All \$36,945 \$33,337 265.0 23.0 4451.0 189.0 0 Acura MDX SUV Asia 3.5 17.0 106.0 1 Acura RSX Type S 2dr Sedan Asia Front \$23,820 \$21,761 2.0 4.0 200.0 24.0 31.0 2778.0 101.0 172.0 2 Acura TSX 4dr Sedan Asia Front \$26,990 \$24,647 2.4 4.0 200.0 22.0 29.0 3230.0 105.0 183.0 3 Acura TL 4dr Sedan Asia Front \$33,195 \$30,299 3.2 6.0 270.0 20.0 28.0 3575.0 108.0 186.0 4 Acura 3.5 RL 4dr Sedan Asia Front \$43,755 \$39,014 3.5 6.0 225.0 18.0 24.0 3880.0 115.0 197.0 28.0 3450.0 Volvo C70 LPT convertible 2dr Sedan Europe Front \$40,565 \$38,203 2.4 5.0 197.0 21.0 105.0 186.0 Volvo C70 HPT convertible 2dr Sedan Europe 428 Front \$42,565 \$40,083 2.3 5.0 242.0 20.0 26.0 3450.0 105.0 186.0 26.0 3653.0 2.9 429 Volvo S80 T6 4dr Sedan Europe Front \$45,210 \$42,573 6.0 268.0 19.0 110.0 190.0 430 Volvo V40 Wagon Europe Front \$26,135 \$24,641 1.9 4.0 170.0 22.0 29.0 2822.0 101.0 180.0 All \$35,145 \$33,112 2.5 208.0 27.0 3823.0 431 Volvo XC70 Wagon Europe 5.0 20.0 109.0 186.0 432 rows × 15 columns car.head() Make Model Type Origin DriveTrain MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length Out[4]: 0 Acura MDX SUV All \$36,945 \$33,337 6.0 265.0 17.0 23.0 4451.0 106.0 189.0 Asia 3.5 101.0 4.0 200.0 31.0 2778.0 172.0 1 Acura RSX Type S 2dr Sedan Asia Front \$23,820 \$21,761 2.0 24.0 Front \$26,990 \$24,647 2 Acura TSX 4dr Sedan 2.4 4.0 200.0 22.0 29.0 3230.0 105.0 183.0 Asia 270.0 28.0 3575.0 108.0 186.0 3 Acura TL 4dr Sedan Asia Front \$33,195 \$30,299 3.2 6.0 20.0 24.0 3880.0 4 Acura 3.5 RL 4dr Sedan Asia Front \$43,755 \$39,014 3.5 6.0 225.0 18.0 115.0 197.0 In [5]: # number of rows and columns the data set have car.shape (432, 15)Out[5]: In [6]: # Finding the null values present in all the columns car.isnull().sum() Make Out[6]: Model Type Origin DriveTrain MSRP Invoice EngineSize 4 6 Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length dtype: int64 In [12]: #filling null cells with values car['Make'].fillna('no information available',inplace=True) car['Model'].fillna('no information available',inplace=True) car['Type'].fillna('no information available',inplace=True) car['Origin'].fillna('no information available',inplace=True) car['DriveTrain'].fillna('no information available',inplace=True) car['MSRP'].fillna(0,inplace=True) car['Invoice'].fillna(0,inplace=True) car['EngineSize'].fillna(0,inplace=True) car['Cylinders'].fillna(0,inplace=True) car['Horsepower'].fillna(0,inplace=True) car['MPG_City'].fillna(0,inplace=True) car['MPG_Highway'].fillna(0,inplace=True) car['Weight'].fillna(0,inplace=True) car['Wheelbase'].fillna(0,inplace=True) car['Length'].fillna(0,inplace=True) In [13]: car.isnull().sum() Out[13]: Model 0 Type 0 **Origin** 0 DriveTrain 0 MSRP Invoice 0 EngineSize Cylinders 0 Horsepower MPG_City MPG_Highway 0 Weight 0 Wheelbase 0 Length 0 dtype: int64 In [14]: # to get the counts of all the manufactures present in first column car['Make'].value_counts() 28 Toyota Out[14]: Chevrolet 27 26 Mercedes-Benz Ford 23 BMW 20 Audi 19 Nissan 17 Honda 17 15 Chrysler Volkswagen 15 Mitsubishi 13 Dodge 13 Hyundai 12 12 Jaguar Volvo 12 Kia 11 11 Mazda Lexus 11 Pontiac 11 Subaru 11 Lincoln 9 9 Mercury 9 Buick Saturn 8 Infiniti 8 GMC 8 Cadillac 8 Suzuki 8 Porsche Saab Acura no information available Oldsmobile Jeep Land Rover MINI Scion Isuzu Hummer 1 Name: Make, dtype: int64 In [15]: car.head(2) Out[15]: Make Type Origin DriveTrain MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length All \$36,945 \$33,337 23.0 4451.0 O Acura MDX SUV Asia 3.5 6.0 265.0 17.0 106.0 189.0 1 Acura RSX Type S 2dr Sedan Asia Front \$23,820 \$21,761 2.0 4.0 200.0 24.0 31.0 2778.0 101.0 172.0 In [17]: # Show all the records wehre origin is Asia and Europe car[car['Origin'].isin(['Asia', 'Europe'])] Type Origin DriveTrain MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length Out[17]: Make Model 0 Acura MDX SUV All \$36,945 \$33,337 3.5 6.0 265.0 17.0 23.0 4451.0 106.0 189.0 Asia Front \$23,820 \$21,761 31.0 2778.0 1 Acura RSX Type S 2dr Sedan Asia 2.0 4.0 200.0 24.0 101.0 172.0 2.4 4.0 200.0 22.0 29.0 3230.0 183.0 TSX 4dr Sedan Asia Front \$26,990 \$24,647 105.0 2 Acura 3 Acura TL 4dr Sedan Asia Front \$33,195 \$30,299 3.2 6.0 270.0 20.0 28.0 3575.0 108.0 186.0 Front \$43,755 \$39,014 3.5 RL 4dr Sedan 3.5 225.0 24.0 3880.0 197.0 4 Acura Asia 6.0 18.0 115.0 427 Volvo C70 LPT convertible 2dr Sedan Europe Front \$40,565 \$38,203 197.0 21.0 28.0 3450.0 186.0 2.4 5.0 105.0 Front \$42,565 \$40,083 C70 HPT convertible 2dr Sedan 2.3 242.0 26.0 3450.0 105.0 186.0 Front \$45,210 \$42,573 2.9 268.0 26.0 3653.0 190.0 429 Volvo S80 T6 4dr Sedan Europe 6.0 19.0 110.0 430 Volvo V40 Wagon Europe Front \$26,135 \$24,641 1.9 4.0 170.0 22.0 29.0 2822.0 101.0 180.0 431 Volvo XC70 Wagon Europe All \$35,145 \$33,112 2.5 5.0 208.0 20.0 27.0 3823.0 109.0 186.0 281 rows × 15 columns In [18]: # Remove all the records(rows) where Weight is above 4000 car[~(car['Weight']>4000)] Out[18]: Make Model Type Origin DriveTrain MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length RSX Type S 2dr Sedan Front \$23,820 \$21,761 1 Acura Asia 2.0 200.0 24.0 31.0 2778.0 101.0 172.0 200.0 29.0 3230.0 TSX 4dr Sedan Front \$26,990 \$24,647 2.4 4.0 22.0 105.0 183.0 2 Acura Asia 3 Acura TL 4dr Sedan Asia Front \$33,195 \$30,299 3.2 6.0 270.0 20.0 28.0 3575.0 108.0 186.0 3.5 RL 4dr Sedan Asia Front \$43,755 \$39,014 3.5 6.0 225.0 18.0 24.0 3880.0 115.0 197.0 4 Acura 5 Acura 3.5 RL w/Navigation 4dr Sedan Asia Front \$46,100 \$41,100 3.5 6.0 225.0 18.0 24.0 3893.0 115.0 197.0 Volvo C70 LPT convertible 2dr Sedan Europe Front \$40,565 \$38,203 2.4 5.0 197.0 21.0 28.0 3450.0 105.0 186.0 242.0 428 Volvo C70 HPT convertible 2dr Sedan Europe Front \$42,565 \$40,083 2.3 5.0 20.0 26.0 3450.0 105.0 186.0 429 Volvo S80 T6 4dr Sedan Europe Front \$45,210 \$42,573 2.9 268.0 19.0 26.0 3653.0 110.0 190.0 V40 Wagon Europe 170.0 29.0 2822.0 180.0 430 Volvo Front \$26,135 \$24,641 1.9 4.0 22.0 101.0 431 Volvo XC70 Wagon Europe All \$35,145 \$33,112 2.5 5.0 208.0 20.0 27.0 3823.0 109.0 186.0 329 rows × 15 columns In [19]: car.shape (432, 15)Out[19]: In [21]: car MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length Out[21]: Make Model Type Origin DriveTrain MDX All \$36,945 \$33,337 3.5 6.0 265.0 17.0 23.0 4451.0 106.0 189.0 0 Acura SUV Asia 1 Acura RSX Type S 2dr Sedan Front \$23,820 \$21,761 2.0 4.0 200.0 24.0 31.0 2778.0 101.0 172.0 105.0 183.0 Front \$26,990 \$24,647 TSX 4dr Sedan **3** Acura TL 4dr Sedan Front \$33,195 \$30,299 270.0 28.0 3575.0 108.0 186.0 4 Acura 3.5 RL 4dr Sedan Front \$43,755 \$39,014 3.5 6.0 225.0 18.0 24.0 3880.0 115.0 197.0 Asia 28.0 3450.0 427 Volvo C70 LPT convertible 2dr Sedan Europe Front \$40,565 \$38,203 2.4 5.0 197.0 105.0 186.0 21.0 Front \$42,565 \$40,083 428 Volvo C70 HPT convertible 2dr Sedan Europe 2.3 242.0 20.0 26.0 3450.0 105.0 186.0 **429** Volvo S80 T6 4dr Sedan Europe Front \$45,210 \$42,573 2.9 6.0 268.0 19.0 26.0 3653.0 110.0 190.0 Front \$26,135 \$24,641 1.9 170.0 29.0 2822.0 101.0 180.0 430 Volvo V40 Wagon Europe All \$35,145 \$33,112 2.5 208.0 27.0 3823.0 109.0 186.0 **431** Volvo XC70 Wagon Europe 5.0 20.0 432 rows × 15 columns

In [1]: **import** pandas **as** pd

Make

In [3]: car

Out[3]:

In [2]: car = pd.read_csv("F:\example/Data_set.csv")

Model

Type

Origin DriveTrain

MSRP Invoice EngineSize Cylinders Horsepower MPG_City MPG_Highway Weight Wheelbase Length