```
In [1]: import pandas as pd
In [8]: s1 = pd.Series([1,12,43,4,75])
In [9]: s1
Out[9]: 0
              1
              12
         2
              43
         3
               4
              75
         dtype: int64
In [10]: type(s1)
Out[10]: pandas.core.series.Series
In [11]: #changing index from numarical to alphabetic
In [12]: import pandas as pd
In [14]: s2 = pd.Series([22,33,55,66])
         s2
Out[14]: 0
              22
              33
              55
         2
              66
         dtype: int64
In [21]: s2 = pd.Series([22,33,55,66],index=['a','b','c','d'])
         s2
Out[21]: a
              22
```

```
33
              55
         С
              66
         dtype: int64
In [22]: #series with dictionary
In [24]: | s1= pd.Series({'a':11,'b':22,'c':33})
         s1
Out[24]: a
              11
              22
              33
         С
         dtype: int64
In [27]: s2= pd.Series(\{'a':32,'b':43,'c':54\},index = ['c','b','a','z'])
         s2
Out[27]: c
              54.0
              43.0
              32.0
         а
               NaN
         dtype: float64
In [29]: import pandas as pd
         sq = [2,4,6,8,9]
         sq
Out[29]: [2, 4, 6, 8, 9]
In [32]: sq1 = pd.Series(sq)
         sq1
Out[32]: 0
              2
              6
              8
```

```
dtype: int64
In [34]: sq1[4]
Out[34]: 9
In [36]: sq1[2]
Out[36]: 6
In [38]: sq1[-3:]
Out[38]: 2
              6
              8
         dtype: int64
In [40]: sq1[1:]
Out[40]: 1
         2
              6
              8
         4
              9
         dtype: int64
In [41]: import pandas as pd
In [43]: 11 = [1,2,4,5,6,7,8]
         l2 = pd.Series(l1)
         12
Out[43]: 0
              1
              2
              4
              5
6
              7
```

```
6
         dtype: int64
In [45]: 12+5
Out[45]: 0
               6
               7
         2
               9
              10
             11
         5
              12
              13
         dtype: int64
In [56]: s1= [1,3,5,7]
         s2 = [2,4,6,8]
         s1= pd.Series(s1)
         s1
Out[56]: 0
              3
         2
              5
         dtype: int64
In [51]: s2= pd.Series(s2)
         s2
Out[51]: 0
              4
         1
         2
              6
         dtype: int64
In [57]: s1+s2
Out[57]: 0
               3
               7
```

```
11
              15
         dtype: int64
In [59]: 11
Out[59]: [1, 2, 4, 5, 6, 7, 8]
In [62]: 12-100 #can be done all operations -,+,/,*
Out[62]: 0
            - 99
            - 98
            - 96
            - 95
            -94
         5
            - 93
            - 92
         dtype: int64
In [64]: import pandas as pd
In [76]: pd.DataFrame({'Name':['Anne', 'Bob', 'Matt'], 'Marks':[20,30,40]})
Out[76]:
            Name Marks
                    20
          0 Anne
                    30
              Bob
                    40
             Matt
In [77]: import pandas as pd
         import os
In [78]: pwd
Out[78]: 'C:\\Users\\amolb'
```

```
v1 = pd.read csv('C:\Users\amolb\testfile.csv')
In [80]: v1 = pd.read csv('C:\Users\amolb\testfile.csv')
            File "<ipython-input-80-81f0bc0bfb98>", line 1
              v1 = pd.read csv('C:\Users\amolb\testfile.csv')
          SyntaxError: (unicode error) 'unicodeescape' codec can't decode bytes i
          n position 2-3: truncated \UXXXXXXX escape
In [82]:
          data
                                                       Traceback (most recent call l
          NameError
          ast)
          <ipython-input-82-c5d84736ba45> in <module>
          ----> 1 data
          NameError: name 'data' is not defined
In [84]: import pandas as pd
In [86]: dell=pd.read csv(r"C:\Users\amolb\.ipynb checkpoints\delli weather.csv"
In [87]: dell
Out[87]:
                 datetime_utc _conds _dewptm _fog _hail _heatindexm _hum _precipm _pressurem
                    19961101-
                             Smoke
               0
                                        9.0
                                              0
                                                    0
                                                             NaN
                                                                  27.0
                                                                           NaN
                                                                                    1010.0
                       11:00
                    19961101-
                             Smoke
                                       10.0
                                              0
                                                    0
                                                                  32.0
                                                                           NaN
                                                                                   -9999.0
                                                            NaN
                       12:00
                    19961101-
               2
                                              0
                             Smoke
                                       11.0
                                                    0
                                                                  44.0
                                                                           NaN
                                                                                   -9999.0
                                                            NaN
                       13:00
```

	da	atetime	_utc _	_conds	_dev	wptm	_fog	_hail	_heatin	dexm <sub>.</sub>	_hum	_pre	cipm	_press	urem
	3	19961 1	1101- 14:00	Smoke		10.0	0	0		NaN	41.0		NaN	10	010.0
	4	19961 1	1101- 16:00	Smoke		11.0	0	0		NaN	47.0		NaN	1	011.0
1009	985	20170 0	)424- )6:00	Haze		17.0	0	0		NaN	25.0		NaN	10	005.0
1009	986	20170	)424- )9:00	Haze		14.0	0	0		NaN	16.0		NaN	10	003.0
1009	987	20170	)424- 12:00	Haze		12.0	0	0		NaN	14.0		NaN	10	002.0
1009	988	20170	)424- 15:00	Haze		15.0	0	0		NaN	27.0		NaN	10	004.0
1009	989	20170	)424- 18:00	Haze		15.0	0	0		NaN	30.0		NaN	10	005.0
4			) colum	ins		-	_								<b>&gt;</b>
dell	l.hea	d(4)													
c	datetim	e_utc	_conds	s _dew	/ptm	_fog	_hail	_heat	indexm	_hum	_pred	cipm	_pres	surem	_rai
0	1996	31101- 11:00	Smoke	Э	9.0	0	0		NaN	27.0		NaN		1010.0	
1		1101- 12:00	Smoke	Э	10.0	0	0		NaN	32.0		NaN		9999.0	
2		31101- 13:00	Smoke	Э	11.0	0	0		NaN	44.0		NaN	-	9999.0	
3	1996	31101- 14:00	Smoke	e	10.0	0	0		NaN	41.0		NaN		1010.0	
4															<b>&gt;</b>

In [89]:

Out[89]:

```
In [91]: dell.nunique() #will give u unique value in each column
Out[91]: datetime_utc
                            100990
           _conds
                                 39
                                 51
           _dewptm
                                  2
           _fog
            _hail
                                  2
            heatindexm
                                193
                                100
           _hum
           _precipm
                                  0
           _pressurem
                                139
                                  2
           rain
                                  2
           _snow
                                 50
           _tempm
           _thunder
                                  2
           _tornado
                                  2
                                 48
           vism
           _wdird
                                 63
           _wdire
                                 17
           _wgustm
                                 22
           _windchillm
                                 20
                                 90
            wspdm
          dtype: int64
In [98]: dell
Out[98]:
                  datetime_utc _conds _dewptm _fog _hail _heatindexm _hum _precipm _pressurem
                     19961101-
                0
                               Smoke
                                          9.0
                                                0
                                                      0
                                                               NaN
                                                                     27.0
                                                                              NaN
                                                                                       1010.0
                        11:00
                     19961101-
                1
                               Smoke
                                         10.0
                                                0
                                                      0
                                                               NaN
                                                                     32.0
                                                                              NaN
                                                                                       -9999.0
                        12:00
                     19961101-
                2
                               Smoke
                                                0
                                                      0
                                                                                       -9999.0
                                         11.0
                                                               NaN
                                                                     44.0
                                                                              NaN
                        13:00
                     19961101-
                3
                               Smoke
                                                0
                                                      0
                                                                              NaN
                                         10.0
                                                               NaN
                                                                     41.0
                                                                                       1010.0
                        14:00
```

	datetime_utc	_conds	_dewptm	_fog	_hail	_heatindexm	_hum	_precipm	_pressurem
4	19961101- 16:00	Smoke	11.0	0	0	NaN	47.0	NaN	1011.0
100985	20170424- 06:00	Haze	17.0	0	0	NaN	25.0	NaN	1005.0
100986	20170424- 09:00	Haze	14.0	0	0	NaN	16.0	NaN	1003.0
100987	20170424- 12:00	Haze	12.0	0	0	NaN	14.0	NaN	1002.0
100988	20170424- 15:00	Haze	15.0	0	0	NaN	27.0	NaN	1004.0
100989	20170424- 18:00	Haze	15.0	0	0	NaN	30.0	NaN	1005.0
100990 r	ows × 20 colu	mns							•
									,
dell['	datetime_ut	c'].un	ique()						
array( ect)	['19961101- '20170424-	11:00' 12:00'	, '19961 , '20170	101 - 1 424 - 1	12:00 15:00	', '199611 ', '201704	01-13: 24-18:	00', 00'], di	ype=obj
	.rename(col ell.rename(		•	_					
dell.h	ead(2)								
datet	ime_utc _con	ds _dew	ptm _fog	_hail	_heat	tindexm _hur	n _pred	cipm _pre	ssurem _rai
0 19	9961101- 11:00 Smo	ke	9.0 0	0		NaN 27.	0	NaN	1010.0

In [101]:

Out[101]:

In [105]:

In [106]:

Out[106]:

	da	tetime_	utc _conds	_dewptm	_fog _hai	_heatindexm	_hum _precipn	n _pressurem _rai
	1	199611 12	01- :00 Smoke	10.0	0 0	NaN	32.0 Nal	N -9999.0
	4							•
In [109]:	impo	rt pan	das as pd					
In [111]:	dell= v")	=pd.re	ead_csv( <mark>r</mark> "	C:\Users\	\amolb\.	ipynb_checkp	oints\austi	n_weather.cs
In [113]:	dell							
Out[113]:		Date	TempHighF	TempAvaF	TempLow	- DewPointHigh	F DewPointAvo	F DewPointLowF
	0	2013-	74	60	4			19 43
		12-21		00	·		•	.0
	1	2013- 12-22	56	48	3	9 4	3	36 28
	2	2013- 12-23	58	45	3	2 3	31 2	27 23
	3	2013- 12-24	61	46	3	1 3	36 2	28 21
	4	2013- 12-25	58	50	4	1 4	.4 4	10 36
	1314	2017- 07-27	103	89	7	5 7	'1 6	61
	1315	2017- 07-28	105	91	7	5 7	'1 e	54 55
	1316	2017- 07-29	107	92	7	7	'2	55
	1317	2017- 07-30	106	93	7	9 7	70 6	63

```
Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF
                2017-
           1318
                            99
                                     88
                                              77
                                                           66
                                                                       61
                                                                                    54
                07-31
          1319 rows × 21 columns
In [115]: dell.nunique()
Out[115]: Date
                                          1319
          TempHighF
                                            74
                                            64
          TempAvgF
          TempLowF
                                            61
          DewPointHighF
                                            64
          DewPointAvgF
                                            66
          DewPointLowF
                                            73
          HumidityHighPercent
                                            58
          HumidityAvgPercent
                                            69
                                            82
          HumidityLowPercent
          SeaLevelPressureHighInches
                                           105
          SeaLevelPressureAvgInches
                                           101
          SeaLevelPressureLowInches
                                           105
          VisibilityHighMiles
                                             5
          VisibilityAvgMiles
                                            10
          VisibilityLowMiles
                                            12
          WindHighMPH
                                            22
          WindAvgMPH
                                            13
                                            37
          WindGustMPH
          PrecipitationSumInches
                                           114
          Events
                                             9
          dtype: int64
In [120]: dell["TempHighF"].nunique() #will give u count of that column
Out[120]: 74
In [121]: dell["TempHighF"].unique() #will show u all numbers of that column
```

```
Out[121]: array([ 74,
                        56,
                             58,
                                  61,
                                        57,
                                             60, 62,
                                                       64,
                                                             44,
                                                                  55,
                             53,
                                   70,
                                        72,
                                                  67,
                                                       76,
                                                             82,
                        48,
                                             75,
                                                                  63,
                                                                        40,
                        80,
                             46,
                                   32,
                                        38, 86, 81,
                                                       83, 77,
                                                                  52,
                                                                       73,
                   65,
                                                                                  50,
                             89,
                                   79,
                                        85, 84, 87, 78,
                                                             88,
                                                                  96,
                   68,
                        66,
                                                                       93,
                                                                                  91,
                   92,
                             95,
                                  97,
                                        98, 100, 101,
                                                       99, 102, 104, 103,
                             42, 43,
                                        37, 105, 34, 107, 106], dtype=int64)
In [123]: dell.head(5)
Out[123]:
              Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF Hui
              2013-
                         74
                                            45
                                   60
                                                         67
                                                                     49
                                                                                 43
              12-21
              2013-
                          56
                                   48
                                            39
                                                         43
                                                                     36
                                                                                 28
              12-22
             2013-
12-23
                          58
                                   45
                                            32
                                                         31
                                                                     27
                                                                                 23
             2013-
12-24
                         61
                                   46
                                            31
                                                                     28
                                                                                 21
                                                         36
             2013-
                         58
                                                         44
                                                                     40
                                   50
                                            41
                                                                                 36
             12-25
          5 rows × 21 columns
In [139]: #finding count
          dell.Events.value counts()
Out[139]:
                                         903
          Rain
                                         192
          Rain , Thunderstorm
                                         137
          Fog , Rain , Thunderstorm
                                          33
                                          21
           Fog
          Thunderstorm
                                          17
          Fog , Rain
                                          14
          Rain , Snow
                                           1
```

```
Fog , Thunderstorm
           Name: Events, dtype: int64
In [142]: dell.Events == 'Rain' #Filtering - will show result in boolean
Out[142]: 0
                    False
                    False
           2
                    False
           3
                    False
                    False
                    . . .
           1314
                    False
           1315
                    False
           1316
                    False
           1317
                    False
           1318
                    False
           Name: Events, Length: 1319, dtype: bool
In [144]: dell[dell.Events == 'Rain'] #will show all the records which is having
            Rain
Out[144]:
                  Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF
                 2014-
                                       47
                              53
                                                 40
                                                              51
                                                                           45
                                                                                        30
                 01-08
                 2014-
01-10
                             72
                                       65
                                                 57
                                                              64
                                                                           61
                                                                                        54
                 2014-
01-12
                             67
                                                              58
                                                                           47
                                       57
                                                 46
                                                                                        33
                 2014-
                             60
                                       47
                                                 34
                                                              43
                                                                           23
                                                                                        5
                 2014-
01-28
                                                                                        7
                              39
                                       33
                                                 27
                                                              19
                                                                           14
                 2017-
                              85
                                       77
                                                 68
                                                              70
                                                                           68
                                                                                        62
```

		Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF
	1269	2017- 06-12	94	85	75	72	68	62
	1281	2017- 06-24	85	79	72	76	71	66
	1282	2017- 06-25	90	83	75	74	71	67
	1284	2017- 06-27	91	81	71	74	72	67
	192 rc	)ws × 2 <sup>-</sup>	1 columns					
	4							<b>&gt;</b>
In [146]:		upby() .head(	This is					
Out[146]:	D	ate Te	mpHighF Te	mpAvgF Te	mpLowF De	ewPointHighF D	ewPointAvgF De	wPointLowF Hui
		)13- 2-21	74	60	45	67	49	43
		)13- 2-22	56	48	39	43	36	28
	<b>2</b> 20 12	)13- 2-23	58	45	32	31	27	23
	3 rows	s × 21 c	olumns					
	4							<b>&gt;</b>
In [149]:	dell	.group	by('Event	s').get_g	group('Ra	in')		
Out[149]:		Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF
	18	2014- 01-08	53	47	40	51	45	30

Da	ate	TempHigh	hF T	TempAv	gF T	empLow	νF	DewPointHig	hF	DewPointAv	gF	DewPointLov	vF
		•	72		65	Ę	57		64		61		54
		(	67		57	4	46		58		47	;	33
		(	60		47	:	34		43		23		5
		;	39		33	2	27		19		14		7
		;	85		77	(	68		70		68	(	62
		,	94		85	7	75		72		68	(	62
		1	85		79	-	72		76		71	(	66
		9	90		83	7	75		74		71	(	67
34 20° 06-	17- ·27	,	91		81	-	71		74		72	(	67
rows	× 21	columns	8										
													•
l.he	ad(!	5)											
Date	Ten	npHighF	Tem	pAvgF	Tem	pLowF	Dev	vPointHighF	De	wPointAvgF	Dev	vPointLowF	Huı
2013- 12-21		74		60		45		67		49		43	
2013- 12-22		56		48		39		43		36		28	
	7 20°- 9 20°- 1 20°- 1 20°- 2 20°- 1 20°- 2 20°- 3 20°- 4 20°- 7 20°- 1 20°- 2 20°- 1 20°- 2 20°- 2 20°- 3 20°- 2 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 2 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 3 20°- 4 20°- 4 20°- 3 20°- 4 20°- 4 20°- 3 20°- 4 20°- 4 20°- 3 20°- 4	0 2014- 01-10 2 2014- 01-12 7 2014- 01-27 8 2014- 01-28  7 2017- 05-31 9 2017- 06-12 1 2017- 06-24 2 2017- 06-25 4 2017- 06-27 rows × 21 l . head (!	0 2014- 01-10 2 2014- 01-12 7 2014- 01-27 8 2014- 01-28  7 2017- 05-31 9 2017- 06-12 1 2017- 06-24 2 2017- 06-25 4 2017- 06-27 rows × 21 columns 1 . head (5) Date TempHighF 2013- 12-21 74	0       2014- 01-10       72         2       2014- 01-12       67         7       2014- 01-27       60         8       2014- 01-28       39              7       2017- 05-31       85         9       2017- 06-12       94         1       2017- 06-24       85         2       2017- 06-25       90         4       2017- 06-27       91         rows × 21 columns         1 . head (5)         Date TempHighF Tem         2013- 12-21       74         2013- 12-21       74	2014- 01-10 72 72 74 72 75 74 72 75 74 75 75 75 75 75 75 75 75 75 75 75 75 75	0       2014- 01-10       72       65         2       2014- 01-12       67       57         7       2014- 01-27       60       47         8       2014- 01-28       39       33               7       2017- 05-31       85       77         9       2017- 06-12       94       85         1       2017- 06-24       85       79         2       2017- 06-25       90       83         4       2017- 06-27       91       81         rows × 21 columns         1. head (5)         Date       TempHighF       TempAvgF       Tem         2013- 12-21       74       60         2013- 12-21       74       60	0       2014- 01-10       72       65       8         2       2014- 01-12       67       57       4         7       2014- 01-27       60       47       3         8       2014- 01-28       39       33       2                7       2017- 05-31       85       77       6         9       2017- 06-12       94       85       79         2       2017- 06-24       85       79       3         2       2017- 06-25       90       83       3         4       2017- 06-27       91       81       3         rows × 21 columns       1. head (5)       81       1       1         2013- 12-21       74       60       45       20         2013- 12-21       74       60       45	0       2014- 01-10       72       65       57         2       2014- 01-12       67       57       46         7       2014- 01-27       60       47       34         8       2014- 01-28       39       33       27                 7       2017- 05-31       85       77       68         9       2017- 05-31       85       79       72         1       2017- 06-12       94       85       75         2       2017- 06-24       85       79       72         2       2017- 06-25       90       83       75         4       2017- 06-27       91       81       71         rows × 21 columns         1. head (5)             Date       TempHighF       TempAvgF       TempLowF       Dev         2013- 12-21       74       60       45         2013- 12-21       74       60       45	0       2014- 01-10       72       65       57         2       2014- 01-12       67       57       46         7       2014- 01-27       60       47       34         8       2014- 01-28       39       33       27                 7       2017- 05-31       85       77       68         9       2017- 06-12       94       85       75         1       2017- 06-24       85       79       72         2       2017- 06-25       90       83       75         4       2017- 06-27       91       81       71         rows × 21 columns         1 . head (5)        DewPointHighF         2013- 12-21       74       60       45       DewPointHighF	0       2014- 01-10       72       65       57       64         2       2014- 01-12       67       57       46       58         7       2014- 01-27       60       47       34       43         8       2014- 01-28       39       33       27       19                    7       2017- 05-31       85       77       68       70	0       2014- 01-10	0         2014- 01-10         72         65         57         64         61           2         2014- 01-12         67         57         46         58         47           7         2014- 01-27         60         47         34         43         23           8         2014- 01-28         39         33         27         19         14           8         2017- 05-31         85         77         68         70         68           9         2017- 06-12         94         85         75         72         68           1         2017- 06-24         85         79         72         76         71           2         2017- 06-25         90         83         75         74         71           4         2017- 06-27         91         81         71         74         72           rows × 21 columns           1. head (5)           Date         TempHighF         TempAvgF         TempLowF         DewPointHighF         DewPointAvgF         DewPointAvgF           2013- 12-21         74         60         45         67         49	0         2014- 01-10         72         65         57         64         61           2         2014- 01-12         67         57         46         58         47           7         2014- 01-27         60         47         34         43         23           8         2014- 01-28         39         33         27         19         14                    7         05-31         85         77         68         70         68           9         2017- 06-12         94         85         75         72         68           1         2017- 06-24         85         79         72         76         71           2         2017- 06-25         90         83         75         74         71           4         2017- 06-27         91         81         71         74         72           rows × 21 columns           1. head (5)

In [151]:

Out[151]:

```
Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF Hui
                                    46
                           61
                                              31
                                                           36
                                                                        28
                                                                                     21
              12-24
              2013-
12-25
                           58
                                    50
                                              41
                                                           44
                                                                        40
                                                                                     36
           5 rows × 21 columns
In [162]: dell['WindAvgMPH'] == 4 #will give u boolean number
Out[162]: 0
                    False
                    False
           1
                    False
           2
           3
                    False
                    False
                    . . .
           1314
                    False
           1315
                    False
           1316
                    False
           1317
                    False
           1318
                    False
           Name: WindAvgMPH, Length: 1319, dtype: bool
In [163]: dell[dell['WindAvgMPH'] == 4]
Out[163]:
             Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF Humi
           0 rows × 21 columns
In [165]: dell
Out[165]:
                  Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF
```

	Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF
0	2013- 12-21	74	60	45	67	49	43
1	2013- 12-22	56	48	39	43	36	28
2	2013- 12-23	58	45	32	31	27	23
3	2013- 12-24	61	46	31	36	28	21
4	2013- 12-25	58	50	41	44	40	36
1314	2017- 07-27	103	89	75	71	67	61
1315	2017- 07-28	105	91	76	71	64	55
1316	2017- 07-29	107	92	77	72	64	55
1317	2017- 07-30	106	93	79	70	68	63
1318	2017- 07-31	99	88	77	66	61	54
	rows × 2	21 columns					<b>&gt;</b>
4							<b>,</b>
dell	.WindH	HighMPH.va	lue_count	ts()			
13 12 14 10 15 16 9	212 195 162 140 113 99 98						

In [169]:

Out[169]:

```
17
                  80
          8
                  74
          18
                  43
          7
                  27
          20
                  25
                  22
          21
          22
                  10
          24
                   5
          23
                   4
          25
                   3
                   2
          28
          29
          6
                   1
          26
          Name: WindHighMPH, dtype: int64
In [177]: dell['WindAvgMPH'] == 4
Out[177]: 0
                   False
                   False
                   False
                   False
                   False
                   . . .
          1314
                   False
          1315
                   False
          1316
                   False
          1317
                   False
          1318
                   False
          Name: WindAvgMPH, Length: 1319, dtype: bool
In [179]: dell[dell['WindAvgMPH'] == 4]
Out[179]:
             Date TempHighF TempAvgF TempLowF DewPointHighF DewPointAvgF DewPointLowF Humi
          0 rows × 21 columns
```

in [181]:	dell							
ut[181]:		Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF
	0	2013- 12-21	74	60	45	67	49	43
	1	2013- 12-22	56	48	39	43	36	28
	2	2013- 12-23	58	45	32	31	27	23
	3	2013- 12-24	61	46	31	36	28	21
	4	2013- 12-25	58	50	41	44	40	36
						•••		
	1314	2017- 07-27	103	89	75	71	67	61
	1315	2017- 07-28	105	91	76	71	64	55
	1316	2017- 07-29	107	92	77	72	64	55
	1317	2017- 07-30	106	93	79	70	68	63
	1318	2017- 07-31	99	88	77	66	61	54
	1319 r	ows × 2	21 columns					
	4							
n [183]:	dell	isnul	.l()					
ut[183]:		Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF

	Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
1314	False	False	False	False	False	False	False
1315	False	False	False	False	False	False	False
1316	False	False	False	False	False	False	False
1317	False	False	False	False	False	False	False
1318	False	False	False	False	False	False	False
dell	.isnul	ll().sum()					<b>&gt;</b>
Temple Temple Temple DewPo DewPo Humic Humic Seale Seale Visik	LowF DintHi DintAv DintLo HityHi HityAv HityLo EvelPr EvelPr Dility	/gF	hInches Inches Inches	0 0 0 0 0 0 0 0 0			

In [185]:

Out[185]:

```
VisibilityLowMiles
                                         0
          WindHighMPH
          WindAvgMPH
                                         0
          WindGustMPH
                                         0
          PrecipitationSumInches
                                         0
          Events
                                         0
          dtype: int64
In [187]: dell.notnull().sum()
Out[187]: Date
                                         1319
          TempHighF
                                         1319
          TempAvgF
                                         1319
          TempLowF
                                         1319
          DewPointHighF
                                         1319
          DewPointAvgF
                                         1319
          DewPointLowF
                                         1319
          HumidityHighPercent
                                         1319
          HumidityAvgPercent
                                         1319
          HumidityLowPercent
                                         1319
          SeaLevelPressureHighInches
                                         1319
          SeaLevelPressureAvgInches
                                         1319
          SeaLevelPressureLowInches
                                         1319
          VisibilityHighMiles
                                         1319
          VisibilityAvgMiles
                                         1319
          VisibilityLowMiles
                                         1319
          WindHighMPH
                                         1319
          WindAvgMPH
                                         1319
          WindGustMPH
                                         1319
          PrecipitationSumInches
                                         1319
          Events
                                         1319
          dtype: int64
In [188]:
          import pandas as pd
In [190]: old=pd.read csv(r"C:\Users\amolb\.ipynb checkpoints\delli weather.csv")
In [191]: old
```

91]:		datetime_utc	_conds	_dewptm	_fog	_hail	_heatindexm	_hum	_precipm	_pressurem
	0	19961101- 11:00	Smoke	9.0	0	0	NaN	27.0	NaN	1010.0
	1	19961101- 12:00	Smoke	10.0	0	0	NaN	32.0	NaN	-9999.0
	2	19961101- 13:00	Smoke	11.0	0	0	NaN	44.0	NaN	-9999.0
	3	19961101- 14:00	Smoke	10.0	0	0	NaN	41.0	NaN	1010.0
	4	19961101- 16:00	Smoke	11.0	0	0	NaN	47.0	NaN	1011.0
	100985	20170424- 06:00	Haze	17.0	0	0	NaN	25.0	NaN	1005.0
	100986	20170424- 09:00	Haze	14.0	0	0	NaN	16.0	NaN	1003.0
	100987	20170424- 12:00	Haze	12.0	0	0	NaN	14.0	NaN	1002.0
	100988	20170424- 15:00	Haze	15.0	0	0	NaN	27.0	NaN	1004.0
	100989	20170424- 18:00	Haze	15.0	0	0	NaN	30.0	NaN	1005.0
	100990	rows × 20 colu	mns							
	4									•
	old.re	name(columr	ns= { ' r	ain': 'R	ain'	})				
		datetime_utc	_conds	_dewptm	_fog	_hail	_heatindexm	_hum	_precipm	_pressurem
	0	19961101- 11:00	Smoke	9.0	0	0	NaN	27.0	NaN	1010.0

	datetime_utc	_conds	_dewptm	_fog	_hail	_heatindexm	_hum	_precipm	_pressurem
1	19961101- 12:00	Smoke	10.0	0	0	NaN	32.0	NaN	-9999.0
2	19961101- 13:00	Smoke	11.0	0	0	NaN	44.0	NaN	-9999.0
3	19961101- 14:00	Smoke	10.0	0	0	NaN	41.0	NaN	1010.0
4	19961101- 16:00	Smoke	11.0	0	0	NaN	47.0	NaN	1011.0
100985	20170424- 06:00	Haze	17.0	0	0	NaN	25.0	NaN	1005.0
100986	20170424- 09:00	Haze	14.0	0	0	NaN	16.0	NaN	1003.0
100987	20170424- 12:00	Haze	12.0	0	0	NaN	14.0	NaN	1002.0
100988	20170424- 15:00	Haze	15.0	0	0	NaN	27.0	NaN	1004.0
100989	20170424- 18:00	Haze	15.0	0	0	NaN	30.0	NaN	1005.0
100990 r	ows × 20 colu	mns							
									•
dell.re	ename(colum	nns= {'	DewPoint	HighF	': 'D	)ewPtHighF	'})		
С	Date TempHig	hF Temp	AvgF Ten	npLowF	DewF	PtHighF Dew	PointAvg	JF DewPo	intLowF Hu
	)13- 2-21	74	60	45		67	4	19	43
	013- 2-22	56	48	39		43	3	36	28
	013- 2-23	58	45	32		31	2	27	23

In [197]:

Out[197]:

	Date	TempHighF	TempAvgF	TempLowF	DewPtHighF	DewPointAvgF	DewPointLowF	Hu
3	2013- 12-24	61	46	31	36	28	21	
4	2013- 12-25	58	50	41	44	40	36	
1314	2017- 07-27	103	89	75	71	67	61	
1315	2017- 07-28	105	91	76	71	64	55	
1316	2017- 07-29	107	92	77	72	64	55	
1317	2017- 07-30	106	93	79	70	68	63	
1318	2017- 07-31	99	88	77	66	61	54	

1319 rows × 21 columns

In [198]: dell.head()

Out[198]:

	Date	TempHighF	TempAvgF	TempLowF	DewPointHighF	DewPointAvgF	DewPointLowF	Huı
0	2013- 12-21	74	60	45	67	49	43	
1	2013- 12-22	56	48	39	43	36	28	
2	2013- 12-23	58	45	32	31	27	23	
3	2013- 12-24	61	46	31	36	28	21	
4	2013- 12-25	58	50	41	44	40	36	

```
5 rows × 21 columns
                                                                                          •
In [199]: dell.rename(columns= {'DewPointHighF': 'DewPtHighF'}, inplace = True)
In [200]:
           dell.head(5)
Out[200]:
               Date TempHighF TempAvgF TempLowF DewPtHighF DewPointAvgF DewPointLowF Humid
              2013-
                           74
                                    60
                                                         67
                                                                      49
                                              45
                                                                                   43
              12-21
              2013-
12-22
                           56
                                    48
                                              39
                                                         43
                                                                      36
                                                                                   28
              2013-
                           58
                                     45
                                              32
                                                         31
                                                                      27
                                                                                   23
              12-23
                           61
                                    46
                                                         36
                                                                      28
                                                                                   21
                                              31
              2013-
12-25
                           58
                                              41
                                                                      40
                                                                                   36
                                     50
                                                         44
           5 rows × 21 columns
In [210]: dell.TempHighF.std()
Out[210]: 14.766522914053345
In [211]: dell.TempAvgF.var()
Out[211]: 197.2874136727024
In [222]: #by using value counts()
           dell.Events.value_counts()
Out[222]:
                                           903
           Rain
                                           192
```

```
Rain , Thunderstorm
                                          137
           Fog , Rain , Thunderstorm
                                           33
           Fog
                                           21
           Thunderstorm
                                           17
           Fog , Rain
                                           14
           Rain , Snow
                                            1
           Fog , Thunderstorm
                                            1
           Name: Events, dtype: int64
In [223]: #by using filtering
           dell.Events == 'Fog'
Out[223]: 0
                   False
                   False
           1
           2
                   False
           3
                   False
                   False
           4
                    . . .
           1314
                   False
           1315
                   False
           1316
                   False
           1317
                   False
           1318
                   False
           Name: Events, Length: 1319, dtype: bool
In [224]: dell[dell.Events == 'Fog']
Out[224]:
                 Date TempHighF TempAvgF TempLowF DewPtHighF DewPointAvgF DewPointLowF Hu
                2014-
             19
                             70
                                      62
                                                53
                                                          60
                                                                       55
                                                                                   50
                01-09
                             76
                                      59
                                                41
                                                          53
                                                                       45
                                                                                   38
                02-09
                2014-
             57
                             76
                                      68
                                                59
                                                          61
                                                                       57
                                                                                   53
                02-16
                2014-
03-01
                             82
                                      68
                                                53
                                                          65
                                                                       57
                                                                                   48
```

	Date	TempHighF	TempAvgF	TempLowF	DewPtHighF	DewPointAvgF	DewPointLowF	Hu
90	2014- 03-21	80	67	54	60	54	41	
374	2014- 12-30	46	43	39	43	40	32	
387	2015- 01-12	46	43	40	45	41	36	
477	2015- 04-12	82	75	67	69	67	65	
681	2015- 11-02	79	68	57	60	58	55	
682	2015- 11-03	80	69	57	62	59	55	
711	2015- 12-02	68	55	42	48	40	31	
720	2015- 12-11	79	66	52	65	61	51	
747	2016- 01-07	73	61	49	53	50	46	
772	2016- 02-01	77	66	54	61	54	37	
845	2016- 04-14	77	66	54	58	56	53	
1045	2016- 10-31	86	73	60	69	62	58	
1059	2016- 11-14	82	69	56	62	58	55	
1081	2016- 12-06	58	51	43	48	45	43	
1107	2017- 01-01	73	63	53	60	52	39	
1127	2017- 01-21	81	65	48	58	51	33	

		Date TempHig	hF TempAv	gF TempLov	wF DewPtHig	hF DewPointAv	gF DewPointLov	vF Hu
	<b>1142</b> 20	)17- 2-05	72	62	51	64	59	51
	21 rows	× 21 columns						
In [226]:	#group	by()						•
In [227]:	dell.he	ead(10)						
Out[227]:	Date	TempHighF	TempAvgF	TempLowF	DewPtHighF	DewPointAvgF	DewPointLowF	Humid
	o 2013- 12-21	74	60	45	67	49	43	
	1 2013- 12-22		48	39	43	36	28	
	<b>2</b> 2013-12-23	58	45	32	31	27	23	
	<b>3</b> 2013-12-24	61	46	31	36	28	21	
	<b>4</b> 2013-12-25	58	50	41	44	40	36	
	<b>5</b> 2013-12-26	57	48	39	39	36	33	
	<b>6</b> 2013-12-27	60	53	45	41	39	37	
	<b>7</b> 2013-12-28	62	51	40	43	39	33	
	<b>8</b> 2013-12-29		50	36	49	41	28	
	<b>9</b> 2013-12-30	44	40	35	31	26	21	

```
10 rows × 21 columns
                                                                                               •
In [234]: #str.contains()
            dell[dell.Events.str.contains('Rain')].head(5)
Out[234]:
                 Date TempHighF TempAvgF TempLowF DewPtHighF DewPointAvgF DewPointLowF Humi
                2013-
12-21
                             74
                                        60
                                                  45
                                                             67
                                                                           49
                                                                                        43
                2014-
01-08
                             53
                                        47
                                                  40
                                                             51
                                                                           45
                                                                                        30
             18
                2014-
01-10
                             72
                                        65
                                                             64
                                                                           61
                                                                                        54
                                                  57
                2014-
01-12
                             67
                                       57
                                                  46
                                                             58
                                                                           47
                                                                                        33
                2014-
01-23
                             56
                                       42
                                                  27
                                                             42
                                                                           29
                                                                                        20
            5 rows × 21 columns
                                                                                               >
In [239]: dell.WindHighMPH.value_counts()
Out[239]: 13
                   212
            12
                   195
            14
                   162
            10
                   140
            15
                   113
            16
                    99
            9
                    98
            17
                    80
            8
                    74
            18
                    43
                    27
            7
                    25
            20
                    22
            21
```

```
22
                    10
            24
                     5
            23
                     4
            25
            28
            29
            6
            26
            Name: WindHighMPH, dtype: int64
In [250]: #dell.head(5)
            dell[(dell['TempHighF'] > 20) & (dell['VisibilityHighMiles'] == 10)]
Out[250]:
              Date TempHighF TempAvgF TempLowF DewPtHighF DewPointAvgF DewPointLowF Humidity
            0 rows × 21 columns
           dell.groupby('Events').mean()
In [251]:
Out[251]:
                                   TempHighF TempAvgF TempLowF
                            Events
                                    82.807309 71.620155
                                                         59.895903
                                              62.809524
                                    73.476190
                                                         51.523810
                         Fog , Rain
                                    71.500000
                                               62.785714
                                                         53.714286
             Fog , Rain , Thunderstorm
                                    83.242424
                                               74.757576
                                                         65.939394
                                    89.000000
                 Fog , Thunderstorm
                                               73.000000
                                                         57.000000
                                    71.619792
                                              64.484375
                                                         56.843750
                              Rain
                        Rain, Snow
                                    56.000000
                                               42.000000
                                                         27.000000
                 Rain , Thunderstorm
                                    81.408759
                                              72.824818
                                                         63.773723
```

## TempHighF TempAvgF TempLowF **Events** 90.764706 80.411765 69.470588 Thunderstorm In [255]: dell.groupby('Events').min() #dell.groupby('Events').max() Out[255]: Date TempHighF TempAvgF TempLowF DewPtHighF DewPointAvgF DewPointL **Events** 2013-32 29 19 12-22 2014-01-09 46 43 39 43 40 Fog 2014-03-15 Fog , Rain 50 42 34 49 45 Fog, Rain, 2014-59 52 34 46 55 Thunderstorm 04-14 Fog, 2015-89 73 57 69 58 Thunderstorm 04-19 2014-01-08 36 30 23 19 12 Rain 2014-Rain, Snow 42 56 27 42 29 01-23 **Rain**, 2013-36 34 24 20 27 Thunderstorm 12-21 2014-**Thunderstorm** 66 55 44 57 50 03-28 In [258]: dell[dell['Events'] == 'Fog'].head(5) Out[258]:

	Date	TempHighF	TempAvgF	TempLowF	DewPtHighF	DewPointAvgF	DewPointLowF	Humi
19	2014- 01-09	70	62	53	60	55	50	
50	2014- 02-09	76	59	41	53	45	38	
57	2014- 02-16	76	68	59	61	57	53	
70	2014- 03-01	82	68	53	65	57	48	
90	2014- 03-21	80	67	54	60	54	41	
<b>←</b>		l columns	s'1 == 'R	ain')   (	dell['Temp	HighF']> 70)	1	<b>&gt;</b>
uet	t [ (ue	CCL EVENC.	, ,	, , ,	• •			
uet	Dat				·		- DewPointLowF	Hu
		e TempHigh	F TempAvg	- TempLow	F DewPtHighl	F DewPointAvgI	- DewPointLowF	
	<b>Dat</b>	e TempHigh 3- 7 1 7	F TempAvgl	TempLow	F DewPtHighl	F DewPointAvgI	F DewPointLowF	}
	Dat  2013 12-2 4 2014 01-0	e TempHigh 3- 7 1 7 4 7	F TempAvgl	TempLow  4	F DewPtHighl 5 6	F DewPointAvgI 7 49 5 48	DewPointLowF	3
1	Dat  2013 12-2 4 2014 01-0 8 2014 01-0	e TempHigh 3- 1 7 4- 7 4- 5 8- 5	F TempAvgl 4 66 1 5	TempLow  4  4  4	F DewPtHighl 5 6 2 5 0 5	F <b>DewPointAvgI</b> 7 48 5 48 1 48	DewPointLowF  3  38  38	3
1	Dat  2013 12-2 4 2014 01-0 8 2014 01-0 0 2014 01-1	e TempHigh  3- 1	F TempAvgl 4 66 1 57 3 47 2 66	TempLow  4  4  5  5	F DewPtHighl 5 6 2 5 7 6	F DewPointAvgI 7 48 5 48 1 48 4 6	F DewPointLowF  3 43  3 38  5 30  54	3
1 1 2 2	Dat  2013 12-2 4 2014 01-0 8 2014 01-0 0 2014 01-1	e TempHigh 3- 7 1- 7 4- 5 1- 0 7	F TempAvgl 4 66 1 57 3 47 2 66	F TempLow  1 4  7 4  5 5  2 4	F DewPtHighl 5 6 2 5 7 6	F DewPointAvgI 7 49 5 48 1 49 4 66 4 37	DewPointLowF  3 43 38 30 47 20	3
1 1 2 2	Dat  2013 12-2 4 2014 01-0 8 2014 01-1 1 2014 01-1 2014	e TempHigh  3- 1	F TempAvgl 4 66 1 5 3 4 2 66 5 66	F TempLow  1 4  7 4  5 5  2 4	F DewPtHighl  5 6  2 5  7 6  8 5	F DewPointAvgI 7 49 5 48 1 49 4 66 4 37	DewPointLowF  3 43 38 5 30 54 7 20	3 3 4

In [261]:

Out[261]:

		Date	TempHighF	TempAvgF	TempLowF	DewPtHighF	DewPointAvgF	DewPointLowF	Hu
	1316	2017- 07-29	107	92	77	72	64	55	
	1317	2017- 07-30	106	93	79	70	68	63	
	1318	2017- 07-31	99	88	77	66	61	54	
	1098 ı	rows × 2	21 columns						
	4								•
In [265]:			['Events' lityHighM	_		n') & (del	l['DewPtHigh	nF'] > 50) (	de
,									
	>	t <b>hon-i</b> > 1 de	.nput-265- !ll <mark>[</mark> (dell <mark>[</mark> _['Visibil	'Events']	== 'Thur	<module></module>		recent call ewPtHighF']	
	50)	(uett	[ ATSIDIC	тсуптупп	ites ] >5)	/ ]			
				e-package	es\pandas\	core\ops\	common.py in	new_method	(s
	elf,	other 62 63		er = item	n_from_zeı	rodim(othe	r)		
	>	64	ret	urn metho	od(self, d	other)			
		65 66	return	new_metho	od				
		aconda other)		e-package	es\pandas\	core\ops\	initpy	in wrapper(	se
		524		lues = ex	ktract_arı	ray(other,	extract_num	py=True)	
	> 5	525 5 <b>26</b> 527	res	_values =	= comparis	son_op(lva	lues, rvalue	es, op)	
		528	ret	urn _cons	struct_res	sult(self,	res_values,	index=self	.i
	ndex	, name	=res_name	)					

```
~\anaconda3\lib\site-packages\pandas\core\ops\array ops.py in compariso
           n op(left, right, op)
               245
                        elif is object dtype(lvalues.dtype):
               246
                            res values = comp method OBJECT ARRAY(op, lvalues, rval
           --> 247
           ues)
               248
               249
                       else:
           ~\anaconda3\lib\site-packages\pandas\core\ops\array_ops.py in comp meth
           od OBJECT ARRAY(op, x, y)
                            result = libops.vec compare(x.ravel(), y, op)
                55
                56
                        else:
                            result = libops.scalar_compare(x.ravel(), y, op)
           ---> 57
                        return result.reshape(x.shape)
                58
                59
           pandas\ libs\ops.pyx in pandas. libs.ops.scalar compare()
           TypeError: '>' not supported between instances of 'str' and 'int'
In [266]: #car data analysis
In [267]:
           import pandas as pd
In [281]: car=pd.read csv(r"C:\Users\amolb\.ipynb checkpoints\Automobile data.cs
           v")
           car
Out[281]:
                                                         num-
                                                                  body-
                         normalized-
                                           fuel-
                                                                         drive-
                                                                               engine-
                symboling
                                     make
                                                aspiration
                                                           of-
                             losses
                                           type
                                                                       wheels
                                                                              location
                                                         doors
             0
                       3
                                                           two convertible
                                                                                 front
                                                                                        88
                                                     std
                                                                          rwd
                                            gas
                                   romero
                                      alfa-
             1
                       3
                                                           two convertible
                                                                                 front
                                                                                        88
                                            gas
                                                     std
                                                                          rwd
                                   romero
```

	symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whe ba
2	1	?	alfa- romero	gas	std	two	hatchback	rwd	front	94
3	2	164	audi	gas	std	four	sedan	fwd	front	99
4	2	164	audi	gas	std	four	sedan	4wd	front	99
200	-1	95	volvo	gas	std	four	sedan	rwd	front	109
201	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
202	-1	95	volvo	gas	std	four	sedan	rwd	front	109
203	-1	95	volvo	diesel	turbo	four	sedan	rwd	front	109
204	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
1	ows × 26 co									•
norma make fuel- aspir num-c body- drive engir wheel lengt width heigh curb-	ration of-doors -style e-wheels ne-locati l-base th	0 0 0 0 0								

In [283]:

Out[283]:

```
num-of-cylinders
                                0
          engine-size
                                0
          fuel-system
                                0
          bore
                                0
          stroke
          compression-ratio
                                0
                                0
          horsepower
          peak-rpm
                                0
                                0
          city-mpg
          highway-mpg
                                0
                                0
          price
          dtype: int64
In [277]: car.shape
Out[277]: (205, 23)
In [280]: #car.isnull()
          car.isnull().sum()
Out[280]: Unnamed: 0
                                0
          make
                                0
          fuel type
                                0
          aspiration
                                0
          num of doors
                                0
          body style
                                0
          drive wheels
                                0
          engine location
          wheel base
                                0
          length
                                0
          width
                                0
          height
                                0
          curb weight
                                0
          engine_type
                                0
          num_of_cylinders
                                0
          engine_size
                                0
          fuel system
                                0
          compression ratio
                                0
          horsepower
                                0
```

```
peak_rpm
                                 0
                                 0
           city_mpg
           highway mpg
                                 0
           price
                                 0
           dtype: int64
In [286]: #car.make.value counts()
           car['make'].value counts()
Out[286]: toyota
                             32
                             18
           nissan
                             17
           mazda
           honda
                             13
           mitsubishi
                             13
           subaru
                             12
                             12
           volkswagen
                             11
           peugot
                             11
           volvo
           dodge
                              9
           bmw
           mercedes-benz
           audi
           plymouth
           saab
           porsche
           isuzu
           chevrolet
           jaguar
           alfa-romero
           renault
                              2
           mercury
           Name: make, dtype: int64
In [330]: car
Out[330]:
                                                         num-
                         normalized-
                                           fuel-
                                                                 body-
                                                                        drive-
                                                                              engine- whe
                symboling
                                               aspiration
                                    make
                                                          of-
                                          type
                             losses
                                                                  style wheels location
                                                        doors
```

	symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whe ba
0	3	?	alfa- romero	gas	std	two	convertible	rwd	front	88
1	3	?	alfa- romero	gas	std	two	convertible	rwd	front	81
2	1	?	alfa- romero	gas	std	two	hatchback	rwd	front	94
3	2	164	audi	gas	std	four	sedan	fwd	front	9(
4	2	164	audi	gas	std	four	sedan	4wd	front	99
200	-1	95	volvo	gas	std	four	sedan	rwd	front	109
201	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
202	-1	95	volvo	gas	std	four	sedan	rwd	front	109
203	-1	95	volvo	diesel	turbo	four	sedan	rwd	front	109
204	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
205 r	rows × 26 co	olumns			_					<b>•</b>
ues car[	-	tyle'].isi y-style'].								
	symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whee bas
2	1	?	alfa- romero	gas	std	two	hatchback	rwd	front	94
3	2	164	audi	gas	std	four	sedan	fwd	front	99

In [292]:

Out[292]:

	4	2	164	audi	gas	std	four	sedan	4wd	front	99
		symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whee bas
	5	2	?	audi	gas	std	two	sedan	fwd	front	99
	6	1	158	audi	gas	std	four	sedan	fwd	front	105
	200	-1	95	volvo	gas	std	four	sedan	rwd	front	109
	201	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
	202	-1	95	volvo	gas	std	four	sedan	rwd	front	109
	203	-1	95	volvo	diesel	turbo	four	sedan	rwd	front	109
	204	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
	166 r	ows × 26 co	lumns								
	4										•
In [328]:		.head(2) shape									
Out[328]:	(205	, 26)									
In [313]:	car[	'engine-	location']	.value	_coun	ts()					
Out[313]:	fron rear Name	3	·location,	dtype	: int(	54					
In [315]:	car[	car['engi	ine-locati	on'] =	= 'rea	ar']					
Out[315]:											
		symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whe

		symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whe ba
	126	3	?	porsche	gas	std	two	hardtop	rwd	rear	89
	127	3	?	porsche	gas	std	two	hardtop	rwd	rear	98
	128	3	?	porsche	gas	std	two	convertible	rwd	rear	98
	3 row	s × 26 colur	mns								
	4										•
	car[	~(car['er	ngine-loca	tion']	== '	rear')]					
:		symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	whe ba
	0	3	?	alfa- romero	gas	std	two	convertible	rwd	front	88
	1	3	?	alfa- romero	gas	std	two	convertible	rwd	front	81
	2	1	?	alfa- romero	gas	std	two	hatchback	rwd	front	94
	3	2	164	audi	gas	std	four	sedan	fwd	front	9!
	4	2	164	audi	gas	std	four	sedan	4wd	front	99
	200	-1	95	volvo	gas	std	four	sedan	rwd	front	109
	201	-1	95	volvo	gas	turbo	four	sedan	rwd	front	10!
	202	-1	95	volvo	gas	std	four	sedan	rwd	front	109
	203	-1	95	volvo	diesel	turbo	four	sedan	rwd	front	10!
	204	-1	95	volvo	gas	turbo	four	sedan	rwd	front	109
	202 r	ows × 26 co	lumns								
	4										

```
In [326]: car[~(car['engine-location'] == 'rear')]
Out[326]:
                                                                      num-
                               normalized-
                                                    fuel-
                                                                                                engine-
                                                                                body-
                                                                                         drive-
                                                                                                         whe
                                                          aspiration
                   symboling
                                            make
                                                                        of-
                                                    type
                                    losses
                                                                                                location
                                                                                       wheels
                                                                                 style
                                                                     doors
                                             alfa-
                            3
                0
                                                     gas
                                                                 std
                                                                        two convertible
                                                                                           rwd
                                                                                                   front
                                                                                                           88
                                           romero
                                              alfa-
                1
                            3
                                                     gas
                                                                 std
                                                                        two convertible
                                                                                           rwd
                                                                                                   front
                                                                                                           88
                                           romero
                                             alfa-
                2
                            1
                                                     gas
                                                                 std
                                                                       two
                                                                             hatchback
                                                                                           rwd
                                                                                                   front
                                                                                                           94
                                           romero
                3
                            2
                                      164
                                              audi
                                                                       four
                                                                                sedan
                                                                                                   front
                                                                                                           9
                                                     gas
                                                                 std
                                                                                           fwd
                            2
                                      164
                                              audi
                                                     gas
                                                                 std
                                                                       four
                                                                                sedan
                                                                                          4wd
                                                                                                   front
                                                                                                           9
              200
                           -1
                                       95
                                                                                                   front
                                                                                                          109
                                             volvo
                                                     gas
                                                                 std
                                                                       four
                                                                                sedan
                                                                                           rwd
              201
                           -1
                                                               turbo
                                                                                                          109
                                       95
                                             volvo
                                                                       four
                                                                                sedan
                                                                                                   front
                                                     gas
                                                                                           rwd
              202
                           -1
                                       95
                                             volvo
                                                                       four
                                                                                                   front
                                                                                                          109
                                                     gas
                                                                 std
                                                                                sedan
                                                                                           rwd
              203
                           -1
                                       95
                                             volvo
                                                   diesel
                                                               turbo
                                                                       four
                                                                                sedan
                                                                                           rwd
                                                                                                   front
                                                                                                          109
              204
                           -1
                                       95
                                             volvo
                                                                                                   front
                                                                                                          109
                                                     gas
                                                               turbo
                                                                       four
                                                                                sedan
                                                                                           rwd
             202 rows × 26 columns
In [329]: car.shape
Out[329]: (205, 26)
In [337]: car.head(5)
Out[337]:
```

		symboling	normalized- losses	make	fuel- type	aspiration	num- of- doors	body- style	drive- wheels	engine- location	wheel- base
	0	3	?	alfa- romero	gas	std	two	convertible	rwd	front	88.6
	1	3	?	alfa- romero	gas	std	two	convertible	rwd	front	88.6
	2	1	?	alfa- romero	gas	std	two	hatchback	rwd	front	94.5
	3	2	164	audi	gas	std	four	sedan	fwd	front	99.8
	4	2	164	audi	gas	std	four	sedan	4wd	front	99.4
	5 rov	vs × 26 co	umns								<b>&gt;</b>
In [338]:	car	['highwa	y-mpg'] =	car['	highw	ay-mpg']	.apply	(lambda	x:x+3)		
In [339]:	car	- 3									
		symbolin	normalize g losse	man	fue		nu on doc	m- of- boo			
In [339]:		symbolin	0	man	se fue typ	oe aspirati	on doc	m- of- boo	/le whee		on ba
In [339]:	car	symbolin	g losse	es mar	a- g:	aspirati as	doc std t	m- boo of- sty ors	y <b>le whee</b>	ls location	on ba
In [339]:	car	symbolin	g losse	? alfa	a- garo garo	as sas	std t	m- boo of- sty ors	ole rv	vd fro	on ba ont 88 ont 88
In [339]:	0 1	symbolin	9 losse 3 3	? alfa rome ? alfa rome ? alfa rome	a- garo garo garo garo	as sas	std t std t	m- of- ors sty wo convertil	ple rv	vd fro	on ba  nt 8i  nt 8i  nt 9i
In [339]:	0 1 2	symbolin	9 losse 3 3	? alfarromei ? alfarromei ? alfarromei ? alfarromei 4 au	a- garo garo garo garo garo garo garo garo	as sas sas sas sas sas sas sas sas sas	std t std t std t std fo	m- of- of- ors  wo convertil  wo convertil  wo hatchba	ple rv ple rv ple rv an fv	vd frovd frovd frovd frovd fro	on ba  nt 88  nt 94  nt 99
In [339]:	0 1 2 3	symbolin	9 losse 3 3 1 2 16 2 16	? alf. rome. ? alf. rome. ? alf. rome. 4 au au au	a- garo garo garo garo garo garo garo garo	as sas sas sas sas sas sas sas sas sas	std t std t std t std fo	m- of- of- ors  wo convertil  wo convertil  wo hatchba	ple ry ole ry an fy an 4y	vd frovd frovd frovd frovd frovd frovd frovd frovd fro	on ba  nt 88  nt 94  nt 99

