

```
In [2]: import pandas as pd

In [3]: data=pd.read_csv("../ecommerce purchases")

Out[3]:
```

|      | Address                       | Lot   | AM or PM | Browser Info                                       | Company                         | Credit Card      | CC Exp Date | CC Security Code | CC Provider                 | Email                          | Job                                    | IP Address      | Language | Purchase Price |
|------|-------------------------------|-------|----------|--|---------------------------------|------------------|-------------|------------------|-----------------------------|--------------------------------|--|-----------------|----------|----------------|
| 0    | 16629 Pace Camp Apt. 4489n    | 46 in | PM       | Opera/9.56 (X11; Linux x86_64; sl-Sl) Presto/2...  | Martinez-Herman                 | 6011929061123406 | 02/20       | 900              | JCB 16 digit                | pdunlap@yahoo.com              | Scientist, product/process development | 149.146.147.205 | el       | 98.14          |
| 1    | 9374 Jasmine Spurs Suite 508n | 28 m  | PM       | Opera/8.93 (Windows 98; Win 9x 4.90; en-US) Pr...  | Fletcher, Richards and Whitaker | 3337758169645356 | 11/18       | 561              | Mastercard                  | anthony41@reed.com             | Drilling engineer                      | 15.160.41.51    | fr       | 70.73          |
| 2    | Unit 0065 Box 5052n           | 94 vE | PM       | Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...  | Simpson, Williams and Pham      | 675957666125     | 08/19       | 699              | JCB 16 digit                | amymiller@morales-harrison.com | Customer service manager               | 132.207.160.22  | de       | 0.95           |
| 3    | 7780 Julia Fordsn             | 36 vm | PM       | Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_0 ...  | Williams, Marshall and Buchanan | 6011578504430710 | 02/24       | 384              | Discover                    | brent16@olson-robinson.info    | Drilling engineer                      | 30.250.74.19    | es       | 78.04          |
| 4    | 23012 Munoz Drive Suite 337n  | 20 IE | AM       | Opera/9.58 (X11; Linux x86_64; i-IT) Presto/2...   | Brown, Watson and Andrews       | 6011456623207998 | 10/25       | 678              | Diners Club / Carte Blanche | christopherwright@gmail.com    | Fine artist                            | 24.140.33.94    | es       | 77.82          |
| ...  | ...                           | ...   | ...      | ...  | ...                             | ...              | ...         | ...              | ...                         | ...                            | ...                                    | ...             | ...      | ...            |
| 9995 | 966 Castaneda Locksn          | 92 XI | PM       | Mozilla/5.0 (Windows NT 5.1) AppleWebKit/5352 ...  | Randall-Sloan                   | 342945015358701  | 03/22       | 838              | JCB 15 digit                | iscott@wade-garner.com         | Printmaker                             | 29.73.197.114   | it       | 82.21          |
| 9996 | 832 Curtis Dam Suite 785n     | 41 JY | AM       | Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...  | Hale, Collins and Wilson        | 210033169205009  | 07/25       | 207              | JCB 16 digit                | mary85@hotmail.com             | Energy engineer                        | 121.133.168.51  | pt       | 25.63          |
| 9997 | Unit 4434 Box 6343n           | 74 Zh | AM       | Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7_... | Anderson Ltd                    | 6011539787356311 | 05/21       | 1                | VISA 16 digit               | tyler16@gmail.com              | Veterinary surgeon                     | 156.210.0.254   | el       | 83.98          |
| 9998 | 0096 English Restn            | 74 cL | PM       | Mozilla/5.0 (Macintosh; Intel Mac OS X 10_9_8;...  | Cook Inc                        | 180003348082930  | 11/17       | 987              | American Express            | elizabethmoore@reid.net        | Local government officer               | 55.78.26.143    | es       | 38.84          |
| 9999 | 40674 Barrett Stravenue       | 64 Hr | AM       | Mozilla/5.0 (X11; Linux i686; rv:1.9.5.20) Gec...  | Greene Inc                      | 4139972901927273 | 02/19       | 302              | JCB 15 digit                | rachefford@vaughn.com          | Embryologist, clinical                 | 176.119.198.199 | el       | 67.59          |

10000 rows x 14 columns

## 1. Display to Top 10 Rows of the Dataset

```
In [4]: data.head(10)

Out[4]:
```

|   | Address                       | Lot   | AM or PM | Browser Info                                       | Company                         | Credit Card      | CC Exp Date | CC Security Code | CC Provider                 | Email                          | Job                                    | IP Address      | Language | Purchase Price |
|---|-------------------------------|-------|----------|--|---------------------------------|------------------|-------------|------------------|-----------------------------|--------------------------------|--|-----------------|----------|----------------|
| 0 | 16629 Pace Camp Apt. 4489n    | 46 in | PM       | Opera/9.56 (X11; Linux x86_64; sl-Sl) Presto/2...  | Martinez-Herman                 | 6011929061123406 | 02/20       | 900              | JCB 16 digit                | pdunlap@yahoo.com              | Scientist, product/process development | 149.146.147.205 | el       | 98.14          |
| 1 | 9374 Jasmine Spurs Suite 508n | 28 m  | PM       | Opera/8.93 (Windows 98; Win 9x 4.90; en-US) Pr...  | Fletcher, Richards and Whitaker | 3337758169645356 | 11/18       | 561              | Mastercard                  | anthony41@reed.com             | Drilling engineer                      | 15.160.41.51    | fr       | 70.73          |
| 2 | Unit 0065 Box 5052n           | 94 vE | PM       | Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...  | Simpson, Williams and Pham      | 675957666125     | 08/19       | 699              | JCB 16 digit                | amymiller@morales-harrison.com | Customer service manager               | 132.207.160.22  | de       | 0.95           |
| 3 | 7780 Julia Fordsn             | 36 vm | PM       | Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_0 ...  | Williams, Marshall and Buchanan | 6011578504430710 | 02/24       | 384              | Discover                    | brent16@olson-robinson.info    | Drilling engineer                      | 30.250.74.19    | es       | 78.04          |
| 4 | 23012 Munoz Drive Suite 337n  | 20 IE | AM       | Opera/9.58 (X11; Linux x86_64; i-IT) Presto/2...   | Brown, Watson and Andrews       | 6011456623207998 | 10/25       | 678              | Diners Club / Carte Blanche | christopherwright@gmail.com    | Fine artist                            | 24.140.33.94    | es       | 77.82          |
| 5 | 7502 Powell Mission Apt. 768n | 21 XT | PM       | Mozilla/5.0 (Macintosh; U; PPC Mac OS X 10_8_5;... | Silva-Anderson                  | 30246185196287   | 07/25       | 7169             | Discover                    | ynguyen@gmail.com              | Fish farm manager                      | 55.96.152.147   | ru       | 25.15          |
| 6 | 93971 Conway Causeway         | 96 XI | AM       | Mozilla/5.0 (compatible; MSIE 7.0; Windows NT ...  | Gibson and Sons                 | 6011398782655569 | 07/24       | 714              | VISA 16 digit               | olivia04@yahoo.com             | Dancer                                 | 127.252.144.18  | de       | 88.56          |
| 7 | 260 Rachel Plains Suite 366n  | 96 pG | PM       | Mozilla/5.0 (X11; Linux i686) AppleWebKit/5350...  | Marshall-Collins                | 561252141909     | 06/25       | 256              | VISA 13 digit               | philip48@parks.info            | Event organiser                        | 224.247.97.150  | pt       | 44.25          |
| 8 | 2129 Dylan Burghn             | 45 JN | PM       | Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7_... | Galloway and Sons               | 180041795790001  | 04/24       | 899              | JCB 16 digit                | kdvais@rasmussen.com           | Financial manager                      | 146.234.201.229 | ru       | 59.54          |
| 9 | 3795 Dawson Extension         | 15 Uj | AM       | Mozilla/5.0 (X11; Linux i686; rv:1.9.7.20) Gec...  | Rivera, Buchanan and Ramirez    | 4396283918371    | 01/17       | 931              | American Express            | qcoleman@hunt-huerta.com       | Forensic scientist                     | 236.198.199.8   | zh       | 95.63          |

## 2.Check last 10 rows of the Dataset

```
In [5]: data.tail(10)

Out[5]:
```

|      | Address                       | Lot   | AM or PM | Browser Info                                       | Company                    | Credit Card      | CC Exp Date | CC Security Code | CC Provider      | Email                       | Job                          | IP Address      | Language | Purchase Price |
|------|-------------------------------|-------|----------|--|----------------------------|------------------|-------------|------------------|------------------|-----------------------------|------------------------------|-----------------|----------|----------------|
| 9990 | 75731 Molly Springsn          | 93 ty | PM       | Mozilla/5.0 (Macintosh; Intel Mac OS X 10_7_4;...  | Pace, Vazquez and Richards | 869968197049750  | 04/24       | 877              | JCB 15 digit     | andersonmichael@sherman.biz | Early years teacher          | 54.170.3.185    | ru       | 18.35          |
| 9991 | PSC 8165, Box 8498n           | 50 dA | AM       | Mozilla/5.0 (compatible; MSIE 8.0; Windows NT ...  | Snyder Inc                 | 4221582137197481 | 02/24       | 969              | Voyager          | kking@wise-lu.com           | IT sales professional        | 254.25.31.156   | el       | 25.93          |
| 9992 | 885 Allen Mountains Apt. 230n | 40 vH | PM       | Mozilla/5.0 (Macintosh; PPC Mac OS X 10_6_5) A...  | Wells Ltd                  | 4664825258997302 | 10/20       | 431              | Discover         | bberry@wright.net           | Set designer                 | 174.173.51.32   | de       | 67.96          |
| 9993 | 7555 Larson Locks Suite 229n  | 72 jG | PM       | Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_8_... | Colon and Sons             | 30025560104631   | 10/25       | 629              | Maestro          | chelseawilliams@lopez.biz   | Designer, exhibition/display | 177.46.82.128   | el       | 65.61          |
| 9994 | 6276 Rojas Hollown            | 93 PM | PM       | Opera/9.68 (X11; Linux x86_64; sl-Sl) Presto/2...  | Ritter-Smith               | 3112186784121077 | 01/25       | 1823             | Maestro          | iroberts@gmail.com          | Education officer, museum    | 242.44.112.18   | zh       | 31.85          |
| 9995 | 966 Castaneda Locksn          | 92 XI | PM       | Mozilla/5.0 (Windows NT 5.1) AppleWebKit/5352 ...  | Randall-Sloan              | 342945015358701  | 03/22       | 838              | JCB 15 digit     | iscott@wade-garner.com      | Printmaker                   | 29.73.197.114   | it       | 82.21          |
| 9996 | 832 Curtis Dam Suite 785n     | 41 JY | AM       | Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...  | Hale, Collins and Wilson   | 210033169205009  | 07/25       | 207              | JCB 16 digit     | mary85@hotmail.com          | Energy engineer              | 121.133.168.51  | pt       | 25.63          |
| 9997 | Unit 4434 Box 6343n           | 74 Zh | AM       | Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7_... | Anderson Ltd               | 6011539787356311 | 05/21       | 1                | VISA 16 digit    | tyler16@gmail.com           | Veterinary surgeon           | 156.210.0.254   | el       | 83.98          |
| 9998 | 0096 English Restn            | 74 cL | PM       | Mozilla/5.0 (Macintosh; Intel Mac OS X 10_9_8;...  | Cook Inc                   | 180003348082930  | 11/17       | 987              | American Express | elizabethmoore@reid.net     | Local government officer     | 55.78.26.143    | es       | 38.84          |
| 9999 | 40674 Barrett Stravenue       | 64 Hr | AM       | Mozilla/5.0 (X11; Linux i686; rv:1.9.5.20) Gec...  | Greene Inc                 | 4139972901927273 | 02/19       | 302              | JCB 15 digit     | rachefford@vaughn.com       | Embryologist, clinical       | 176.119.198.199 | el       | 67.59          |

## 3.Check Datatype of each column

```
In [8]: data.dtypes

Out[8]:
```

|                  |         |
|------------------|---------|
| Address          | object  |
| Lot              | object  |
| AM or PM         | object  |
| Browser Info     | object  |
| Company          | object  |
| Credit Card      | int64   |
| CC Exp Date      | object  |
| CC Security Code | int64   |
| CC Provider      | object  |
| Email            | object  |
| Job              | object  |
| IP Address       | object  |
| Language         | object  |
| Purchase Price   | float64 |
| dtype:           | object  |

## 4.Check null values in the Dataset

```
In [11]: data.isnull().sum()

Out[11]:
```

|                  |       |
|------------------|-------|
| Address          | 0     |
| Lot              | 0     |
| AM or PM         | 0     |
| Browser Info     | 0     |
| Company          | 0     |
| Credit Card      | 0     |
| CC Exp Date      | 0     |
| CC Security Code | 0     |
| CC Provider      | 0     |
| Email            | 0     |
| Job              | 0     |
| IP Address       | 0     |
| Language         | 0     |
| Purchase Price   | 0     |
| dtype:           | int64 |

## 5.How many rows and columns are there in our Dataset?

```
In [12]: len(data.columns)

Out[12]: 14

In [13]: len(data)

Out[13]: 10000
```

## 6.Highest and Lowest Purchase Prices

```
In [15]: data.columns

Out[15]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [17]: data['Purchase Price'].max()

Out[17]: 99.99

In [19]: data['Purchase Price'].min()

Out[19]: 0.0
```

## 7.Average Purchase Price

```
In [21]: data['Purchase Price'].mean()

Out[21]: 50.347382
```

## 8.How many people have French 'fr' as their Language?

```
In [23]: len(data[data['Language']=='fr'])

Out[23]: 1097

In [24]: data[data['Language']=='fr'].count()

Out[24]:
```

|                  |       |
|------------------|-------|
| Address          | 1097  |
| Lot              | 1097  |
| AM or PM         | 1097  |
| Browser Info     | 1097  |
| Company          | 1097  |
| Credit Card      | 1097  |
| CC Exp Date      | 1097  |
| CC Security Code | 1097  |
| CC Provider      | 1097  |
| Email            | 1097  |
| Job              | 1097  |
| IP Address       | 1097  |
| Language         | 1097  |
| Purchase Price   | 1097  |
| dtype:           | int64 |

## 9.Job Title Contains Engineer

```
In [25]: data.columns

Out[25]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [26]: len(data[data['Job'].str.contains('engineer', case=False)])

Out[26]: 984
```

## 10.Find E mail of the Person with the following IP address: 132.207.160.22

```
In [28]: data.columns

Out[28]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [29]: data[data['IP Address']=='132.207.160.22']['Email']

Out[29]: 2    amymiller@morales-harrison.com
Name: Email, dtype: object
```

## 11.How many people have mastercard as their credit card provider and made a purchase above 50?

```
In [30]: data.columns

Out[30]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [32]: len(data[(data['CC Provider']=='Mastercard') & (data['Purchase Price']>50)])

Out[32]: 405

In [34]: data[(data['CC Provider']=='Mastercard') & (data['Purchase Price']>50)].count()

Out[34]:
```

|                  |       |
|------------------|-------|
| Address          | 405   |
| Lot              | 405   |
| AM or PM         | 405   |
| Browser Info     | 405   |
| Company          | 405   |
| Credit Card      | 405   |
| CC Exp Date      | 405   |
| CC Security Code | 405   |
| CC Provider      | 405   |
| Email            | 405   |
| Job              | 405   |
| IP Address       | 405   |
| Language         | 405   |
| Purchase Price   | 405   |
| dtype:           | int64 |

## 12.Find Email of the person with the following credit card number: 466482528997302

```
In [35]: data.columns

Out[35]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [36]: data[data['Credit Card']=='466482528997302']

Out[36]:
```

|      | Address                       | Lot   | AM or PM | Browser Info                                      | Company   | Credit Card      | CC Exp Date | CC Security Code | CC Provider | Email             | Job          | IP Address    | Language | Purchase Price |
|------|-------------------------------|-------|----------|---|-----------|------------------|-------------|------------------|-------------|-------------------|--------------|---------------|----------|----------------|
| 9992 | 885 Allen Mountains Apt. 230n | 40 vH | PM       | Mozilla/5.0 (Macintosh; PPC Mac OS X 10_6_5) A... | Wells Ltd | 4664825258997302 | 10/20       | 431              | Discover    | bberry@wright.net | Set designer | 174.173.51.32 | de       | 67.96          |

## 13.How many people purchase during the AM and how many people purchase during PM?

```
In [37]: data.columns

Out[37]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [38]: data['AM or PM'].value_counts()

Out[38]:
```

|                              |      |
|------------------------------|------|
| PM                           | 5068 |
| AM                           | 4932 |
| Name: AM or PM, dtype: int64 |      |

## 14.How many people have credit card that expires in 2020?

```
In [39]: data.columns

Out[39]: Index(['Address', 'Lot', 'AM or PM', 'Browser Info', 'Company', 'Credit Card', 'CC Exp Date', 'CC Security Code', 'CC Provider', 'Email', 'Job', 'IP Address', 'Language', 'Purchase Price'], dtype='object')
```

```
In [40]: data['CC Exp Date']

Out[40]:
```

|   |       |
|---|-------|
| 0   | 02/20 |
| 1   | 11/18 |
| 2   | 08/19 |
| 3   | 02/24 |
| 4   | 10/25 |
| ...   | ...   |
| 9995  | 03/22 |
| 9996  | 07/25 |
| 9997  | 05/21 |
| 9998  | 11/17 |
| 9999  | 02/19 |
| Name: CC Exp Date, Length: 10000, dtype: object |       |

```
In [44]: def fun():
count=0
for date in data['CC Exp Date']:
    if date.split('/')[1]=='20':
        count=count+1
print(count)

In [45]: fun()

988
```

## 15.Top most popular email provider(e.g gmail.com, yahoo.com, etc...)

```
In [46]: list1=[]
for email in data['Email']:
    list1.append(email.split('@')[1])

In [47]: data['temp']=list1

In [48]: data.head(1)

Out[48]:
```

|   | Address                    | Lot   | AM or PM | Browser Info                                      | Company         | Credit Card      | CC Exp Date | CC Security Code | CC Provider  | Email             | Job                                    | IP Address      | Language | Purchase Price | temp      |
|---|----------------------------|-------|----------|---|-----------------|------------------|-------------|------------------|--------------|-------------------|--|-----------------|----------|----------------|-----------|
| 0 | 16629 Pace Camp Apt. 4489n | 46 in | PM       | Opera/9.56 (X11; Linux x86_64; sl-Sl) Presto/2... | Martinez-Herman | 6011929061123406 | 02/20       | 900              | JCB 16 digit | pdunlap@yahoo.com | Scientist, product/process development | 149.146.147.205 | el       | 98.14          | yahoo.com |

```
In [ ]:
```