

```
import pandas as pd

df=pd.read_csv("C:\\Users\\Akash Kumbharkar\\Desktop\\Data Sets\\
archive\\Ecommerce Purchases")
```

1.Display top 10 rows

```
df.head(10)
```

	Address	Lot	AM or
PM \			
0	16629 Pace Camp Apt. 448\nAlexisborough, NE 77...	46 in	PM
1	9374 Jasmine Spurs Suite 508\nSouth John, TN 8...	28 rn	PM
2	Unit 0065 Box 5052\nDPO AP 27450	94 vE	PM
3	7780 Julia Fords\nNew Stacy, WA 45798	36 vm	PM
4	23012 Munoz Drive Suite 337\nNew Cynthia, TX 5...	20 IE	AM
5	7502 Powell Mission Apt. 768\nTravisland, VA 3...	21 XT	PM
6	93971 Conway Causeway\nAndersonburgh, AZ 75107	96 Xt	AM
7	260 Rachel Plains Suite 366\nCastroberg, WV 24...	96 pG	PM
8	2129 Dylan Burg\nNew Michelle, ME 28650	45 JN	PM
9	3795 Dawson Extensions\nLake Tinafort, ID 88739	15 Ug	AM

	Browser Info	\
0	Opera/9.56.(X11; Linux x86_64; sl-SI) Presto/2...	
1	Opera/8.93.(Windows 98; Win 9x 4.90; en-US) Pr...	
2	Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...	
3	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_0 ...	
4	Opera/9.58.(X11; Linux x86_64; it-IT) Presto/2...	
5	Mozilla/5.0 (Macintosh; U; PPC Mac OS X 10_8_5...	
6	Mozilla/5.0 (compatible; MSIE 7.0; Windows NT ...	
7	Mozilla/5.0 (X11; Linux i686) AppleWebKit/5350...	
8	Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7...	
9	Mozilla/5.0 (X11; Linux i686; rv:1.9.7.20) Gec...	

	Company	Credit Card	CC Exp Date	\
0	Martinez-Herman	6011929061123406	02/20	
1	Fletcher, Richards and Whitaker	3337758169645356	11/18	
2	Simpson, Williams and Pham	675957666125	08/19	
3	Williams, Marshall and Buchanan	6011578504430710	02/24	
4	Brown, Watson and Andrews	6011456623207998	10/25	
5	Silva-Anderson	30246185196287	07/25	

6	Gibson and Sons	6011398782655569	07/24
7	Marshall-Collins	561252141909	06/25
8	Galloway and Sons	180041795790001	04/24
9	Rivera, Buchanan and Ramirez	4396283918371	01/17

	CC Security Code	CC Provider \
0	900	JCB 16 digit
1	561	Mastercard
2	699	JCB 16 digit
3	384	Discover
4	678	Diners Club / Carte Blanche
5	7169	Discover
6	714	VISA 16 digit
7	256	VISA 13 digit
8	899	JCB 16 digit
9	931	American Express

	Email	
Job \		
0	pdunlap@yahoo.com	Scientist, product/process development
1	anthony41@reed.com	Drilling engineer
2	amymiller@morales-harrison.com	Customer service manager
3	brent16@olson-robinson.info	Drilling engineer
4	christopherwright@gmail.com	Fine artist
5	ynguyen@gmail.com	Fish farm manager
6	olivia04@yahoo.com	Dancer
7	phillip48@parks.info	Event organiser
8	kdavis@rasmussen.com	Financial manager
9	qcoleman@hunt-huerta.com	Forensic scientist

	IP Address	Language	Purchase Price
0	149.146.147.205	el	98.14
1	15.160.41.51	fr	70.73
2	132.207.160.22	de	0.95
3	30.250.74.19	es	78.04
4	24.140.33.94	es	77.82
5	55.96.152.147	ru	25.15
6	127.252.144.18	de	88.56
7	224.247.97.150	pt	44.25

8	146.234.201.229	ru	59.54
9	236.198.199.8	zh	95.63

2.Display all Columns

```
df.columns
```

```
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')
```

3.Check null values

```
df.isnull
```

```
<bound method DataFrame.isnull of
```

```
Address      Lot AM or PM \
```

```
0      16629 Pace Camp Apt. 448\nAlexisborough, NE 77... 46 in
PM
```

```
1      9374 Jasmine Spurs Suite 508\nSouth John, TN 8... 28 rn
PM
```

```
2      Unit 0065 Box 5052\nDPO AP 27450 94 vE
PM
```

```
3      7780 Julia Fords\nNew Stacy, WA 45798 36 vm
PM
```

```
4      23012 Munoz Drive Suite 337\nNew Cynthia, TX 5... 20 IE
AM
```

```
...      ...      ...      ..
```

```
.
9995      966 Castaneda Locks\nWest Juliafurt, CO 96415 92 XI
PM
```

```
9996      832 Curtis Dam Suite 785\nNorth Edwardburgh, T... 41 JY
AM
```

```
9997      Unit 4434 Box 6343\nDPO AE 28026-0283 74 Zh
AM
```

```
9998      0096 English Rest\nRoystad, IA 12457 74 cL
PM
```

```
9999      40674 Barrett Stravenue\nGrimesville, WI 79682 64 Hr
AM
```

```
Browser Info \
```

```
0      Opera/9.56.(X11; Linux x86_64; sl-SI) Presto/2...
```

```
1      Opera/8.93.(Windows 98; Win 9x 4.90; en-US) Pr...
```

```
2      Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...
```

```
3      Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_0 ...
```

```
4      Opera/9.58.(X11; Linux x86_64; it-IT) Presto/2...
```

```

...
9995 Mozilla/5.0 (Windows NT 5.1) AppleWebKit/5352 ...
9996 Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...
9997 Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7...
9998 Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_8;...
9999 Mozilla/5.0 (X11; Linux i686; rv:1.9.5.20) Gec...

```

	Company	Credit Card	CC Exp Date	\
0	Martinez-Herman	6011929061123406	02/20	
1	Fletcher, Richards and Whitaker	3337758169645356	11/18	
2	Simpson, Williams and Pham	675957666125	08/19	
3	Williams, Marshall and Buchanan	6011578504430710	02/24	
4	Brown, Watson and Andrews	6011456623207998	10/25	
...	
9995	Randall-Sloan	342945015358701	03/22	
9996	Hale, Collins and Wilson	210033169205009	07/25	
9997	Anderson Ltd	6011539787356311	05/21	
9998	Cook Inc	180003348082930	11/17	
9999	Greene Inc	4139972901927273	02/19	

	CC Security Code	CC Provider	\
0	900	JCB 16 digit	
1	561	Mastercard	
2	699	JCB 16 digit	
3	384	Discover	
4	678	Diners Club / Carte Blanche	
...	
9995	838	JCB 15 digit	
9996	207	JCB 16 digit	
9997	1	VISA 16 digit	
9998	987	American Express	
9999	302	JCB 15 digit	

	Email	
Job \		
0	pdunlap@yahoo.com	Scientist, product/process development
1	anthony41@reed.com	Drilling engineer
2	amymiller@morales-harrison.com	Customer service manager
3	brentl6@olson-robinson.info	Drilling engineer
4	christopherwright@gmail.com	Fine artist
...	...	
...		
9995	iscott@wade-garner.com	Printmaker
9996	mary85@hotmail.com	Energy

```

engineer
9997          tyler16@gmail.com          Veterinary
surgeon
9998          elizabethmoore@reid.net          Local government
officer
9999          rachelford@vaughn.com          Embryologist,
clinical

```

	IP Address	Language	Purchase Price
0	149.146.147.205	el	98.14
1	15.160.41.51	fr	70.73
2	132.207.160.22	de	0.95
3	30.250.74.19	es	78.04
4	24.140.33.94	es	77.82
...
9995	29.73.197.114	it	82.21
9996	121.133.168.51	pt	25.63
9997	156.210.0.254	el	83.98
9998	55.78.26.143	es	38.84
9999	176.119.198.199	el	67.59

```
[10000 rows x 14 columns]>
```

```
df.isnull().sum()
```

```

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

```

3.display stat of data

```
df.describe()
```

	Credit Card	CC Security Code	Purchase Price
count	1.000000e+04	10000.000000	10000.000000
mean	2.341374e+15	907.217800	50.347302
std	2.256103e+15	1589.693035	29.015836
min	6.040186e+10	0.000000	0.000000

25%	3.056322e+13	280.000000	25.150000
50%	8.699942e+14	548.000000	50.505000
75%	4.492298e+15	816.000000	75.770000
max	6.012000e+15	9993.000000	99.990000

4.Display shape of data

```
df.shape
(10000, 14)
```

5.Highest and lowest purchase price

```
df["Purchase Price"].sort_values(ascending=False).iloc[1]
99.99

df["Purchase Price"].sort_values(ascending=True).iloc[1]
0.0
```

6.Average of purchase price

```
df["Purchase Price"].mean()
50.347302
```

7.How many people have freach as their language

```
df.columns
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')

df["Language"]
0      el
1      fr
2      de
3      es
4      es
..
9995   it
9996   pt
9997   el
9998   es
```

```

9999    el
Name: Language, Length: 10000, dtype: object

df["Language"][df["Language"]=="fr"].count()

1097

df[df["Language"]=="fr"].count()

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

```

8. Job title contains engineer

```

df[df["Job"].str.contains("engineer",case=False)]

```

	Address	Lot	AM or
PM \			
1	9374 Jasmine Spurs Suite 508\nSouth John, TN 8...	28	rn
PM			
3	7780 Julia Fords\nNew Stacy, WA 45798	36	vm
PM			
50	41159 Michael Centers\nAdamsfort, RI 37108-6674	46	Ce
PM			
55	27635 Maureen Bypass Apt. 883\nSandrerview, SD ...	59	LJ
AM			
60	7126 Katherine Squares\nPerkinsview, CO 97299-...	63	qu
AM			
...
.			
9948	95544 Johnson Isle Suite 939\nMichaelberg, RI ...	91	bW
AM			
9952	9991 Vaughn Hills\nRacheltown, PA 55409	36	KC
PM			
9970	0060 Keith Stream\nWestport, CO 47097	11	nt
PM			
9977	02182 Keith Expressway\nEast Shannon, CT 20578...	34	RL

AM
9996 832 Curtis Dam Suite 785\nNorth Edwardburgh, T... 41 JY
AM

	Browser Info \
1	Opera/8.93.(Windows 98; Win 9x 4.90; en-US) Pr...
3	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_0 ...
50	Mozilla/5.0 (Windows 98; Win 9x 4.90; sl-SI; r...
55	Mozilla/5.0 (iPod; U; CPU iPhone OS 3_3 like M...
60	Opera/8.68.(X11; Linux x86_64; en-US) Presto/2...
...	...
9948	Opera/8.36.(X11; Linux x86_64; sl-SI) Presto/2...
9952	Mozilla/5.0 (X11; Linux i686; rv:1.9.5.20) Gec...
9970	Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_8...
9977	Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...
9996	Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...

	Company	Credit Card	CC Exp Date \
1	Fletcher, Richards and Whitaker	3337758169645356	11/18
3	Williams, Marshall and Buchanan	6011578504430710	02/24
50	Wright, Williams and Mendez	4008586485908075	05/19
55	Sims-Lyons	3158113629128344	09/19
60	Marshall-Fernandez	349767747049645	05/20
...
9948	Fox-Peterson	4762924304307	03/17
9952	Ward, Smith and Castillo	6011679271321726	09/19
9970	Carpenter, Good and Hart	6011485664704662	07/19
9977	Deleon, Jacobson and Benton	4186094003664688	06/21
9996	Hale, Collins and Wilson	210033169205009	07/25

	CC Security Code	CC Provider	Email \
1	561	Mastercard	anthony41@reed.com
3	384	Discover	brent16@olson-robinson.info
50	945	JCB 16 digit	susanvalentine@obrien.org
55	857	VISA 16 digit	adkinsarthur@yahoo.com
60	672	JCB 15 digit	sweeneyhannah@jones.biz
...
9948	567	Mastercard	haleybenjamin@gmail.com
9952	964	Voyager	jonesjennifer@olson.com
9970	543	Discover	rangelbrian@hotmail.com
9977	397	JCB 16 digit	daltoncarter@yahoo.com
9996	207	JCB 16 digit	mary85@hotmail.com

	Job	IP Address	Language \
1	Drilling engineer	15.160.41.51	fr
3	Drilling engineer	30.250.74.19	es
50	Mechanical engineer	213.203.143.215	de
55	Engineer, broadcasting (operations)	227.235.89.210	pt
60	Engineer, agricultural	197.144.142.102	de
...

9948	Structural engineer	120.36.140.58	en
9952	Engineer, energy	116.228.12.42	es
9970	Electrical engineer	242.8.85.205	en
9977	Biomedical engineer	146.238.118.2	fr
9996	Energy engineer	121.133.168.51	pt

	Purchase Price
1	70.73
3	78.04
50	36.85
55	48.74
60	20.43
...	...
9948	71.89
9952	39.63
9970	17.76
9977	94.93
9996	25.63

[984 rows x 14 columns]

```
len(df[df["Job"].str.contains("engineer",case=False)])
```

984

9. Find the email of person with the following ip address

- 132.207.160.22

```
df.columns
```

```
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')
```

```
df[df["IP Address"]=="132.207.160.22"]
```

	Address	Lot	AM or PM	\
2	Unit 0065 Box 5052\nDPO AP 27450	94	vE	PM

	Browser Info	\
2	Mozilla/5.0 (compatible; MSIE 9.0; Windows NT ...	

	Company	Credit Card	CC Exp Date	CC Security
2	Simpson, Williams and Pham	675957666125	08/19	

699

	CC Provider	Email
Job \		
2	JCB 16 digit	amymiller@morales-harrison.com Customer service manager

	IP Address	Language	Purchase Price
2	132.207.160.22	de	0.95

10.How many people have mastecard as their credit card provider and made a purchase above 50

```
df[(df["CC Provider"]=="Mastercard")&(df["Purchase Price"]>50)]
```

		Address	Lot	AM or
PM \				
1	9374 Jasmine Spurs Suite 508\nSouth John, TN 8...	28	rn	
PM				
18	461 Christopher Square\nWest Michaelchester, C...	17	SB	
PM				
31	USNS Alvarado\nFP0 AA 27052-1231	26	Lh	
PM				
35	93392 Webb Gardens Apt. 220\nLaurabury, AR 999...	37	om	
AM				
90	431 Bowen Lights\nFergusonborough, MH 01362	31	tG	
AM				
...	
.				
9941	43757 Brown Lodge\nValerieberg, PR 88518	68	DG	
AM				
9948	95544 Johnson Isle Suite 939\nMichaelberg, RI ...	91	bW	
AM				
9954	051 Samantha Wells Apt. 328\nScottborough, OR ...	11	vG	
AM				
9981	087 Larson Roads Apt. 587\nRicestad, WI 98077-...	95	Kw	
AM				
9987	2754 Klein Mission\nJohnsonview, PA 64925-9624	65	Fg	
PM				
		Browser Info	\	
1	Opera/8.93.(Windows 98; Win 9x 4.90; en-US) Pr...			
18	Mozilla/5.0 (X11; Linux i686; rv:1.9.6.20) Gec...			
31	Opera/8.84.(X11; Linux i686; sl-SI) Presto/2.9...			
35	Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_7...			
90	Mozilla/5.0 (Windows NT 5.2; it-IT; rv:1.9.1.2...			
...		...		
9941	Mozilla/5.0 (compatible; MSIE 5.0; Windows NT ...			
9948	Opera/8.36.(X11; Linux x86_64; sl-SI) Presto/2...			
9954	Mozilla/5.0 (Macintosh; U; PPC Mac OS X 10_8_2...			
9981	Opera/9.63.(Windows NT 5.01; en-US) Presto/2.9...			

9987 Opera/9.26.(Windows CE; sl-SI) Presto/2.9.188 ...

	Company	Credit Card	CC Exp Date	\
1	Fletcher, Richards and Whitaker	3337758169645356	11/18	
18	Beard, Abbott and Pena	6011350184276270	12/22	
31	Nicholson Group	4614997834548	03/22	
35	Mora Ltd	6011049630969815	09/16	
90	Copeland-Lee	639032576097	06/18	
...	
9941	Jones, Williams and Dunn	6011508474487291	04/26	
9948	Fox-Peterson	4762924304307	03/17	
9954	Mendoza, Zimmerman and Reilly	30232295374907	05/21	
9981	Ortiz, Schultz and Adams	4690863684605	01/19	
9987	Curtis LLC	180027305702263	12/24	

	CC Security Code	CC Provider	Email	\
1	561	Mastercard	anthony41@reed.com	
18	767	Mastercard	hannah63@yahoo.com	
31	909	Mastercard	ashley12@hotmail.com	
35	367	Mastercard	hgonzalez@mcdowell.com	
90	868	Mastercard	nrogers@brown.com	
...	
9941	906	Mastercard	christian55@gmail.com	
9948	567	Mastercard	haleybenjamin@gmail.com	
9954	762	Mastercard	brownamy@perkins.com	
9981	695	Mastercard	laurenbennett@richards.com	
9987	865	Mastercard	denisehamilton@novak.biz	

	Job	IP Address	Language
\			
1	Drilling engineer	15.160.41.51	fr
18	Photographer	73.250.176.201	el
31	Sales executive	94.176.142.201	en
35	Lecturer, further education	216.23.95.40	zh
90	Teacher, English as a foreign language	153.188.13.203	es
...
9941	Secondary school teacher	216.118.235.145	fr
9948	Structural engineer	120.36.140.58	en
9954	Presenter, broadcasting	61.97.84.101	it
9981	Environmental education officer	106.21.237.73	pt

```
9987          Primary school teacher  164.39.190.217  es
```

	Purchase Price
1	70.73
18	70.15
31	94.14
35	97.46
90	78.86
...	...
9941	60.03
9948	71.89
9954	87.15
9981	63.61
9987	60.83

```
[405 rows x 14 columns]
```

```
len(df[(df["CC Provider"]=="Mastercard")&(df["Purchase Price"]>50)])  
405
```

11.Find the email of person with the folloeing credit card number

*4664825258997302

```
df[df["Credit Card"]==4664825258997302]["Email"]
```

```
9992    bberry@wright.net  
Name: Email, dtype: object
```

12.How many people purchase during the AM and How many purchase during the PM

```
df.columns
```

```
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')
```

```
df["AM or PM"].nunique()
```

```
2
```

```
df["AM or PM"].value_counts()
```

```
PM      5068
AM      4932
Name: AM or PM, dtype: int64
```