

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

data

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance
2	1006314	Financial Modeling for Business Analysts and C...	https://www.udemy.com/financial-modeling-for-b...	True	45	2174	74	51	Intermediate Level	2.5	2016-12-19T19:26:30Z	Business Finance
3	1210588	Beginner to Pro - Financial Analysis in Excel ...	https://www.udemy.com/complete-excel-finance-c...	True	95	2451	11	36	All Levels	3.0	2017-05-30T20:07:24Z	Business Finance
4	1011058	How To Maximize Your Profits Trading Options	https://www.udemy.com/how-to-maximize-your-pro...	True	200	1276	45	26	Intermediate Level	2.0	2016-12-13T14:57:18Z	Business Finance
...
3673	775618	Learn jQuery from Scratch - Master of JavaScri...	https://www.udemy.com/easy-jquery-for-beginner...	True	100	1040	14	21	All Levels	2.0	2016-06-14T17:36:46Z	Web Development
3674	1088178	How To Design A WordPress Website With No Codi...	https://www.udemy.com/how-to-make-a-wordpress-...	True	25	306	3	42	Beginner Level	3.5	2017-03-10T22:24:30Z	Web Development
3675	635248	Learn and Build using Polymer	https://www.udemy.com/learn-and-build-using-po...	True	40	513	169	48	All Levels	3.5	2015-12-30T16:41:42Z	Web Development
3676	905096	CSS Animations: Create Amazing Effects on Your	https://www.udemy.com/css-animations-create-am...	True	50	300	31	38	All Levels	3.0	2016-08-11T19:06:15Z	Web Development

data.head(2)

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance

data.shape

(3678, 12)

data.columns

```
Index(['course_id', 'course_title', 'url', 'is_paid', 'price',
      'num_subscribers', 'num_reviews', 'num_lectures', 'level',
      'content_duration', 'published_timestamp', 'subject'],
      dtype='object')
```

data.dtypes

```
course_id      int64
course_title    object
url             object
is_paid        bool
price          int64
num_subscribers int64
num_reviews     int64
num_lectures    int64
level           object
content_duration float64
published_timestamp object
subject         object
dtype: object
```

data.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3678 entries, 0 to 3677
Data columns (total 12 columns):
 #   Column                Non-Null Count  Dtype
---  -
 0   course_id             3678 non-null   int64
 1   course_title          3678 non-null   object
 2   url                   3678 non-null   object
 3   is_paid               3678 non-null   bool
 4   price                 3678 non-null   int64
 5   num_subscribers       3678 non-null   int64
 6   num_reviews           3678 non-null   int64
 7   num_lectures          3678 non-null   int64
 8   level                 3678 non-null   object
 9   content_duration      3678 non-null   float64
10   published_timestamp    3678 non-null   object
11   subject               3678 non-null   object
dtypes: bool(1), float64(1), int64(5), object(5)
memory usage: 319.8+ KB
```

data.isnull()



	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	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
2	False	False	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False	False	False
...
3673	False	False	False	False	False	False	False	False	False	False	False	False
3674	False	False	False	False	False	False	False	False	False	False	False	False
3675	False	False	False	False	False	False	False	False	False	False	False	False
3676	False	False	False	False	False	False	False	False	False	False	False	False
3677	False	False	False	False	False	False	False	False	False	False	False	False

3678 rows × 12 columns

data.isnull().sum()




```

course_id      0
course_title   0
url            0
is_paid        0
price          0
num_subscribers 0
num_reviews    0
num_lectures   0
level          0
content_duration 0
published_timestamp 0
subject        0
dtype: int64

```


data.notnull()



	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	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
2	True	True	True	True	True	True	True	True	True	True	True	True
3	True	True	True	True	True	True	True	True	True	True	True	True
4	True	True	True	True	True	True	True	True	True	True	True	True
...
3673	True	True	True	True	True	True	True	True	True	True	True	True
3674	True	True	True	True	True	True	True	True	True	True	True	True
3675	True	True	True	True	True	True	True	True	True	True	True	True
3676	True	True	True	True	True	True	True	True	True	True	True	True
3677	True	True	True	True	True	True	True	True	True	True	True	True

3678 rows × 12 columns

```
data.notnull().sum()
```



course_id	3678
course_title	3678
url	3678
is_paid	3678
price	3678
num_subscribers	3678
num_reviews	3678
num_lectures	3678
level	3678
content_duration	3678
published_timestamp	3678
subject	3678
dtype: int64	

```
data.describe()
```



	course_id	price	num_subscribers	num_reviews	num_lectures	content_duration
count	3.678000e+03	3678.000000	3678.000000	3678.000000	3678.000000	3678.000000
mean	6.759720e+05	66.049483	3197.150625	156.259108	40.108755	4.094517
std	3.432732e+05	61.005755	9504.117010	935.452044	50.383346	6.053840
min	8.324000e+03	0.000000	0.000000	0.000000	0.000000	0.000000
25%	4.076925e+05	20.000000	111.000000	4.000000	15.000000	1.000000
50%	6.879170e+05	45.000000	911.500000	18.000000	25.000000	2.000000
75%	9.613555e+05	95.000000	2546.000000	67.000000	45.750000	4.500000
max	1.282064e+06	200.000000	268923.000000	27445.000000	779.000000	78.500000

1) What are all different subject for which Udemy is offering course?

```
data.head(2)
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance

```
data['subject'].unique()
```

```
array(['Business Finance', 'Graphic Design', 'Musical Instruments',  
      'Web Development'], dtype=object)
```

2) Which subject has the maximum number of course?

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

```
Web Development      1200  
Business Finance     1195  
Musical Instruments    680  
Graphic Design        603  
Name: subject, dtype: int64
```

```
data['subject'].max()
```

```
'Web Development'
```

3) Show all the course which are free the cost

```
data[data['is_paid'] == False]
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
95	1148774	Options Trading 101: The Basics	https://www.udemy.com/options-trading-101-the-...	False	0	1514	66	11	Beginner Level	0.550000	2017-03-23T22:19:57Z	Business Finance
103	133536	Stock Market Investing for Beginners	https://www.udemy.com/the-beginners-guide-to-t...	False	0	50855	2698	15	Beginner Level	1.500000	2013-12-25T19:53:34Z	Business Finance
106	265960	Fundamentals of Forex Trading	https://www.udemy.com/fundamentals-of-forex-tr...	False	0	17160	620	23	All Levels	1.000000	2014-08-29T20:10:38Z	Business Finance
108	923616	Website Investing 101 - Buying & Selling Onlin...	https://www.udemy.com/cash-flow-website-invest...	False	0	6811	151	51	All Levels	2.000000	2016-08-05T17:03:15Z	Business Finance
112	191854	Stock Market Foundations	https://www.udemy.com/how-to-invest-in-the-sto...	False	0	19339	794	9	Beginner Level	2.000000	2014-03-31T21:35:06Z	Business Finance
...
3638	155640	Building a Search Engine in PHP & MySQL	https://www.udemy.com/creating-a-search-engine...	False	0	10110	379	12	All Levels	2.500000	2014-02-03T18:07:52Z	Web Development
3643	366720	CSS Image filters - The modern web images colo...	https://www.udemy.com/super-awesome-images-wit...	False	0	6315	53	16	All Levels	1.500000	2014-12-10T19:43:40Z	Web Development
3651	1079078	Drupal 8 Site Building	https://www.udemy.com/drupal-8-site-building/	False	0	1942	23	48	All Levels	4.500000	2017-05-02T05:15:52Z	Web Development
3665	21386	Beginner Photoshop to HTML5 and CSS3	https://www.udemy.com/psd-html5-css3/	False	0	73110	1716	22	All Levels	2.000000	2012-07-27T12:54:57Z	Web Development
		A how to guide in	https://www.udemy.com/a-how-to-guide-						Beginner			Web

✓ 4) Show all the course which are paid

```
data[data['is_paid'] == True]
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance
2	1006314	Financial Modeling for Business Analysts and C...	https://www.udemy.com/financial-modeling-for-b...	True	45	2174	74	51	Intermediate Level	2.5	2016-12-19T19:26:30Z	Business Finance
3	1210588	Beginner to Pro - Financial Analysis in Excel ...	https://www.udemy.com/complete-excel-finance-c...	True	95	2451	11	36	All Levels	3.0	2017-05-30T20:07:24Z	Business Finance
4	1011058	How To Maximize Your Profits Trading Options	https://www.udemy.com/how-to-maximize-your-pro...	True	200	1276	45	26	Intermediate Level	2.0	2016-12-13T14:57:18Z	Business Finance
...
3673	775618	Learn jQuery from Scratch - Master of JavaScri...	https://www.udemy.com/easy-jquery-for-beginner...	True	100	1040	14	21	All Levels	2.0	2016-06-14T17:36:46Z	Web Development
3674	1088178	How To Design A WordPress Website With No Codi...	https://www.udemy.com/how-to-make-a-wordpress-...	True	25	306	3	42	Beginner Level	3.5	2017-03-10T22:24:30Z	Web Development
3675	635248	Learn and Build using Polymer	https://www.udemy.com/learn-and-build-using-po...	True	40	513	169	48	All Levels	3.5	2015-12-30T16:41:42Z	Web Development
3676	905006	CSS Animations: Create Amazing Effects	https://www.udemy.com/css-	True	50	200	21	28	All Levels	2.0	2016-08-11T10:06:15Z	Web

5) Which are Top selling course?

```
data.head(2)
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance

```
data.sort_values('num_subscribers', ascending = False)
```



	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
2827	41295	Learn HTML5 Programming From Scratch	https://www.udemy.com/learn-html5-programming-...	False	0	268923	8629	45	All Levels	10.500000	2013-02-14T07:03:41Z	Web Development
3032	59014	Coding for Entrepreneurs Basic	https://www.udemy.com/coding-for-entrepreneurs...	False	0	161029	279	27	Beginner Level	3.500000	2013-06-09T15:51:55Z	Web Development
3230	625204	The Web Developer Bootcamp	https://www.udemy.com/the-web-developer-bootcamp/	True	200	121584	27445	342	All Levels	43.000000	2015-11-02T21:13:27Z	Web Development
2783	173548	Build Your First Website in 1 Week with HTML5 ...	https://www.udemy.com/build-your-first-website...	False	0	120291	5924	30	Beginner Level	3.000000	2014-04-08T16:21:30Z	Web Development
3232	764164	The Complete Web Developer Course 2.0	https://www.udemy.com/the-complete-web-develop...	True	200	114512	22412	304	All Levels	30.500000	2016-03-08T22:28:36Z	Web Development
...
1569	726314	Create Beautiful Image Maps for Your Website	https://www.udemy.com/how-to-create-hotspot-im...	True	20	0	0	8	Intermediate Level	0.616667	2016-01-18T17:56:36Z	Graphic Design
1473	185526	MicroStation - Células	https://www.udemy.com/microstation-celulas/	True	20	0	0	9	Beginner Level	0.616667	2014-04-15T21:48:55Z	Graphic Design
1472	181268	Photoshop: Creando elemental de aire	https://www.udemy.com/photoshop-creando-elemen...	True	20	0	0	5	Beginner Level	1.000000	2014-04-01T21:50:32Z	Graphic Design
1471	188584	Letras en Adobe Illustrator	https://www.udemy.com/letras-en-adobe-illustra...	True	40	0	0	13	Beginner Level	2.500000	2014-04-04T21:23:23Z	Graphic Design

6) Which are least selling course?

```
data.sort_values('num_subscribers', ascending = True)
```




	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
885	1032648	beginning accounting	https://www.udemy.com/beginning_accounting/	True	20	0	0	12	Intermediate Level	0.633333	2016-12-26T16:52:47Z	Business Finance
456	1247992	Introduction to Project Management for Finance...	https://www.udemy.com/introduction-to-project-...	True	50	0	0	9	Beginner Level	2.000000	2017-07-03T21:40:32Z	Business Finance
457	1251582	Best Practices in Corporate Budgeting	https://www.udemy.com/best-practices-corporate-...	True	50	0	0	9	Intermediate Level	2.000000	2017-06-29T22:01:56Z	Business Finance
458	1258666	Financial Statement Auditing Cycles	https://www.udemy.com/financial-statement-audi-...	True	50	0	0	9	Intermediate Level	2.000000	2017-06-29T23:20:10Z	Business Finance
459	1168172	Case studies on credit appraisal for bankers	https://www.udemy.com/case-studies-on-credit-a...	True	20	0	0	15	Beginner Level	3.500000	2017-05-01T20:16:26Z	Business Finance
...
3232	764164	The Complete Web Developer Course 2.0	https://www.udemy.com/the-complete-web-develop...	True	200	114512	22412	304	All Levels	30.500000	2016-03-08T22:28:36Z	Web Development
2783	173548	Build Your First Website in 1 Week with HTML5 ...	https://www.udemy.com/build-your-first-website...	False	0	120291	5924	30	Beginner Level	3.000000	2014-04-08T16:21:30Z	Web Development
...	...	The Web	https://www.udemy.com/the-web-developer-	Web

✓ 7) Show all course of graphic design where the price is below 150?

```
data[(data.subject == 'Graphic Design') & (data.price < 100)]
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
1196	1197206	Illustrator CC MasterClass	https://www.udemy.com/illustrator-cc-masterclass/	True	95	462	50	86	All Levels	12.0	2017-05-02T16:41:21Z	Graphic Design
1198	1219520	Adobe Illustrator T-Shirt Design for Merch by ...	https://www.udemy.com/merchbyamazondesign/	True	20	390	44	15	All Levels	1.0	2017-06-13T20:41:14Z	Graphic Design
1202	28556	Discover How to Draw and paint Comics	https://www.udemy.com/learn-to-draw-and-paint/	True	65	8901	424	85	All Levels	62.0	2012-11-21T22:03:54Z	Graphic Design
1203	317278	Typographic Logos: Typography and Lettering fo...	https://www.udemy.com/typographic-logos-typogr...	True	25	4235	427	20	Intermediate Level	1.5	2014-10-16T19:30:01Z	Graphic Design
1204	573064	Photoshop in Ease: Create World Amazing Graph...	https://www.udemy.com/photoshop-knights-become...	True	20	14440	182	26	All Levels	3.0	2015-08-13T21:17:34Z	Graphic Design
...
1793	456388	Adobe Photoshop CC The Essential Guide	https://www.udemy.com/adobe-photoshop-cc-the-e...	True	20	254	5	81	All Levels	4.5	2015-05-12T00:19:27Z	Graphic Design
1794	955242	Learn to Composite a 2D Action Shot in Photoshop	https://www.udemy.com/3dmotive-learn-to-compos...	True	20	40	2	8	Beginner Level	1.5	2016-09-10T21:38:26Z	Graphic Design
1795	1001400	Infographic Design: How to Create Stunning...	https://www.udemy.com/infoographic-design-how-	True	20	21	2	10	All Levels	2.0	2015-05-10T00:00:00Z	Graphic Design

8) List out all the courses that are related with python

```
data.head(2)
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
0	1070968	Ultimate Investment Banking Course	https://www.udemy.com/ultimate-investment-bank...	True	200	2147	23	51	All Levels	1.5	2017-01-18T20:58:58Z	Business Finance
1	1113822	Complete GST Course & Certification - Grow You...	https://www.udemy.com/goods-and-services-tax/	True	75	2792	923	274	All Levels	39.0	2017-03-09T16:34:20Z	Business Finance

```
data[data.course_title.str.contains('Python')]
```

	course_id	course_title	url	is_paid	price	num_subscribers	num_reviews	num_lectures	level	content_duration	published_timestamp	subject
14	1196544	Python Algo Trading: Sentiment Trading with News	https://www.udemy.com/hedge-fund-strategy-trad...	True	200	294	19	42	All Levels	7.0	2017-04-28T16:41:44Z	Business Finance
30	1170894	Python Algo Stock Trading: Automate Your Trading!	https://www.udemy.com/algorithmic-stock-tradin...	True	95	1165	21	41	Beginner Level	2.5	2017-05-28T23:41:03Z	Business Finance
41	1035472	Python for Finance: Investment Fundamentals & ...	https://www.udemy.com/python-for-finance-inves...	True	195	3811	278	103	All Levels	6.5	2017-03-30T22:17:09Z	Business Finance
147	1070886	Python Algo Trading: FX Trading with Oanda	https://www.udemy.com/python-algo-trading-fx-t...	True	200	453	42	33	Intermediate Level	3.0	2017-03-14T00:39:45Z	Business Finance
334	815482	Stock Technical Analysis with Python	https://www.udemy.com/stock-technical-analysis...	True	50	409	35	46	All Levels	8.0	2016-04-12T00:40:03Z	Business Finance
536	529828	Python for Trading & Investing	https://www.udemy.com/python-for-trading-inves...	True	95	638	25	36	All Levels	5.0	2015-06-17T22:23:31Z	Business Finance
762	1088656	Quantitative Trading Analysis with Python	https://www.udemy.com/quantitative-trading-ana...	True	50	256	17	49	All Levels	5.5	2017-01-27T17:11:28Z	Business Finance
863	902888	Investment Portfolio Analysis with Python	https://www.udemy.com/investment-portfolio-ana...	True	50	209	13	37	All Levels	7.0	2016-07-13T21:40:32Z	Business Finance
1682	546848	Learn to code in Python and learn Adobe Photos...	https://www.udemy.com/learn-to-code-in-python-...	True	50	1132	1	29	All Levels	2.0	2015-07-08T00:15:12Z	Graphic Design
2497	16646	Web Programming with Python	https://www.udemy.com/web-programming-with-pyt...	True	50	35267	217	53	All Levels	4.0	2012-04-25T00:01:43Z	Web Development
2528	391546	Learn Python and Django: Payment Processing	https://www.udemy.com/learn-django-code-accept...	True	70	17714	198	23	All Levels	3.5	2015-02-09T15:37:56Z	Web Development
2553	938560	The Complete Ethical Hacking Course 2.0: Pytho...	https://www.udemy.com/penetration-testing-ethi...	True	195	7827	268	66	All Levels	11.0	2016-09-26T15:08:29Z	Web Development
2570	47963	Coding for Entrepreneurs: Learn Python, Django...	https://www.udemy.com/coding-for-entrepreneurs/	True	195	23412	799	251	All Levels	45.0	2013-04-08T00:46:14Z	Web Development
2681	477702	Python for Beginners: Python Programming Langu...	https://www.udemy.com/python-course/	True	150	6153	125	84	Beginner Level	5.0	2015-06-14T18:18:57Z	Web Development
2960	270808	Projects in Django and Python	https://www.udemy.com/projects-in-django-and-p...	True	60	1764	53	28	All Levels	6.5	2014-10-21T07:58:07Z	Web Development
3133	574082	Web Scraping with Python, Ruby & import. io	https://www.udemy.com/web-scraping-with-python...	True	75	973	50	46	All Levels	4.5	2015-08-09T22:16:41Z	Web Development
3138	631128	Complete Python Web Course: Build 8 Python Web...	https://www.udemy.com/the-complete-python-web-...	True	110	7489	941	173	All Levels	16.0	2015-11-08T20:57:35Z	Web Development
		Professional Pvthon										

3160	368340	Web Development Using Flask	https://www.udemy.com/python-flask-course/	True	120	3420	489	102	Beginner Level	14.5	2015-03-04T00:10:36Z	Web Development
3192	1035940	Professional RESTful API Design using Python F...	https://www.udemy.com/restful-api-flask-course/	True	120	578	25	36	Intermediate Level	4.5	2017-01-11T21:15:25Z	Web Development
3194	1063722	Learn Python Django - A Hands-On Course	https://www.udemy.com/learn-python-django-a-ha...	True	50	1339	21	18	Beginner Level	2.0	2017-01-18T21:53:34Z	Web Development
3197	76052	Try Django 1.9 Build a Blog and Learn Python...	https://www.udemy.com/try-django/	True	50	7407	172	147	All Levels	20.0	2014-03-04T07:12:21Z	Web Development
3200	822444	Python and Django Full Stack Web Developer Boo...	https://www.udemy.com/python-and-django-full-s...	True	200	11832	1883	191	All Levels	31.5	2017-02-24T18:40:55Z	Web Development
3203	970600	REST APIs with Flask and Python	https://www.udemy.com/rest-api-flask-and-python/	True	110	5151	737	115	Intermediate Level	12.5	2016-11-06T19:00:38Z	Web Development
		Advanced Scalable	https://www.udemy.com/advanced						Intermediate			Web

9) What are the Maximum Number of Subscribers for Each level of course?

```
data.groupby('level')['num_subscribers'].max()
```

```
level
All Levels      268923
Beginner Level  161029
Expert Level     5172
Intermediate Level 29167
Name: num_subscribers, dtype: int64
```