

```
import pandas as pd
data = pd.read_csv('test.csv')
```

data

|  |     | id   | car_name           | yr_mfr | fuel_type    | kms_run | sale_price | city      | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_c |
|--|-----|------|--------------------|--------|--------------|---------|------------|-----------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|-----------|
|  | 0   | 1    | maruti swift dzire | 2012   | petrol       | 69029   | 364299     | pune      | 2068         | sedan     | manual       | ... | 3            | 363529       | 365029.0       | great      | 2021-03-16T05:00:49.555 |           |
|  | 1   | 2    | hyundai eon        | 2013   | petrol       | 45721   | 216799     | gurgaon   | 903          | hatchback | manual       | ... | 1            | 205738       | NaN            | great      | 2021-03-10T12:08:11.905 |           |
|  | 2   | 3    | honda amaze        | 2013   | diesel       | 37395   | 387399     | pune      | 2809         | sedan     | manual       | ... | 1            | 382667       | NaN            | great      | 2021-03-15T12:03:30.041 |           |
|  | 3   | 4    | hyundai i20        | 2012   | petrol       | 37652   | 364699     | bengaluru | 1054         | hatchback | manual       | ... | 3            | 335740       | NaN            | great      | 2021-04-09T11:16:26.157 |           |
|  | 4   | 5    | hyundai creta      | 2017   | diesel       | 53648   | 1082011    | lucknow   | 2927         | suv       | automatic    | ... | 1            | 1119840      | 1125840.0      | great      | 2021-04-01T07:24:31.712 |           |
|  | ... | ...  | ...                | ...    | ...          | ...     | ...        | ...       | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...                     | ...       |
|  | 995 | 996  | maruti 800         | 2002   | petrol & lpg | 77323   | 35000      | ahmedabad | 492          | hatchback | manual       | ... | 2            | 0            | NaN            | overpriced | 2019-12-31T16:07:01.563 |           |
|  | 996 | 997  | honda amaze        | 2018   | diesel       | 53486   | 604299     | ghaziabad | 2756         | sedan     | NaN          | ... | 1            | 630810       | 787750.0       | great      | 2021-02-07T08:05:30.443 |           |
|  | 997 | 998  | maruti ignis       | 2018   | petrol       | 8854    | 562599     | chennai   | 640          | hatchback | manual       | ... | 1            | 549440       | NaN            | great      | 2021-03-31T10:21:56.289 |           |
|  | 998 | 999  | honda amaze        | 2015   | petrol       | 46300   | 400499     | pune      | 795          | sedan     | manual       | ... | 1            | 383419       | NaN            | great      | 2021-03-04T12:40:38.652 |           |
|  | 999 | 1000 | maruti alto k10    | 2016   | petrol       | 27245   | 284099     | new delhi | 1155         | hatchback | manual       | ... | 1            | 286515       | 369885.0       | great      | 2021-03-16T13:31:39.766 |           |

1000 rows × 30 columns

```
data.shape
(1000, 30)

data.columns
Index(['id', 'car_name', 'yr_mfr', 'fuel_type', 'kms_run', 'sale_price',
      'city', 'times_viewed', 'body_type', 'transmission', 'variant',
      'assured_buy', 'registered_city', 'registered_state', 'is_hot', 'rto',
      'source', 'make', 'model', 'car_availability', 'total_owners',
      'broker_quote', 'original_price', 'car_rating', 'ad_created_on',
      'fitness_certificate', 'emi_starts_from', 'booking_down_pymnt',
      'reserved', 'warranty_avail'],
      dtype='object')
```

```
data.dtypes
```

```
↵ id                int64
  car_name          object
  yr_mfr            int64
  fuel_type         object
  kms_run           int64
  sale_price        int64
  city             object
  times_viewed      int64
  body_type         object
  transmission      object
  variant           object
  assured_buy       bool
  registered_city   object
  registered_state  object
  is_hot            bool
  rto               object
  source            object
  make              object
  model             object
  car_availability  object
  total_owners      int64
  broker_quote      int64
  original_price    float64
  car_rating        object
  ad_created_on     object
  fitness_certificate bool
  emi_starts_from   int64
  booking_down_pymnt int64
  reserved          bool
  warranty_avail    bool
  dtype: object
```

```
data.isnull()
```



|     | id    | car_name | yr_mfr | fuel_type | kms_run | sale_price | city  | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on | fitness_certifi |
|-----|-------|----------|--------|-----------|---------|------------|-------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|---------------|-----------------|
| 0   | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | False          | False      | False         | False           |
| 1   | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 2   | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 3   | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 4   | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | False          | False      | False         | False           |
| ... | ...   | ...      | ...    | ...       | ...     | ...        | ...   | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...           | ...             |
| 995 | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 996 | False | False    | False  | False     | False   | False      | False | False        | False     | True         | ... | False        | False        | False          | False      | False         | False           |
| 997 | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 998 | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | True           | False      | False         | False           |
| 999 | False | False    | False  | False     | False   | False      | False | False        | False     | False        | ... | False        | False        | False          | False      | False         | False           |

1000 rows × 30 columns

data.isnull().sum()



```

id                0
car_name          0
yr_mfr            0
fuel_type         0
kms_run           0
sale_price        0
city              0
times_viewed      0
body_type         13
transmission       82
variant           0
assured_buy       0
registered_city    2
registered_state   2
is_hot            0
rto               0
source            12
make              0
model             0
car_availability   78
total_owners       0
broker_quote       0
original_price     455
car_rating         2
ad_created_on      0
fitness_certificate 0
emi_starts_from    0
booking_down_pymnt 0
reserved           0
warranty_avail     0
dtype: int64

```

data.notnull()

|     | id   | car_name | yr_mfr | fuel_type | kms_run | sale_price | city | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on | fitness_certificate |
|-----|------|----------|--------|-----------|---------|------------|------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|---------------|---------------------|
| 0   | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | True           | True       | True          | -                   |
| 1   | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 2   | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 3   | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 4   | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | True           | True       | True          | -                   |
| ... | ...  | ...      | ...    | ...       | ...     | ...        | ...  | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...           | -                   |
| 995 | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 996 | True | True     | True   | True      | True    | True       | True | True         | True      | False        | ... | True         | True         | True           | True       | True          | -                   |
| 997 | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 998 | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | False          | True       | True          | -                   |
| 999 | True | True     | True   | True      | True    | True       | True | True         | True      | True         | ... | True         | True         | True           | True       | True          | -                   |

1000 rows × 30 columns

data.notnull().sum()

|                     |       |
|---------------------|-------|
| id                  | 1000  |
| car_name            | 1000  |
| yr_mfr              | 1000  |
| fuel_type           | 1000  |
| kms_run             | 1000  |
| sale_price          | 1000  |
| city                | 1000  |
| times_viewed        | 1000  |
| body_type           | 987   |
| transmission        | 918   |
| variant             | 1000  |
| assured_buy         | 1000  |
| registered_city     | 998   |
| registered_state    | 998   |
| is_hot              | 1000  |
| rto                 | 1000  |
| source              | 988   |
| make                | 1000  |
| model               | 1000  |
| car_availability    | 922   |
| total_owners        | 1000  |
| broker_quote        | 1000  |
| original_price      | 545   |
| car_rating          | 998   |
| ad_created_on       | 1000  |
| fitness_certificate | 1000  |
| emi_starts_from     | 1000  |
| booking_down_pymnt  | 1000  |
| reserved            | 1000  |
| warranty_avail      | 1000  |
| dtype:              | int64 |

```
data.describe()
```



|              | id          | yr_mfr      | kms_run       | sale_price   | times_viewed | total_owners | broker_quote | original_price | emi_starts_from | booking_down_pymnt |
|--------------|-------------|-------------|---------------|--------------|--------------|--------------|--------------|----------------|-----------------|--------------------|
| <b>count</b> | 1000.000000 | 1000.000000 | 1000.000000   | 1.000000e+03 | 1000.000000  | 1000.000000  | 1.000000e+03 | 5.450000e+02   | 1000.000000     | 1000.000000        |
| <b>mean</b>  | 500.500000  | 2013.81700  | 64200.546000  | 4.564917e+05 | 1649.047000  | 1.336000     | 4.340296e+05 | 5.529012e+05   | 10603.155000    | 68473.909000       |
| <b>std</b>   | 288.819436  | 3.08367     | 46279.250371  | 3.116202e+05 | 2703.996647  | 0.611128     | 3.049773e+05 | 3.159273e+05   | 7238.156858     | 46743.080291       |
| <b>min</b>   | 1.000000    | 2002.00000  | 379.000000    | 3.500000e+04 | 6.000000     | 1.000000     | 0.000000e+00 | 9.689900e+04   | 813.000000      | 5250.000000        |
| <b>25%</b>   | 250.750000  | 2012.00000  | 33159.500000  | 2.727740e+05 | 556.000000   | 1.000000     | 2.464942e+05 | 3.304990e+05   | 6336.000000     | 40916.250000       |
| <b>50%</b>   | 500.500000  | 2014.00000  | 56880.000000  | 3.836490e+05 | 1155.500000  | 1.000000     | 3.618295e+05 | 4.688120e+05   | 8911.000000     | 57547.500000       |
| <b>75%</b>   | 750.250000  | 2016.00000  | 84372.500000  | 5.433740e+05 | 2036.500000  | 2.000000     | 5.267560e+05 | 6.912220e+05   | 12621.250000    | 81506.250000       |
| <b>max</b>   | 1000.000000 | 2020.00000  | 640251.000000 | 3.866000e+06 | 61930.000000 | 5.000000     | 3.250000e+06 | 2.706469e+06   | 89798.000000    | 579901.000000      |

```
data.info()
```



```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 30 columns):
#   Column                Non-Null Count  Dtype
---  -
0   id                    1000 non-null   int64
1   car_name              1000 non-null   object
2   yr_mfr                1000 non-null   int64
3   fuel_type             1000 non-null   object
4   kms_run               1000 non-null   int64
5   sale_price            1000 non-null   int64
6   city                  1000 non-null   object
7   times_viewed          1000 non-null   int64
8   body_type             987 non-null    object
9   transmission          918 non-null    object
10  variant               1000 non-null   object
11  assured_buy           1000 non-null   bool
12  registered_city        998 non-null    object
13  registered_state       998 non-null    object
14  is_hot                 1000 non-null   bool
15  rto                    1000 non-null   object
16  source                 988 non-null    object
17  make                   1000 non-null   object
18  model                  1000 non-null   object
19  car_availability       922 non-null    object
20  total_owners           1000 non-null   int64
21  broker_quote           1000 non-null   int64
22  original_price         545 non-null    float64
23  car_rating             998 non-null    object
24  ad_created_on          1000 non-null   object
25  fitness_certificate    1000 non-null   bool
26  emi_starts_from        1000 non-null   int64
27  booking_down_pymnt     1000 non-null   int64
28  reserved               1000 non-null   bool
29  warranty_avail         1000 non-null   bool
dtypes: bool(5), float64(1), int64(9), object(15)
memory usage: 200.3+ KB
```

data.head(2)



|   | id | car_name           | yr_mfr | fuel_type | kms_run | sale_price | city    | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_certific |
|---|----|--------------------|--------|-----------|---------|------------|---------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|------------------|
| 0 | 1  | maruti swift dzire | 2012   | petrol    | 69029   | 364299     | pune    | 2068         | sedan     | manual       | ... | 3            | 363529       | 365029.0       | great      | 2021-03-16T05:00:49.555 | 1                |
| 1 | 2  | hyundai eon        | 2013   | petrol    | 45721   | 216799     | gurgaon | 903          | hatchback | manual       | ... | 1            | 205738       | NaN            | great      | 2021-03-10T12:08:11.905 | 1                |

2 rows × 30 columns

## ✓ How cars in the bengaluru in the city?

data[data['city'] == 'bengaluru']



|     | id  | car_name           | yr_mfr | fuel_type | kms_run | sale_price | city      | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_cert |
|-----|-----|--------------------|--------|-----------|---------|------------|-----------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|--------------|
| 3   | 4   | hyundai i20        | 2012   | petrol    | 37652   | 364699     | bengaluru | 1054         | hatchback | manual       | ... | 3            | 335740       | NaN            | great      | 2021-04-09T11:16:26.157 |              |
| 5   | 6   | renault duster     | 2016   | petrol    | 55724   | 695999     | bengaluru | 889          | suv       | manual       | ... | 1            | 655939       | NaN            | great      | 2021-03-20T08:11:03.55  |              |
| 7   | 8   | maruti alto k10    | 2014   | petrol    | 50294   | 283299     | bengaluru | 1281         | hatchback | manual       | ... | 1            | 280943       | 349654.0       | great      | 2021-01-02T09:04:27.423 |              |
| 9   | 10  | maruti alto k10    | 2013   | petrol    | 116848  | 205299     | bengaluru | 1069         | hatchback | manual       | ... | 1            | 208701       | 263694.0       | great      | 2020-12-21T10:01:35.047 |              |
| 12  | 13  | maruti swift       | 2015   | petrol    | 43743   | 499099     | bengaluru | 1233         | hatchback | manual       | ... | 2            | 490000       | 591000.0       | great      | 2021-01-12T11:44:59.197 |              |
| ... | ... | ...                | ...    | ...       | ...     | ...        | ...       | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...                     | ...          |
| 956 | 957 | maruti ciaz        | 2014   | diesel    | 46586   | 605099     | bengaluru | 986          | sedan     | manual       | ... | 2            | 598002       | NaN            | great      | 2021-02-23T13:08:50.505 |              |
| 967 | 968 | maruti swift dzire | 2014   | diesel    | 87125   | 493599     | bengaluru | 801          | sedan     | manual       | ... | 2            | 484000       | 583980.0       | great      | 2021-01-10T12:37:28.715 |              |
| 978 | 979 | maruti celerio     | 2017   | petrol    | 163124  | 389899     | bengaluru | 663          | hatchback | manual       | ... | 1            | 369653       | NaN            | great      | 2021-03-27T10:49:29.611 |              |
| 986 | 987 | maruti swift       | 2018   | petrol    | 26202   | 624999     | bengaluru | 401          | hatchback | manual       | ... | 1            | 610000       | NaN            | great      | 2021-03-13T11:38:18.55  |              |
| 991 | 992 | maruti zen estilo  | 2010   | petrol    | 40225   | 213599     | bengaluru | 1453         | hatchback | manual       | ... | 2            | 215023       | NaN            | great      | 2020-12-15T14:34:32.735 |              |

181 rows × 30 columns

len(data[data['city'] == 'bengaluru'])



181

✓ Show the record of sale price value is 300000 in the bengaluru city.

```
data[(data['city'] == 'bengaluru') | (data['sale_price'] == '300000')]
```



|     | id  | car_name           | yr_mfr | fuel_type | kms_run | sale_price | city      | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_cert |
|-----|-----|--------------------|--------|-----------|---------|------------|-----------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|--------------|
| 3   | 4   | hyundai i20        | 2012   | petrol    | 37652   | 364699     | bengaluru | 1054         | hatchback | manual       | ... | 3            | 335740       | NaN            | great      | 2021-04-09T11:16:26.157 |              |
| 5   | 6   | renault duster     | 2016   | petrol    | 55724   | 695999     | bengaluru | 889          | suv       | manual       | ... | 1            | 655939       | NaN            | great      | 2021-03-20T08:11:03.55  |              |
| 7   | 8   | maruti alto k10    | 2014   | petrol    | 50294   | 283299     | bengaluru | 1281         | hatchback | manual       | ... | 1            | 280943       | 349654.0       | great      | 2021-01-02T09:04:27.423 |              |
| 9   | 10  | maruti alto k10    | 2013   | petrol    | 116848  | 205299     | bengaluru | 1069         | hatchback | manual       | ... | 1            | 208701       | 263694.0       | great      | 2020-12-21T10:01:35.047 |              |
| 12  | 13  | maruti swift       | 2015   | petrol    | 43743   | 499099     | bengaluru | 1233         | hatchback | manual       | ... | 2            | 490000       | 591000.0       | great      | 2021-01-12T11:44:59.197 |              |
| ... | ... | ...                | ...    | ...       | ...     | ...        | ...       | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...                     | ...          |
| 956 | 957 | maruti ciaz        | 2014   | diesel    | 46586   | 605099     | bengaluru | 986          | sedan     | manual       | ... | 2            | 598002       | NaN            | great      | 2021-02-23T13:08:50.505 |              |
| 967 | 968 | maruti swift dzire | 2014   | diesel    | 87125   | 493599     | bengaluru | 801          | sedan     | manual       | ... | 2            | 484000       | 583980.0       | great      | 2021-01-10T12:37:28.715 |              |
| 978 | 979 | maruti celerio     | 2017   | petrol    | 163124  | 389899     | bengaluru | 663          | hatchback | manual       | ... | 1            | 369653       | NaN            | great      | 2021-03-27T10:49:29.611 |              |
| 986 | 987 | maruti swift       | 2018   | petrol    | 26202   | 624999     | bengaluru | 401          | hatchback | manual       | ... | 1            | 610000       | NaN            | great      | 2021-03-13T11:38:18.55  |              |
| 991 | 992 | maruti zen estilo  | 2010   | petrol    | 40225   | 213599     | bengaluru | 1453         | hatchback | manual       | ... | 2            | 215023       | NaN            | great      | 2020-12-15T14:34:32.735 |              |

181 rows × 30 columns

✓ Show the record of sale price vale is less than 400000 in the bengaluru city.

```
data[(data['city'] == 'bengaluru') & (data['sale_price'] < 400000)]
```



|     | id  | car_name            | yr_mfr | fuel_type | kms_run | sale_price | city      | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_cert |
|-----|-----|---------------------|--------|-----------|---------|------------|-----------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|--------------|
| 3   | 4   | hyundai i20         | 2012   | petrol    | 37652   | 364699     | bengaluru | 1054         | hatchback | manual       | ... | 3            | 335740       | NaN            | great      | 2021-04-09T11:16:26.157 |              |
| 7   | 8   | maruti alto k10     | 2014   | petrol    | 50294   | 283299     | bengaluru | 1281         | hatchback | manual       | ... | 1            | 280943       | 349654.0       | great      | 2021-01-02T09:04:27.423 |              |
| 9   | 10  | maruti alto k10     | 2013   | petrol    | 116848  | 205299     | bengaluru | 1069         | hatchback | manual       | ... | 1            | 208701       | 263694.0       | great      | 2020-12-21T10:01:35.047 |              |
| 23  | 24  | hyundai santro xing | 2008   | petrol    | 20719   | 242299     | bengaluru | 61930        | hatchback | manual       | ... | 1            | 223261       | NaN            | great      | 2021-03-15T06:01:02.972 |              |
| 31  | 32  | tata nano           | 2010   | petrol    | 9278    | 89099      | bengaluru | 5908         | hatchback | manual       | ... | 1            | 77957        | 96899.0        | good       | 2021-03-31T06:14:55.961 |              |
| ... | ... | ...                 | ...    | ...       | ...     | ...        | ...       | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...                     | ...          |
| 941 | 942 | ford figo           | 2010   | diesel    | 116520  | 251099     | bengaluru | 1293         | hatchback | manual       | ... | 2            | 207000       | NaN            | good       | 2021-02-13T10:20:09.741 |              |
| 945 | 946 | tata nano           | 2016   | petrol    | 14330   | 205899     | bengaluru | 931          | hatchback | automatic    | ... | 3            | 202536       | NaN            | great      | 2021-03-07T10:16:47.784 |              |
| 947 | 948 | maruti zen estilo   | 2011   | petrol    | 43511   | 252699     | bengaluru | 887          | hatchback | manual       | ... | 3            | 236867       | NaN            | great      | 2021-03-27T13:42:13.501 |              |
| 978 | 979 | maruti celerio      | 2017   | petrol    | 163124  | 389899     | bengaluru | 663          | hatchback | manual       | ... | 1            | 369653       | NaN            | great      | 2021-03-27T10:49:29.611 |              |
| 991 | 992 | maruti zen estilo   | 2010   | petrol    | 40225   | 213599     | bengaluru | 1453         | hatchback | manual       | ... | 2            | 215023       | NaN            | great      | 2020-12-15T14:34:32.735 |              |

91 rows × 30 columns

- ✓ Show the record of sale price is greater than 400000 in the bangalore city or fuel type is petrol and total owner is less than 1 of them.

```
data[(data['city'] == 'bengaluru') & (data['sale_price'] > 400000) | (data['fuel_type'] == 'petrol') & (data['total_owners'] > 1)]
```





|     | id  | car_name           | yr_mfr | fuel_type | kms_run | sale_price | city      | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_ce |
|-----|-----|--------------------|--------|-----------|---------|------------|-----------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|------------|
| 0   | 1   | maruti swift dzire | 2012   | petrol    | 69029   | 364299     | pune      | 2068         | sedan     | manual       | ... | 3            | 363529       | 365029.0       | great      | 2021-03-16T05:00:49.555 |            |
| 3   | 4   | hyundai i20        | 2012   | petrol    | 37652   | 364699     | bengaluru | 1054         | hatchback | manual       | ... | 3            | 335740       | NaN            | great      | 2021-04-09T11:16:26.157 |            |
| 5   | 6   | renault duster     | 2016   | petrol    | 55724   | 695999     | bengaluru | 889          | suv       | manual       | ... | 1            | 655939       | NaN            | great      | 2021-03-20T08:11:03.55  |            |
| 6   | 7   | hyundai i10        | 2010   | petrol    | 59295   | 286399     | chennai   | 506          | hatchback | manual       | ... | 2            | 255175       | 286499.0       | good       | 2021-04-07T05:42:09.856 |            |
| 12  | 13  | maruti swift       | 2015   | petrol    | 43743   | 499099     | bengaluru | 1233         | hatchback | manual       | ... | 2            | 490000       | 591000.0       | great      | 2021-01-12T11:44:59.197 |            |
| ... | ... | ...                | ...    | ...       | ...     | ...        | ...       | ...          | ...       | ...          | ... | ...          | ...          | ...            | ...        | ...                     | ...        |
| 981 | 982 | skoda rapid        | 2012   | petrol    | 53525   | 293599     | mumbai    | 1889         | sedan     | manual       | ... | 2            | 253818       | NaN            | good       | 2021-04-04T08:05:53.493 |            |
| 986 | 987 | maruti swift       | 2018   | petrol    | 26202   | 624999     | bengaluru | 401          | hatchback | manual       | ... | 1            | 610000       | NaN            | great      | 2021-03-13T11:38:18.55  |            |
| 988 | 989 | maruti alto k10    | 2017   | petrol    | 18913   | 294299     | gurgaon   | 2151         | hatchback | manual       | ... | 2            | 302687       | 313187.0       | great      | 2021-02-24T10:44:58.039 |            |
| 991 | 992 | maruti zen estilo  | 2010   | petrol    | 40225   | 213599     | bengaluru | 1453         | hatchback | manual       | ... | 2            | 215023       | NaN            | great      | 2020-12-15T14:34:32.735 |            |
| 994 | 995 | volkswagen jetta   | 2012   | petrol    | 88973   | 448699     | new delhi | 1171         | sedan     | manual       | ... | 2            | 450466       | 564246.0       | great      | 2021-03-20T09:07:40.447 |            |

262 rows × 30 columns

▼ show the car name of the given dataset

```
data['car_name'].value_counts()
```



```
maruti swift      57
hyundai i10      56
maruti wagon r 1.0 52
maruti swift dzire 45
hyundai i20      38
..
mahindra bolero   1
tata manza        1
hyundai tucson new 1
jaguar xj l       1
maruti 800        1
Name: car_name, Length: 117, dtype: int64
```

▼ Show the body type of the given dataset

```
data['body_type'].value_counts()
```

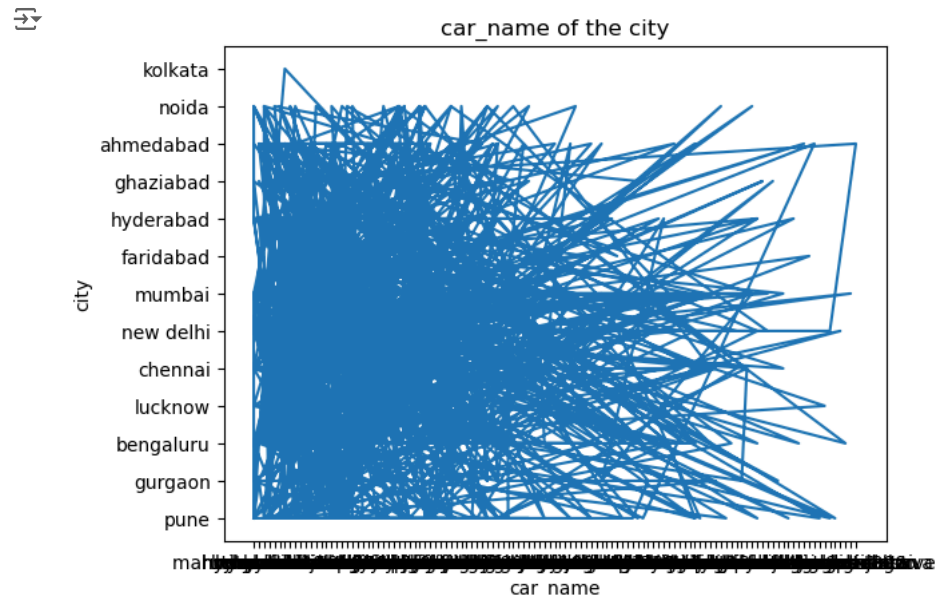
```
↗ hatchback      560
   sedan         222
   suv           157
   luxury sedan   28
   luxury suv     20
   Name: body_type, dtype: int64
```

### ✓ Plot the chart of car name and city of given dataset

```
import matplotlib.pyplot as plt
import seaborn as sns

import pandas as pd
data = pd.read_csv('test.csv')

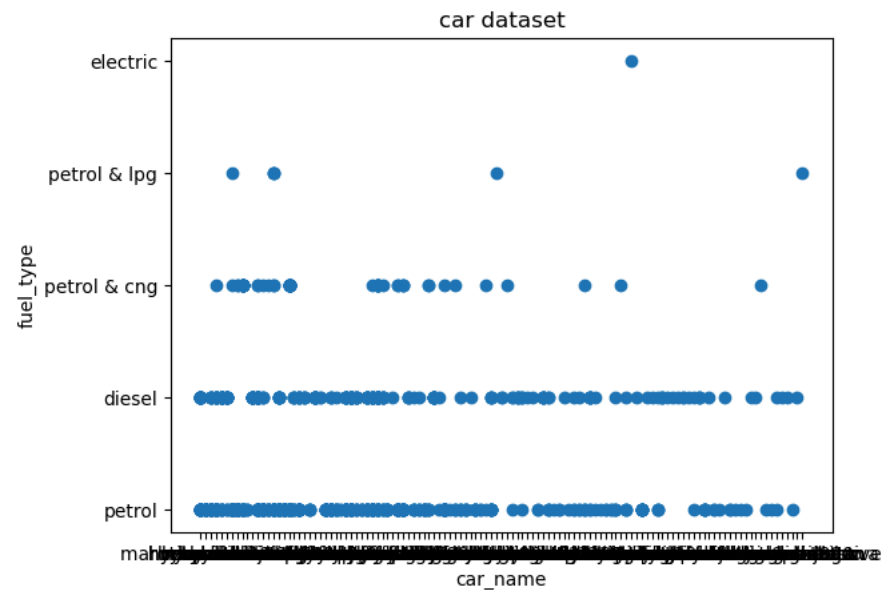
plt.plot(data['car_name'], data['city'])
plt.xlabel('car_name')
plt.ylabel('city')
plt.title('car_name of the city')
plt.show()
```



### ✓ Plot the car name and fuel type in the given dataset

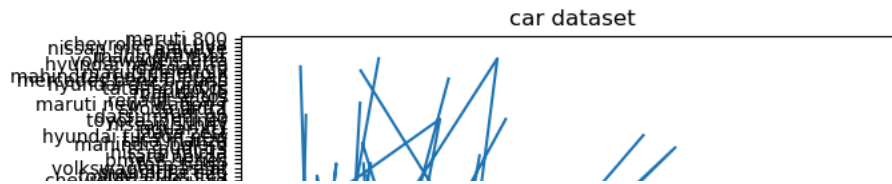
```
plt.scatter(data['car_name'], data['fuel_type'])
plt.xlabel('car_name')
```

```
plt.ylabel('fuel_type')
plt.title('car dataset')
plt.show()
```



✓ Plot the charts of original price and car name in the given dataset

```
plt.plot(data['original_price'], data['car_name'])
plt.xlabel('original_price')
plt.ylabel('car_name')
plt.title('car dataset')
plt.show()
```



✓ Plot the charts of car name and kms run in the given dataset



data.head(2)



|   | id | car_name           | yr_mfr | fuel_type | kms_run | sale_price | city    | times_viewed | body_type | transmission | ... | total_owners | broker_quote | original_price | car_rating | ad_created_on           | fitness_certific |
|---|----|--------------------|--------|-----------|---------|------------|---------|--------------|-----------|--------------|-----|--------------|--------------|----------------|------------|-------------------------|------------------|
| 0 | 1  | maruti swift dzire | 2012   | petrol    | 69029   | 364299     | pune    | 2068         | sedan     | manual       | ... | 3            | 363529       | 365029.0       | great      | 2021-03-16T05:00:49.555 | 1                |
| 1 | 2  | hyundai eon        | 2013   | petrol    | 45721   | 216799     | gurgaon | 903          | hatchback | manual       | ... | 1            | 205738       | NaN            | great      | 2021-03-10T12:08:11.905 | 1                |

2 rows × 30 columns

```
plt.plot(data['car_name'], data['kms_run'])
plt.xlabel('car_name')
plt.ylabel('kms_run')
plt.title('kms and car_name of the car dataset')
plt.show()
```



kms and car\_name of the car dataset