

KEY_Practice14_Pandas-Intro

January 20, 2020

1 Practice: Intro to Pandas

First we need to import the `pandas` package. Let's give it the same special nickname we used before—`pd`.

```
[1]: # import the pandas package with the nickname pd

import pandas as pd
```

Now we'll create a `DataFrame`. Modify this cell to save it to a variable called `car_data`.

```
[2]: # save the DataFrame to a variable
car_data = pd.DataFrame({'acceleration': [12.0,11.5,11.0,12.0,10.5,10.0,9.0,8.
→5,10.0,8.5,10.0,8.0,9.5,10.0,15.0,15.5,15.5,16.0,14.5,20.5],
'cylinders': [8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 4, 6, 6, 6, 4, 4],
'displacement': [307.0,350.0,318.0,304.0,302.0,429.0,454.0,440.0,455.0,390.
→0,383.0,340.0,400.0,455.0,113.0,198.0,199.0,200.0,97.0,97.0],
'horsepower': [130.0,165.0,150.0,150.0,140.0,198.0,220.0,215.0,225.0,190.0,170.
→0,160.0,150.0,225.0,95.0,95.0,97.0,85.0,88.0,46.0],
'model_year': [70,70,70,70,70,70,70,70,70,70,70,70,70,70,70,70,70,70,70,70],
'mpg': [18.0,15.0,18.0,16.0,17.0,15.0,14.0,14.0,14.0,15.0,15.0,14.0,15.0,14.
→0,24.0,22.0,18.0,21.0,27.0,26.0],
'name': ['chevrolet chevelle malibu','buick skylark 320','plymouth_
→satellite','amc rebel sst','ford torino','ford galaxie 500','chevrolet_
→impala','plymouth fury iii','pontiac catalina','amc ambassador dpl','dodge_
→challenger se',"plymouth 'cuda 340",'chevrolet monte carlo','buick estate_
→wagon (sw)','toyota corona mark ii','plymouth duster','amc hornet','ford_
→maverick','datsun pl510','volkswagen 1131 deluxe sedan'],
'origin':_
→['usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','usa','japan',
'weight':_
→[3504,3693,3436,3433,3449,4341,4354,4312,4425,3850,3563,3609,3761,3086,2372,2833,2774,2587,
```

Now explore the `car_data` `DataFrame`. View the first few rows:

```
[3]: # view the first 5 rows

car_data.head(5)
```

```
[3]: acceleration cylinders displacement horsepower model_year mpg \
0      12.0          8      307.0      130.0          70 18.0
1      11.5          8      350.0      165.0          70 15.0
2      11.0          8      318.0      150.0          70 18.0
3      12.0          8      304.0      150.0          70 16.0
4      10.5          8      302.0      140.0          70 17.0
```

```

          name origin weight
0  chevrolet chevelle malibu    usa    3504
1      buick skylark 320      usa    3693
2    plymouth satellite      usa    3436
3      amc rebel sst      usa    3433
4      ford torino      usa    3449
```

```
[4]: # view the first 10 rows
```

```
car_data.head(10)
```

```
[4]: acceleration cylinders displacement horsepower model_year mpg \
0      12.0          8      307.0      130.0          70 18.0
1      11.5          8      350.0      165.0          70 15.0
2      11.0          8      318.0      150.0          70 18.0
3      12.0          8      304.0      150.0          70 16.0
4      10.5          8      302.0      140.0          70 17.0
5      10.0          8      429.0      198.0          70 15.0
6       9.0          8      454.0      220.0          70 14.0
7       8.5          8      440.0      215.0          70 14.0
8      10.0          8      455.0      225.0          70 14.0
9       8.5          8      390.0      190.0          70 15.0
```

```

          name origin weight
0  chevrolet chevelle malibu    usa    3504
1      buick skylark 320      usa    3693
2    plymouth satellite      usa    3436
3      amc rebel sst      usa    3433
4      ford torino      usa    3449
5    ford galaxie 500      usa    4341
6    chevrolet impala      usa    4354
7    plymouth fury iii      usa    4312
8    pontiac catalina      usa    4425
9    amc ambassador dpl      usa    3850
```

What does the end of the DataFrame look like? Try viewing the last few rows:

```
[5]: # view the last 5 rows
```

```
car_data.tail(5)
```

```
[5]:      acceleration  cylinders  displacement  horsepower  model_year  mpg  \
15          15.5          6          198.0          95.0          70  22.0
16          15.5          6          199.0          97.0          70  18.0
17          16.0          6          200.0          85.0          70  21.0
18          14.5          4           97.0          88.0          70  27.0
19          20.5          4           97.0          46.0          70  26.0

      name  origin  weight
15  plymouth duster    usa   2833
16      amc hornet    usa   2774
17    ford maverick    usa   2587
18    datsun pl510  japan   2130
19 volkswagen 1131 deluxe sedan europe   1835
```

What happens when you call `head` or `tail` without putting a number between the parentheses?

```
[6]: # try using head without a number

car_data.head()
```

```
[6]:      acceleration  cylinders  displacement  horsepower  model_year  mpg  \
0          12.0          8          307.0          130.0          70  18.0
1          11.5          8          350.0          165.0          70  15.0
2          11.0          8          318.0          150.0          70  18.0
3          12.0          8          304.0          150.0          70  16.0
4          10.5          8          302.0          140.0          70  17.0

      name  origin  weight
0  chevrolet chevelle malibu    usa   3504
1      buick skylark 320    usa   3693
2    plymouth satellite    usa   3436
3      amc rebel sst    usa   3433
4      ford torino    usa   3449
```

```
[7]: # try using tail without a number

car_data.tail()
```

```
[7]:      acceleration  cylinders  displacement  horsepower  model_year  mpg  \
15          15.5          6          198.0          95.0          70  22.0
16          15.5          6          199.0          97.0          70  18.0
17          16.0          6          200.0          85.0          70  21.0
18          14.5          4           97.0          88.0          70  27.0
19          20.5          4           97.0          46.0          70  26.0

      name  origin  weight
15  plymouth duster    usa   2833
```

16		amc hornet	usa	2774
17		ford maverick	usa	2587
18		datsum pl510	japan	2130
19	volkswagen 1131	deluxe sedan	europa	1835

What do the rows of the `DataFrame` represent?

Answers: Different types of cars

What measurements or observations do we have about the data?

Answer: acceleration, cylinder count, engine displacement, horsepower, model year, mpg, name, country of origin, and weight

What types of variables are in each of the columns?

- **acceleration:** float
- **cylinders:** int
- **displacement:** float
- **horsepower:** float
- **model_year:** int
- **mpg:** float
- **name:** string
- **origin:** string
- **weight:** int