  'Maximum Sustained Wind': 185,
  'Month': 'September',
  'Year': 1935},
 {'Areas Affected': ['Central America'],
  'Damage': '60.3M',
  'Deaths': 319,
  'Maximum Sustained Wind': 160,
  'Month': 'October',
  'Year': 1961},
 {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
  'Damage': '1.42B',
  'Deaths': 259,
  'Maximum Sustained Wind': 175,
  'Month': 'August',
  'Year': 1969},
 {'Areas Affected': ['The Caribbean',
                     'Yucatn Peninsula',
                     'Mexico',
                     'South Texas'],
  'Damage': '1.24B',
  'Deaths': 269,
  'Maximum Sustained Wind': 190,
  'Month': 'August',
  'Year': 1980},
 {'Areas Affected': ['Jamaica',
                     'Venezuela',
                     'Central America',
                     'Hispaniola',
                     'Mexico'],
```

```
     'Damage': '7.1B',
     'Deaths': 318,
     'Maximum Sustained Wind': 185,
     'Month': 'September',
     'Year': 1988},
    {'Areas Affected': ['The Caribbean', 'United States East Coast'],
     'Damage': '10B',
     'Deaths': 107,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1989},
    {'Areas Affected': ['The Caribbean',
                        'Venezuela',
                        'United States Gulf Coast'],
     'Damage': '23.3B',
     'Deaths': 124,
     'Maximum Sustained Wind': 165,
     'Month': 'September',
     'Year': 2004},
    {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
     'Damage': '12B',
     'Deaths': 125,
     'Maximum Sustained Wind': 180,
     'Month': 'September',
     'Year': 2005},
    {'Areas Affected': ['Nicaragua', 'Honduras'],
     'Damage': '720M',
     'Deaths': 133,
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 2007},
    {'Areas Affected': ['Cape Verde',
                        'The Caribbean',
                        'British Virgin Islands',
                        'U.S. Virgin Islands',
                        'Cuba',
                        'Florida'],
     'Damage': '64.8B',
     'Deaths': 138,
     'Maximum Sustained Wind': 180,
     'Month': 'September',
     'Year': 2017}],
3: [{'Areas Affected': ['Southeastern United States',
                        'Northeastern United States',
                        'Southwestern Quebec'],
     'Damage': '306M',
     'Deaths': 682,
     'Maximum Sustained Wind': 160,
```

```
     'Month': 'September',
     'Year': 1938},
    {'Areas Affected': ['The Caribbean', 'Mexico', 'Texas'],
     'Damage': '208M',
     'Deaths': 688,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1967},
    {'Areas Affected': ['Antilles',
                        'Venezuela',
                        'Colombia',
                        'United States East Coast',
                        'Atlantic Canada'],
     'Damage': '15.1B',
     'Deaths': 603,
     'Maximum Sustained Wind': 165,
     'Month': 'October',
     'Year': 2016}],
4: [{'Areas Affected': ['Lesser Antilles',
                        'The Bahamas',
                        'United States East Coast',
                        'Atlantic Canada'],
     'Damage': '100M',
     'Deaths': 4000,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1928},
    {'Areas Affected': ['Lesser Antilles',
                        'Jamaica',
                        'Cayman Islands',
                        'Cuba',
                        'The Bahamas',
                        'Bermuda'],
     'Damage': '40M',
     'Deaths': 3103,
     'Maximum Sustained Wind': 175,
     'Month': 'November',
     'Year': 1932},
    {'Areas Affected': ['Lesser Antilles', 'Central America'],
     'Damage': '65.8M',
     'Deaths': 1023,
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 1955},
    {'Areas Affected': ['The Caribbean', 'United States East coast'],
     'Damage': '1.54B',
     'Deaths': 2068,
     'Maximum Sustained Wind': 175,
```

```
      'Month': 'August',
      'Year': 1979},
     {'Areas Affected': ['Bahamas', 'United States Gulf Coast'],
      'Damage': '125B',
      'Deaths': 1836,
      'Maximum Sustained Wind': 175,
      'Month': 'August',
      'Year': 2005},
     {'Areas Affected': ['Lesser Antilles',
                         'Virgin Islands',
                         'Puerto Rico',
                         'Dominican Republic',
                         'Turks and Caicos Islands'],
      'Damage': '91.6B',
      'Deaths': 3057,
      'Maximum Sustained Wind': 175,
      'Month': 'September',
      'Year': 2017}],
 5: [{'Areas Affected': ['Central America',
                         'Yucatn Peninsula',
                         'South Florida'],
      'Damage': '6.2B',
      'Deaths': 19325,
      'Maximum Sustained Wind': 180,
      'Month': 'October',
      'Year': 1998}]}
```

8. Write a function that finds the hurricane that caused the greatest damage, and how costly it was.

   Test your function on your hurricane dictionary.

[20]:
```
# 8
# Calculating Hurricane Maximum Damage

# find highest damage inducing hurricane and its total cost
recorded_damages = {name: details for name, details in combined_dict.items() if␣
 ↪details['Damage'] != 'Damages not recorded'}

# Find the hurricane with the highest damage
hurricane_highest_damage = max(recorded_damages, key=lambda name:␣
 ↪recorded_damages[name]['Damage'])
max_damage = recorded_damages[hurricane_highest_damage]['Damage']

print(f"The hurricane with the highest cost of damage is␣
 ↪{hurricane_highest_damage} with {max_damage} dollars worth of damage.")
```

```
The hurricane with the highest cost of damage is Maria with 91.6B dollars worth
of damage.
```

9. Lastly, you want to rate hurricanes according to how much damage they cause.

   Write a function that rates hurricanes on a damage scale according to the following ratings, where the key is the rating and the value is the upper bound of damage for that rating.

   ```
   damage_scale = {0: 0,
   1: 100000000,
   2: 1000000000,
   3: 10000000000,
   4: 50000000000}
   ```

   For example, a hurricane with a `1` damage rating would have resulted in damages greater than `0` USD but less than or equal to `100000000` USD. A hurricane with a `5` damage rating would have resulted in damages greater than `50000000000` USD (talk about a lot of money).

   Store the hurricanes in a new dictionary where the keys are damage ratings and the values are lists containing a dictionary for each hurricane that falls into that damage rating.

   Test your function on your hurricane dictionary.

[26]:
```python
damage_scale = {0: 0,
                1: 100000000,
                2: 1000000000,
                3: 10000000000,
                4: 50000000000}

conversion = {"M": 1000000, "B": 1000000000}

from pprint import pprint

def rate_hurricanes_by_damage(combined_dict):
    hurricanes_by_damage = {0: [], 1: [], 2: [], 3: [], 4: [], 5: []}
    for name, details in combined_dict.items():
        damage = details['Damage']
        if damage == 'Damages not recorded':
            continue  # Skip hurricanes with unrecorded damages
        # Convert damage to float
        if isinstance(damage, str):
            factor = conversion[damage[-1]]
            damage = float(damage[:-1]) * factor
        for rating, upper_bound in damage_scale.items():
            if damage > upper_bound:
                continue
            hurricanes_by_damage[rating].append(details)
            break
        else:
            hurricanes_by_damage[5].append(details)
    return hurricanes_by_damage

hurricanes_by_damage = rate_hurricanes_by_damage(combined_dict)
```

```
pprint(hurricanes_by_damage)
```

```
{0: [],
 1: [{'Areas Affected': ['Lesser Antilles',
                         'The Bahamas',
                         'United States East Coast',
                         'Atlantic Canada'],
      'Damage': '100M',
      'Deaths': 4000,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1928},
     {'Areas Affected': ['Lesser Antilles',
                         'Jamaica',
                         'Cayman Islands',
                         'Cuba',
                         'The Bahamas',
                         'Bermuda'],
      'Damage': '40M',
      'Deaths': 3103,
      'Maximum Sustained Wind': 175,
      'Month': 'November',
      'Year': 1932},
     {'Areas Affected': ['The Bahamas',
                         'Cuba',
                         'Florida',
                         'Texas',
                         'Tamaulipas'],
      'Damage': '27.9M',
      'Deaths': 179,
      'Maximum Sustained Wind': 160,
      'Month': 'August',
      'Year': 1933},
     {'Areas Affected': ['Jamaica', 'Yucatn Peninsula'],
      'Damage': '5M',
      'Deaths': 184,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1933},
     {'Areas Affected': ['Bermuda', 'New England', 'Atlantic Canada'],
      'Damage': '2M',
      'Deaths': 5,
      'Maximum Sustained Wind': 160,
      'Month': 'September',
      'Year': 1953},
     {'Areas Affected': ['Lesser Antilles', 'Central America'],
      'Damage': '65.8M',
```

```
     'Deaths': 1023,
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 1955},
    {'Areas Affected': ['Central America'],
     'Damage': '60.3M',
     'Deaths': 319,
     'Maximum Sustained Wind': 160,
     'Month': 'October',
     'Year': 1961},
    {'Areas Affected': ['The Caribbean',
                        'Central America',
                        'Mexico',
                        'United States Gulf Coast'],
     'Damage': '25.4M',
     'Deaths': 37,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1971}],
2: [{'Areas Affected': ['Southeastern United States',
                        'Northeastern United States',
                        'Southwestern Quebec'],
     'Damage': '306M',
     'Deaths': 682,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1938},
    {'Areas Affected': ['Texas', 'Louisiana', 'Midwestern United States'],
     'Damage': '326M',
     'Deaths': 43,
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 1961},
    {'Areas Affected': ['The Caribbean', 'Mexico', 'Texas'],
     'Damage': '208M',
     'Deaths': 688,
     'Maximum Sustained Wind': 160,
     'Month': 'September',
     'Year': 1967},
    {'Areas Affected': ['Nicaragua', 'Honduras'],
     'Damage': '720M',
     'Deaths': 133,
     'Maximum Sustained Wind': 175,
     'Month': 'September',
     'Year': 2007}],
3: [{'Areas Affected': ['Cuba', 'United States Gulf Coast'],
     'Damage': '1.42B',
     'Deaths': 259,
```

```
 'Maximum Sustained Wind': 175,
 'Month': 'August',
 'Year': 1969},
{'Areas Affected': ['The Caribbean', 'United States East coast'],
 'Damage': '1.54B',
 'Deaths': 2068,
 'Maximum Sustained Wind': 175,
 'Month': 'August',
 'Year': 1979},
{'Areas Affected': ['The Caribbean',
                    'Yucatn Peninsula',
                    'Mexico',
                    'South Texas'],
 'Damage': '1.24B',
 'Deaths': 269,
 'Maximum Sustained Wind': 190,
 'Month': 'August',
 'Year': 1980},
{'Areas Affected': ['Jamaica',
                    'Venezuela',
                    'Central America',
                    'Hispaniola',
                    'Mexico'],
 'Damage': '7.1B',
 'Deaths': 318,
 'Maximum Sustained Wind': 185,
 'Month': 'September',
 'Year': 1988},
{'Areas Affected': ['The Caribbean', 'United States East Coast'],
 'Damage': '10B',
 'Deaths': 107,
 'Maximum Sustained Wind': 160,
 'Month': 'September',
 'Year': 1989},
{'Areas Affected': ['Central America',
                    'Yucatn Peninsula',
                    'South Florida'],
 'Damage': '6.2B',
 'Deaths': 19325,
 'Maximum Sustained Wind': 180,
 'Month': 'October',
 'Year': 1998},
{'Areas Affected': ['Greater Antilles',
                    'Bahamas',
                    'Eastern United States',
                    'Ontario'],
 'Damage': '5.37B',
 'Deaths': 51,
```

```
     'Maximum Sustained Wind': 165,
     'Month': 'September',
     'Year': 2003},
    {'Areas Affected': ['Windward Islands', 'Jamaica', 'Mexico', 'Texas'],
     'Damage': '1.01B',
     'Deaths': 17,
     'Maximum Sustained Wind': 160,
     'Month': 'July',
     'Year': 2005},
    {'Areas Affected': ['The Caribbean', 'Central America'],
     'Damage': '1.76B',
     'Deaths': 45,
     'Maximum Sustained Wind': 175,
     'Month': 'August',
     'Year': 2007}],
4: [{'Areas Affected': ['The Bahamas', 'Florida', 'United States Gulf Coast'],
     'Damage': '26.5B',
     'Deaths': 65,
     'Maximum Sustained Wind': 175,
     'Month': 'August',
     'Year': 1992},
    {'Areas Affected': ['The Caribbean',
                        'Venezuela',
                        'United States Gulf Coast'],
     'Damage': '23.3B',
     'Deaths': 124,
     'Maximum Sustained Wind': 165,
     'Month': 'September',
     'Year': 2004},
    {'Areas Affected': ['Cuba', 'United States Gulf Coast'],
     'Damage': '12B',
     'Deaths': 125,
     'Maximum Sustained Wind': 180,
     'Month': 'September',
     'Year': 2005},
    {'Areas Affected': ['Greater Antilles', 'Central America', 'Florida'],
     'Damage': '29.4B',
     'Deaths': 87,
     'Maximum Sustained Wind': 185,
     'Month': 'October',
     'Year': 2005},
    {'Areas Affected': ['Antilles',
                        'Venezuela',
                        'Colombia',
                        'United States East Coast',
                        'Atlantic Canada'],
     'Damage': '15.1B',
     'Deaths': 603,
```

```
 'Maximum Sustained Wind': 165,
 'Month': 'October',
 'Year': 2016},
{'Areas Affected': ['Central America',
                    'United States Gulf Coast (especially Florida '
                    'Panhandle)'],
 'Damage': '25.1B',
 'Deaths': 74,
 'Maximum Sustained Wind': 160,
 'Month': 'October',
 'Year': 2018}],
5: [{'Areas Affected': ['Bahamas', 'United States Gulf Coast'],
 'Damage': '125B',
 'Deaths': 1836,
 'Maximum Sustained Wind': 175,
 'Month': 'August',
 'Year': 2005},
{'Areas Affected': ['Cape Verde',
                    'The Caribbean',
                    'British Virgin Islands',
                    'U.S. Virgin Islands',
                    'Cuba',
                    'Florida'],
 'Damage': '64.8B',
 'Deaths': 138,
 'Maximum Sustained Wind': 180,
 'Month': 'September',
 'Year': 2017},
{'Areas Affected': ['Lesser Antilles',
                    'Virgin Islands',
                    'Puerto Rico',
                    'Dominican Republic',
                    'Turks and Caicos Islands'],
 'Damage': '91.6B',
 'Deaths': 3057,
 'Maximum Sustained Wind': 175,
 'Month': 'September',
 'Year': 2017}]}
```

1.2 Solution

Great work! View the **Hurricane Analysis_Solution.ipynb** file or visit our forums to compare your project to our sample solution code. You can also learn how to host your own solution on GitHub so you can share it with other learners! Your solution might look different than ours, and that's okay! There are multiple ways to solve these projects, and you'll learn more by seeing others' code.

[ ]: