

Python - Analiza danych z modulem PANDAS

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LAB - S03-L007-LAB Sortowanie data frame

1. Zaimportuj moduł pandas oraz numpy i nadaj im standardowe aliasy. Do zmiennej **fuel** wczytaj zawartość pliku **fuel.csv**. Podczas wczytywania skorzystaj z dodatkowego argumentu **low_memory=False**, pobierz tylko następujące kolumny: 'Vehicle ID','Year','Make','Model','Class','Fuel Type','Combined MPG (FT1)'. Wyświetl nagłówek tak utworzonego Data Frame
2. Wykonaj poniższe polecenia, żeby wprowadzić nowe wartości NaN do pierwszych wierszy zmiennej **fuel**

```
fuel.loc[27681, 'Combined MPG (FT1)'] = np.NaN
```

3. Wyświetl nagłówek **fuel** żeby upewnić się, że wiersze rzeczywiście zawierają wartości **NaN**
4. Posortuj **fuel** rosnąco wg 'Make','Model'. Wyświetl początkowe 5 wierszy
5. Posortuj **fuel** malejąco wg 'Combined MPG (FT1)', wyświetl początkowych 5 wierszy
6. Posortuj **fuel** wg 'Make','Combined MPG (FT1)'. Piersza kolumna ma być sortowana rosnąco, ale druga - malejąco. Wyświetl nagłówek
7. Posortuj **fuel** rosnąco wg kolumny 'Combined MPG (FT1)' tak, aby wartość **NaN** była na początku. Wyświetl nagłówek
8. Ponownie wykonaj poprzedni punkt, ale tym razem sortowanie ma się odbyć w oryginalnym obiekcie. Wyświetl nagłówek
9. Posortuj **fuel** rosnąco wg indeksu. Wyświetl nagłówek.

Rozwiązania:

Poniżej znajdują się propozycje rozwiązań zadań. Prawdopodobnie istnieje wiele dobrych rozwiązań, dlatego jeżeli rozwiązujesz zadania samodzielnie, to najprawdopodobniej zrobisz to inaczej, może nawet lepiej :) Możesz pochwalić się swoimi rozwiązaniami w sekcji Q&A

```
In [1]: import pandas as pd
import numpy as np
fuel = pd.read_csv("fuel.csv", usecols=['Vehicle ID', 'Year', 'Make',
                                         'Model', 'Class', 'Fuel Type',
                                         'Combined MPG (FT1)'],
                index_col = 'Vehicle ID')
fuel.head()
```

Out[1]:

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|------------|------|------------|--------------------|-----------------------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 26587 | 1984 | Alfa Romeo | GT V6 2.5 | Minicompact Cars | Regular | 20.0 |
| 27705 | 1984 | Alfa Romeo | GT V6 2.5 | Minicompact Cars | Regular | 20.0 |
| 26561 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | 21.0 |
| 27681 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | 21.0 |
| 27550 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |

```
In [2]: fuel.loc[27681, 'Combined MPG (FT1)'] = np.NaN
```

```
In [3]: fuel.head()
```

```
Out[3]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|------------|--------------------|-----------------------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 26587 | 1984 | Alfa Romeo | GT V6 2.5 | Minicompact Cars | Regular | 20.0 |
| 27705 | 1984 | Alfa Romeo | GT V6 2.5 | Minicompact Cars | Regular | 20.0 |
| 26561 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | 21.0 |
| 27681 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | NaN |
| 27550 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |

```
In [4]: fuel.sort_values(by = ['Make', 'Model']).head()
```

```
Out[4]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|------------|---------------------|-----------------------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 27550 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |
| 28426 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |
| 27549 | 1984 | AM General | FJ8c Post Office | Special Purpose Vehicle 2WD | Regular | 13.0 |
| 28425 | 1984 | AM General | FJ8c Post Office | Special Purpose Vehicle 2WD | Regular | 13.0 |
| 1032 | 1985 | AM General | Post Office DJ5 2WD | Special Purpose Vehicle 2WD | Regular | 16.0 |

```
In [5]: fuel.sort_values('Combined MPG (FT1)', ascending=False).head()
```

```
Out[5]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|------------|----------------|------------------|-------------|--------------------|
| Vehicle ID | | | | | | |
| 31673 | 2012 | Mitsubishi | i-MiEV | Subcompact Cars | Electricity | 112.0 |
| 32278 | 2012 | Ford | Focus Electric | Compact Cars | Electricity | 105.0 |
| 32276 | 2011 | BMW | Active E | Subcompact Cars | Electricity | 102.0 |
| 30979 | 2011 | Nissan | Leaf | Midsize Cars | Electricity | 99.0 |
| 30978 | 2008 | MINI | MiniE | Minicompact Cars | Electricity | 98.0 |

```
In [6]: fuel.sort_values(by = ['Make', 'Combined MPG (FT1)'], ascending=[True, False]).head()
```

```
Out[6]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|------------|---------------------|-----------------------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 27550 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |
| 28426 | 1984 | AM General | DJ Po Vehicle 2WD | Special Purpose Vehicle 2WD | Regular | 17.0 |
| 1032 | 1985 | AM General | Post Office DJ5 2WD | Special Purpose Vehicle 2WD | Regular | 16.0 |
| 27549 | 1984 | AM General | FJ8c Post Office | Special Purpose Vehicle 2WD | Regular | 13.0 |
| 28425 | 1984 | AM General | FJ8c Post Office | Special Purpose Vehicle 2WD | Regular | 13.0 |

```
In [7]: fuel.sort_values(by = 'Combined MPG (FT1) ').head()
```

```
Out[7]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|-------------|----------|-------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 2914 | 1987 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 6413 | 1990 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 5267 | 1989 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 4141 | 1988 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 1711 | 1986 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |

```
In [8]: fuel.sort_values(by='Combined MPG (FT1)',na_position='first').head()
```

```
Out[8]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|-------------|--------------------|-------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 27681 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | NaN |
| 32106 | 2012 | Mitsubish | NaN | NaN | NaN | NaN |
| 2914 | 1987 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 6413 | 1990 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 5267 | 1989 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |

```
In [9]: fuel.sort_values(by='Combined MPG (FT1)',na_position='first',inplace=True)
fuel.head()
```

```
Out[9]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|-------------|--------------------|-------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 27681 | 1984 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | NaN |
| 32106 | 2012 | Mitsubish | NaN | NaN | NaN | NaN |
| 2914 | 1987 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 6413 | 1990 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |
| 5267 | 1989 | Lamborghini | Countach | Two Seaters | Premium | 7.0 |

```
In [10]: fuel.sort_index().head()
```

```
Out[10]:
```

| | Year | Make | Model | Class | Fuel Type | Combined MPG (FT1) |
|-------------------|------|------------|--------------------|-------------|-----------|--------------------|
| Vehicle ID | | | | | | |
| 1 | 1985 | Alfa Romeo | Spider Veloce 2000 | Two Seaters | Regular | 21.0 |
| 2 | 1985 | Bertone | X1/9 | Two Seaters | Regular | 22.0 |
| 3 | 1985 | Chevrolet | Corvette | Two Seaters | Regular | 17.0 |
| 4 | 1985 | Chevrolet | Corvette | Two Seaters | Regular | 17.0 |
| 5 | 1985 | Nissan | 300ZX | Two Seaters | Regular | 16.0 |

```
In [ ]:
```

