ragavarshini-python-project

July 10, 2024

Problem Statement 1: Samantha has created a dataset named 'top50spotify.csv' of her top 50 songs from spotify. Dataset Description:top50spotify.csv - The dataset contains 14 features. Here's a brief description of a few columns in the dataset: • SerialNo. - Serial number of songs • Track.Name - Name of the track • Artist.Name - Name of the artist • Genre - Genre of the song • Energy - Energy index of the song • Length. - Length of the song • Popularity - Popularity index of the song Tasks to be performed:

1.Import the dataset as a DataFrame and drop the first column.

2.Save it as 'top50.csv'.

3.Find the average Energy and Length of first 10 songs.

4.Find the total length of songs, group by genre from top to bottom.

5.Print the artist name with the most number of tracks in one genre. (Hint: Group by artist name and genre)

6.Print the data of the tracks created by the artist from the previous question.

[1]:
```
import numpy as np
import pandas as pd
#1.import the dataset as a DataFrame
df=pd.read_csv('/content/top50spotify.csv')
df
```

[1]:

	SerialNo.	Track.Name
0	1	Señorita
1	2	China
2	3	boyfriend (with Social House)
3	4	Beautiful People (feat. Khalid)
4	5	Goodbyes (Feat. Young Thug)
5	6	I Don't Care (with Justin Bieber)
6	7	Ransom
7	8	How Do You Sleep?
8	9	Old Town Road - Remix
9	10	bad guy
10	11	Callaita
11	12	Loco Contigo (feat. J. Balvin & Tyga)
12	13	Someone You Loved
13	14	Otro Trago - Remix

14	15	Money In The Grave (Drake ft. Rick Ross)	
15	16	No Guidance (feat. Drake)	
16	17	LA CANCIÓN	
17	18	Sunflower - Spider-Man: Into the Spider-Verse	
18	19	Lalala	
19	20	Truth Hurts	
20	21	Piece Of Your Heart	
21	22	Panini	
22	23	No Me Conoce - Remix	
23	24	Soltera - Remix	
24	25	bad guy (with Justin Bieber)	
25	26	If I Can't Have You	
26	27	Dance Monkey	
27	28	It's You	
28	29	Con Calma	
29	30	QUE PRETENDES	
30	31	Takeaway	
31	32	7 rings	
32	33	0.958333333	
33	34	The London (feat. J. Cole & Travis Scott)	
34	35	Never Really Over	
35	36	Summer Days (feat. Macklemore & Patrick Stump …	
36	37	Otro Trago	
37	38	Antisocial (with Travis Scott)	
38	39	Sucker	
39	40	fuck, i'm lonely (with Anne-Marie) - from "13 …	
40	41	Higher Love	
41	42	You Need To Calm Down	
42	43	Shallow	
43	44	Talk	
44	45	Con Altura	
45	46	One Thing Right	
46	47	Te Robaré	
47	48	Happier	
48	49	Call You Mine	
49	50	Cross Me (feat. Chance the Rapper & PnB Rock)	

	Artist.Name	Genre	Beats.Per.Minute	Energy	\
0	Shawn Mendes	canadian pop	117	55	
1	Anuel AA	reggaeton flow	105	81	
2	Ariana Grande	dance pop	190	80	
3	Ed Sheeran	pop	93	65	
4	Post Malone	dfw rap	150	65	
5	Ed Sheeran	pop	102	68	
6	Lil Tecca	trap music	180	64	
7	Sam Smith	pop	111	68	
8	Lil Nas X	country rap	136	62	

9	Billie Eilish	electropop	135	43
10	Bad Bunny	reggaeton	176	62
11	DJ Snake	dance pop	96	71
12	Lewis Capaldi	pop	110	41
13	Sech	panamanian pop	176	79
14	Drake	canadian hip hop	101	50
15	Chris Brown	dance pop	93	45
16	J Balvin	latin	176	65
17	Post Malone	dfw rap	90	48
18	Y2K	canadian hip hop	130	39
19	Lizzo	escape room	158	62
20	MEDUZA	pop house	124	74
21	Lil Nas X	country rap	154	59
22	Jhay Cortez	reggaeton flow	92	79
23	Lunay	latin	92	78
24	Billie Eilish	electropop	135	45
25	Shawn Mendes	canadian pop	124	82
26	Tones and I	australian pop	98	59
27	Ali Gatie	canadian hip hop	96	46
28	Daddy Yankee	latin	94	86
29	J Balvin	latin	93	79
30	The Chainsmokers	edm	85	51
31	Ariana Grande	dance pop	140	32
32	Maluma	reggaeton	96	71
33	Young Thug	atl hip hop	98	59
34	Katy Perry	dance pop	100	88
35	Martin Garrix	big room	114	72
36	Sech	panamanian pop	176	70
37	Ed Sheeran	pop	152	82
38	Jonas Brothers	boy band	138	73
39	Lauv	dance pop	95	56
40	Kygo	edm	104	68
41	Taylor Swift	dance pop	85	68
42	Lady Gaga	dance pop	96	39
43	Khalid	pop	136	40
44	ROSALÍA	r&b en espanol	98	69
45	Marshmello	brostep	88	62
46	Nicky Jam	latin	176	75
47	Marshmello	brostep	100	79
48	The Chainsmokers	edm	104	70
49	Ed Sheeran	pop	95	79

	Danceability	Loudness..dB..	Liveness	Valence.	Length.	Acousticness..	\
0	76	-6	8	75	191	4	
1	79	-4	8	61	302	8	
2	40	-4	16	70	186	12	
3	64	-8	8	55	198	12	

4	58	−4	11	18	175	45
5	80	−5	9	84	220	9
6	75	−6	7	23	131	2
7	48	−5	8	35	202	15
8	88	−6	11	64	157	5
9	70	−11	10	56	194	33
10	61	−5	24	24	251	60
11	82	−4	15	38	185	28
12	50	−6	11	45	182	75
13	73	−2	6	76	288	7
14	83	−4	12	10	205	10
15	70	−7	16	14	261	12
16	75	−6	11	43	243	15
17	76	−6	7	91	158	56
18	84	−8	14	50	161	18
19	72	−3	12	41	173	11
20	68	−7	7	63	153	4
21	70	−6	12	48	115	34
22	81	−4	9	58	309	14
23	80	−4	44	80	266	36
24	67	−11	12	68	195	25
25	69	−4	13	87	191	49
26	82	−6	18	54	210	69
27	73	−7	19	40	213	37
28	74	−3	6	66	193	11
29	64	−4	36	94	222	3
30	29	−8	10	36	210	12
31	78	−11	9	33	179	59
32	78	−5	9	68	176	22
33	80	−7	13	18	200	2
34	77	−5	32	39	224	19
35	66	−7	14	32	164	18
36	75	−5	11	62	226	14
37	72	−5	36	91	162	13
38	84	−5	11	95	181	4
39	81	−6	6	68	199	48
40	69	−7	10	40	228	2
41	77	−6	7	73	171	1
42	57	−6	23	32	216	37
43	90	−9	6	35	198	5
44	88	−4	5	75	162	39
45	66	−2	58	44	182	7
46	67	−4	8	80	202	24
47	69	−3	17	67	214	19
48	59	−6	41	50	218	23
49	75	−6	7	61	206	21

	Speechiness.	Popularity
0	3	79
1	9	92
2	46	85
3	19	86
4	7	94
5	4	84
6	29	92
7	9	90
8	10	87
9	38	95
10	31	93
11	7	86
12	3	88
13	20	87
14	5	92
15	15	82
16	32	90
17	5	91
18	8	88
19	11	91
20	3	91
21	8	91
22	7	83
23	4	91
24	30	89
25	6	70
26	10	83
27	3	89
28	6	91
29	25	89
30	4	84
31	33	89
32	28	89
33	15	89
34	6	89
35	6	89
36	34	91
37	5	87
38	6	80
39	7	78
40	3	88
41	5	90
42	3	87
43	13	84
44	12	88
45	5	88

```
46              6          88
47              5          88
48              3          88
49             12          82
```

[2]:
```
#drop the first column
df=pd.read_csv('/content/top50spotify.csv')
df=df.drop(df.columns[0], axis=1)
df
```

[2]:

	Track.Name	Artist.Name	\
0	Señorita	Shawn Mendes	
1	China	Anuel AA	
2	boyfriend (with Social House)	Ariana Grande	
3	Beautiful People (feat. Khalid)	Ed Sheeran	
4	Goodbyes (Feat. Young Thug)	Post Malone	
5	I Don't Care (with Justin Bieber)	Ed Sheeran	
6	Ransom	Lil Tecca	
7	How Do You Sleep?	Sam Smith	
8	Old Town Road - Remix	Lil Nas X	
9	bad guy	Billie Eilish	
10	Callaita	Bad Bunny	
11	Loco Contigo (feat. J. Balvin & Tyga)	DJ Snake	
12	Someone You Loved	Lewis Capaldi	
13	Otro Trago - Remix	Sech	
14	Money In The Grave (Drake ft. Rick Ross)	Drake	
15	No Guidance (feat. Drake)	Chris Brown	
16	LA CANCIÓN	J Balvin	
17	Sunflower - Spider-Man: Into the Spider-Verse	Post Malone	
18	Lalala	Y2K	
19	Truth Hurts	Lizzo	
20	Piece Of Your Heart	MEDUZA	
21	Panini	Lil Nas X	
22	No Me Conoce - Remix	Jhay Cortez	
23	Soltera - Remix	Lunay	
24	bad guy (with Justin Bieber)	Billie Eilish	
25	If I Can't Have You	Shawn Mendes	
26	Dance Monkey	Tones and I	
27	It's You	Ali Gatie	
28	Con Calma	Daddy Yankee	
29	QUE PRETENDES	J Balvin	
30	Takeaway	The Chainsmokers	
31	7 rings	Ariana Grande	
32	0.958333333	Maluma	
33	The London (feat. J. Cole & Travis Scott)	Young Thug	
34	Never Really Over	Katy Perry	
35	Summer Days (feat. Macklemore & Patrick Stump …	Martin Garrix	

36	Otro Trago	Sech	
37	Antisocial (with Travis Scott)	Ed Sheeran	
38	Sucker	Jonas Brothers	
39	fuck, i'm lonely (with Anne-Marie) - from "13 …	Lauv	
40	Higher Love	Kygo	
41	You Need To Calm Down	Taylor Swift	
42	Shallow	Lady Gaga	
43	Talk	Khalid	
44	Con Altura	ROSALÍA	
45	One Thing Right	Marshmello	
46	Te Robaré	Nicky Jam	
47	Happier	Marshmello	
48	Call You Mine	The Chainsmokers	
49	Cross Me (feat. Chance the Rapper & PnB Rock)	Ed Sheeran	

	Genre	Beats.Per.Minute	Energy	Danceability	Loudness..dB..	\
0	canadian pop	117	55	76	-6	
1	reggaeton flow	105	81	79	-4	
2	dance pop	190	80	40	-4	
3	pop	93	65	64	-8	
4	dfw rap	150	65	58	-4	
5	pop	102	68	80	-5	
6	trap music	180	64	75	-6	
7	pop	111	68	48	-5	
8	country rap	136	62	88	-6	
9	electropop	135	43	70	-11	
10	reggaeton	176	62	61	-5	
11	dance pop	96	71	82	-4	
12	pop	110	41	50	-6	
13	panamanian pop	176	79	73	-2	
14	canadian hip hop	101	50	83	-4	
15	dance pop	93	45	70	-7	
16	latin	176	65	75	-6	
17	dfw rap	90	48	76	-6	
18	canadian hip hop	130	39	84	-8	
19	escape room	158	62	72	-3	
20	pop house	124	74	68	-7	
21	country rap	154	59	70	-6	
22	reggaeton flow	92	79	81	-4	
23	latin	92	78	80	-4	
24	electropop	135	45	67	-11	
25	canadian pop	124	82	69	-4	
26	australian pop	98	59	82	-6	
27	canadian hip hop	96	46	73	-7	
28	latin	94	86	74	-3	
29	latin	93	79	64	-4	
30	edm	85	51	29	-8	

31	dance pop	140	32	78	-11
32	reggaeton	96	71	78	-5
33	atl hip hop	98	59	80	-7
34	dance pop	100	88	77	-5
35	big room	114	72	66	-7
36	panamanian pop	176	70	75	-5
37	pop	152	82	72	-5
38	boy band	138	73	84	-5
39	dance pop	95	56	81	-6
40	edm	104	68	69	-7
41	dance pop	85	68	77	-6
42	dance pop	96	39	57	-6
43	pop	136	40	90	-9
44	r&b en espanol	98	69	88	-4
45	brostep	88	62	66	-2
46	latin	176	75	67	-4
47	brostep	100	79	69	-3
48	edm	104	70	59	-6
49	pop	95	79	75	-6

	Liveness	Valence.	Length.	Acousticness..	Speechiness.	Popularity
0	8	75	191	4	3	79
1	8	61	302	8	9	92
2	16	70	186	12	46	85
3	8	55	198	12	19	86
4	11	18	175	45	7	94
5	9	84	220	9	4	84
6	7	23	131	2	29	92
7	8	35	202	15	9	90
8	11	64	157	5	10	87
9	10	56	194	33	38	95
10	24	24	251	60	31	93
11	15	38	185	28	7	86
12	11	45	182	75	3	88
13	6	76	288	7	20	87
14	12	10	205	10	5	92
15	16	14	261	12	15	82
16	11	43	243	15	32	90
17	7	91	158	56	5	91
18	14	50	161	18	8	88
19	12	41	173	11	11	91
20	7	63	153	4	3	91
21	12	48	115	34	8	91
22	9	58	309	14	7	83
23	44	80	266	36	4	91
24	12	68	195	25	30	89
25	13	87	191	49	6	70

26	18	54	210	69	10	83
27	19	40	213	37	3	89
28	6	66	193	11	6	91
29	36	94	222	3	25	89
30	10	36	210	12	4	84
31	9	33	179	59	33	89
32	9	68	176	22	28	89
33	13	18	200	2	15	89
34	32	39	224	19	6	89
35	14	32	164	18	6	89
36	11	62	226	14	34	91
37	36	91	162	13	5	87
38	11	95	181	4	6	80
39	6	68	199	48	7	78
40	10	40	228	2	3	88
41	7	73	171	1	5	90
42	23	32	216	37	3	87
43	6	35	198	5	13	84
44	5	75	162	39	12	88
45	58	44	182	7	5	88
46	8	80	202	24	6	88
47	17	67	214	19	5	88
48	41	50	218	23	3	88
49	7	61	206	21	12	82

[3]:
```
#2.Save it as 'top50.csv':
df.to_csv('top50.csv')
df
```

[3]:

	Track.Name	Artist.Name	\
0	Señorita	Shawn Mendes	
1	China	Anuel AA	
2	boyfriend (with Social House)	Ariana Grande	
3	Beautiful People (feat. Khalid)	Ed Sheeran	
4	Goodbyes (Feat. Young Thug)	Post Malone	
5	I Don't Care (with Justin Bieber)	Ed Sheeran	
6	Ransom	Lil Tecca	
7	How Do You Sleep?	Sam Smith	
8	Old Town Road - Remix	Lil Nas X	
9	bad guy	Billie Eilish	
10	Callaita	Bad Bunny	
11	Loco Contigo (feat. J. Balvin & Tyga)	DJ Snake	
12	Someone You Loved	Lewis Capaldi	
13	Otro Trago - Remix	Sech	
14	Money In The Grave (Drake ft. Rick Ross)	Drake	
15	No Guidance (feat. Drake)	Chris Brown	
16	LA CANCIÓN	J Balvin	

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17      Sunflower - Spider-Man: Into the Spider-Verse       Post Malone
18                                             Lalala               Y2K
19                                         Truth Hurts             Lizzo
20                                 Piece Of Your Heart            MEDUZA
21                                             Panini         Lil Nas X
22                                No Me Conoce - Remix       Jhay Cortez
23                                    Soltera - Remix             Lunay
24                         bad guy (with Justin Bieber)     Billie Eilish
25                                  If I Can't Have You      Shawn Mendes
26                                         Dance Monkey       Tones and I
27                                             It's You         Ali Gatie
28                                            Con Calma      Daddy Yankee
29                                        QUE PRETENDES          J Balvin
30                                             Takeaway  The Chainsmokers
31                                              7 rings     Ariana Grande
32                                        0.958333333             Maluma
33          The London (feat. J. Cole & Travis Scott)        Young Thug
34                                   Never Really Over        Katy Perry
35  Summer Days (feat. Macklemore & Patrick Stump …     Martin Garrix
36                                        Otro Trago              Sech
37                       Antisocial (with Travis Scott)        Ed Sheeran
38                                             Sucker    Jonas Brothers
39  fuck, i'm lonely (with Anne-Marie) - from "13 …              Lauv
40                                        Higher Love              Kygo
41                                You Need To Calm Down      Taylor Swift
42                                             Shallow         Lady Gaga
43                                                Talk            Khalid
44                                        Con Altura           ROSALÍA
45                                    One Thing Right        Marshmello
46                                          Te Robaré         Nicky Jam
47                                            Happier        Marshmello
48                                       Call You Mine  The Chainsmokers
49      Cross Me (feat. Chance the Rapper & PnB Rock)        Ed Sheeran

                Genre  Beats.Per.Minute  Energy  Danceability  Loudness..dB..  \
0       canadian pop               117      55            76              -6
1     reggaeton flow               105      81            79              -4
2          dance pop               190      80            40              -4
3                pop                93      65            64              -8
4            dfw rap               150      65            58              -4
5                pop               102      68            80              -5
6         trap music               180      64            75              -6
7                pop               111      68            48              -5
8        country rap               136      62            88              -6
9         electropop               135      43            70             -11
10         reggaeton               176      62            61              -5
11         dance pop                96      71            82              -4
```

12	pop	110	41	50	-6
13	panamanian pop	176	79	73	-2
14	canadian hip hop	101	50	83	-4
15	dance pop	93	45	70	-7
16	latin	176	65	75	-6
17	dfw rap	90	48	76	-6
18	canadian hip hop	130	39	84	-8
19	escape room	158	62	72	-3
20	pop house	124	74	68	-7
21	country rap	154	59	70	-6
22	reggaeton flow	92	79	81	-4
23	latin	92	78	80	-4
24	electropop	135	45	67	-11
25	canadian pop	124	82	69	-4
26	australian pop	98	59	82	-6
27	canadian hip hop	96	46	73	-7
28	latin	94	86	74	-3
29	latin	93	79	64	-4
30	edm	85	51	29	-8
31	dance pop	140	32	78	-11
32	reggaeton	96	71	78	-5
33	atl hip hop	98	59	80	-7
34	dance pop	100	88	77	-5
35	big room	114	72	66	-7
36	panamanian pop	176	70	75	-5
37	pop	152	82	72	-5
38	boy band	138	73	84	-5
39	dance pop	95	56	81	-6
40	edm	104	68	69	-7
41	dance pop	85	68	77	-6
42	dance pop	96	39	57	-6
43	pop	136	40	90	-9
44	r&b en espanol	98	69	88	-4
45	brostep	88	62	66	-2
46	latin	176	75	67	-4
47	brostep	100	79	69	-3
48	edm	104	70	59	-6
49	pop	95	79	75	-6

	Liveness	Valence.	Length.	Acousticness..	Speechiness.	Popularity
0	8	75	191	4	3	79
1	8	61	302	8	9	92
2	16	70	186	12	46	85
3	8	55	198	12	19	86
4	11	18	175	45	7	94
5	9	84	220	9	4	84
6	7	23	131	2	29	92

7	8	35	202	15	9	90
8	11	64	157	5	10	87
9	10	56	194	33	38	95
10	24	24	251	60	31	93
11	15	38	185	28	7	86
12	11	45	182	75	3	88
13	6	76	288	7	20	87
14	12	10	205	10	5	92
15	16	14	261	12	15	82
16	11	43	243	15	32	90
17	7	91	158	56	5	91
18	14	50	161	18	8	88
19	12	41	173	11	11	91
20	7	63	153	4	3	91
21	12	48	115	34	8	91
22	9	58	309	14	7	83
23	44	80	266	36	4	91
24	12	68	195	25	30	89
25	13	87	191	49	6	70
26	18	54	210	69	10	83
27	19	40	213	37	3	89
28	6	66	193	11	6	91
29	36	94	222	3	25	89
30	10	36	210	12	4	84
31	9	33	179	59	33	89
32	9	68	176	22	28	89
33	13	18	200	2	15	89
34	32	39	224	19	6	89
35	14	32	164	18	6	89
36	11	62	226	14	34	91
37	36	91	162	13	5	87
38	11	95	181	4	6	80
39	6	68	199	48	7	78
40	10	40	228	2	3	88
41	7	73	171	1	5	90
42	23	32	216	37	3	87
43	6	35	198	5	13	84
44	5	75	162	39	12	88
45	58	44	182	7	5	88
46	8	80	202	24	6	88
47	17	67	214	19	5	88
48	41	50	218	23	3	88
49	7	61	206	21	12	82

[7]:
```
#3.Find the average Energy and Length of first 10 songs:
average_energy = df.loc[:9, 'Energy'].mean()
average_length = df.loc[:9, 'Length.'].mean()
```

```
print("Average Energy of first 10 songs:", average_energy)
print("Average Length of first 10 songs:", average_length)
```

```
Average Energy of first 10 songs: 65.1
Average Length of first 10 songs: 195.6
```

[8]:
```
#4.Find the total length of songs, group by genre from top to bottom:
total_length_by_genre = df.groupby('Genre')['Length.'].sum()
print(total_length_by_genre)
```

```
Genre
atl hip hop          200
australian pop       210
big room             164
boy band             181
brostep              396
canadian hip hop     579
canadian pop         382
country rap          272
dance pop           1621
dfw rap              333
edm                  656
electropop           389
escape room          173
latin               1126
panamanian pop       514
pop                 1368
pop house            153
r&b en espanol       162
reggaeton            427
reggaeton flow       611
trap music           131
Name: Length., dtype: int64
```

[9]:
```
#5.Print the artist name with the most number of tracks in one genre  :
artist_with_most_tracks = df.groupby(['Artist.Name','Genre']).size().
  ↪sort_values(ascending=False)
print(artist_with_most_tracks)
```

```
Artist.Name       Genre
Ed Sheeran        pop              4
Lil Nas X         country rap      2
Shawn Mendes      canadian pop     2
Marshmello        brostep          2
Post Malone       dfw rap          2
Sech              panamanian pop   2
J Balvin          latin            2
```

```
The Chainsmokers  edm                2
Billie Eilish     electropop         2
Ariana Grande     dance pop          2
Taylor Swift      dance pop          1
Tones and I       australian pop     1
Lizzo             escape room        1
Sam Smith         pop                1
ROSALÍA           r&b en espanol     1
Y2K               canadian hip hop   1
Nicky Jam         latin              1
Martin Garrix     big room           1
Maluma            reggaeton          1
MEDUZA            pop house          1
Lunay             latin              1
Ali Gatie         canadian hip hop   1
Lil Tecca         trap music         1
Anuel AA          reggaeton flow     1
Lewis Capaldi     pop                1
Lauv              dance pop          1
Lady Gaga         dance pop          1
Kygo              edm                1
Khalid            pop                1
Katy Perry        dance pop          1
Jonas Brothers    boy band           1
Jhay Cortez       reggaeton flow     1
Drake             canadian hip hop   1
Daddy Yankee      latin              1
DJ Snake          dance pop          1
Chris Brown       dance pop          1
Bad Bunny         reggaeton          1
Young Thug        atl hip hop        1
dtype: int64
```

[10]:
```
# 6.Print the data of the tracks created by the artist from the previous␣
 ↪question
artist_name = artist_with_most_tracks.index[0][0] # Extract the artist name
genre = artist_with_most_tracks.index[0][1] #Extract the genre
tracks_by_artist = df[(df['Artist.Name'] == artist_name) & (df['Genre'] ==␣
 ↪genre)] # Filter by artist name and genre
print(tracks_by_artist)
df.head()
```

```
                                    Track.Name Artist.Name Genre  \
3                 Beautiful People (feat. Khalid)  Ed Sheeran   pop
5               I Don't Care (with Justin Bieber)  Ed Sheeran   pop
37                 Antisocial (with Travis Scott)  Ed Sheeran   pop
49  Cross Me (feat. Chance the Rapper & PnB Rock)  Ed Sheeran   pop
```

	Beats.Per.Minute	Energy	Danceability	Loudness..dB..	Liveness	\
3	93	65	64	-8	8	
5	102	68	80	-5	9	
37	152	82	72	-5	36	
49	95	79	75	-6	7	

	Valence.	Length.	Acousticness..	Speechiness.	Popularity
3	55	198	12	19	86
5	84	220	9	4	84
37	91	162	13	5	87
49	61	206	21	12	82

[10]:

	Track.Name	Artist.Name	Genre	\
0	Señorita	Shawn Mendes	canadian pop	
1	China	Anuel AA	reggaeton flow	
2	boyfriend (with Social House)	Ariana Grande	dance pop	
3	Beautiful People (feat. Khalid)	Ed Sheeran	pop	
4	Goodbyes (Feat. Young Thug)	Post Malone	dfw rap	

	Beats.Per.Minute	Energy	Danceability	Loudness..dB..	Liveness	Valence.	\
0	117	55	76	-6	8	75	
1	105	81	79	-4	8	61	
2	190	80	40	-4	16	70	
3	93	65	64	-8	8	55	
4	150	65	58	-4	11	18	

	Length.	Acousticness..	Speechiness.	Popularity
0	191	4	3	79
1	302	8	9	92
2	186	12	46	85
3	198	12	19	86
4	175	45	7	94

Problem Statement 2: Write a Python program to perform the following tasks-

1.Create a pandas series from the below dictionary where indices are subjects:{'English':{'Sam':60,'Jackson':74,'Ahree':85}, 'History':{'Gloria':83,'Sam':65,'Isla':78,'Aron':72,'Gray':61}, Python for Data Science Project Data Science and Machine Learning Program

2'Geography':{'Jackson':92,'Gloria':95,'Isla':82,'Aron':75,'Ahree':76}, 'Mathematics':{'Sam':99,'Gloria':74,'Jackson':89,'Ahree':85,'Gray':95}, 'Science':{'Sam':89,'Aron':82,'Gray':78,'Isla':93,'Ahree':87} }

2.Convert the created series into DataFrame and replace the null values with zeroes.

3.Transpose the DataFrame and create a new column 'Average' and fill the values in it by calculating the average of all subjects.

[11]:
```
#1.Create a pandas series from the below dictionary where indices are subjects:
 ↪{'English':{'Sam':60,'Jackson':74,'Ahree':85}, 'History':{'Gloria':83,'Sam':
 ↪65,'Isla':78,'Aron':72,'Gray':61}, Python for Data Science Project Data␣
 ↪Science and Machine Learning Program 2'Geography':{'Jackson':92,'Gloria':
 ↪95,'Isla':82,'Aron':75,'Ahree':76}, 'Mathematics':{'Sam':99,'Gloria':
 ↪74,'Jackson':89,'Ahree':85,'Gray':95}, 'Science':{'Sam':89,'Aron':82,'Gray':
 ↪78,'Isla':93,'Ahree':87} }
import pandas as pd
data = {'English':{'Sam':60,'Jackson':74,'Ahree':85},
        'History':{'Gloria':83,'Sam':65,'Isla':78,'Aron':72,'Gray':61},
        'Geography':{'Jackson':92,'Gloria':95,'Isla':82,'Aron':75,'Ahree':76},
        'Mathematics':{'Sam':99,'Gloria':74,'Jackson':89,'Ahree':85,'Gray':95},
        'Science':{'Sam':89,'Aron':82,'Gray':78,'Isla':93,'Ahree':87} }
series = pd.Series(data)
print(series)
```

```
English                 {'Sam': 60, 'Jackson': 74, 'Ahree': 85}
History       {'Gloria': 83, 'Sam': 65, 'Isla': 78, 'Aron': …
Geography     {'Jackson': 92, 'Gloria': 95, 'Isla': 82, 'Aro…
Mathematics   {'Sam': 99, 'Gloria': 74, 'Jackson': 89, 'Ahre…
Science       {'Sam': 89, 'Aron': 82, 'Gray': 78, 'Isla': 93…
dtype: object
```

[12]:
```
import pandas as pd
data = {'English':{'Sam':60,'Jackson':74,'Ahree':85},
        'History':{'Gloria':83,'Sam':65,'Isla':78,'Aron':72,'Gray':61},
        'Geography':{'Jackson':92,'Gloria':95,'Isla':82,'Aron':75,'Ahree':76},
        'Mathematics':{'Sam':99,'Gloria':74,'Jackson':89,'Ahree':85,'Gray':95},
        'Science':{'Sam':89,'Aron':82,'Gray':78,'Isla':93,'Ahree':87} }
# Now you can fill NaN values:
df = df.fillna(0)
print(df)
```

```
                                        Track.Name       Artist.Name  \
0                                         Señorita      Shawn Mendes
1                                            China         Anuel AA
2                    boyfriend (with Social House)     Ariana Grande
3                  Beautiful People (feat. Khalid)        Ed Sheeran
4                      Goodbyes (Feat. Young Thug)      Post Malone
5                I Don't Care (with Justin Bieber)        Ed Sheeran
6                                          Ransom         Lil Tecca
7                                How Do You Sleep?         Sam Smith
8                            Old Town Road - Remix         Lil Nas X
9                                         bad guy     Billie Eilish
10                                        Callaita         Bad Bunny
11            Loco Contigo (feat. J. Balvin & Tyga)          DJ Snake
12                                Someone You Loved     Lewis Capaldi
```

```
13                                Otro Trago - Remix              Sech
14          Money In The Grave (Drake ft. Rick Ross)             Drake
15                           No Guidance (feat. Drake)       Chris Brown
16                                        LA CANCIÓN          J Balvin
17     Sunflower - Spider-Man: Into the Spider-Verse       Post Malone
18                                            Lalala              Y2K
19                                       Truth Hurts             Lizzo
20                                 Piece Of Your Heart            MEDUZA
21                                            Panini         Lil Nas X
22                                 No Me Conoce - Remix       Jhay Cortez
23                                      Soltera - Remix             Lunay
24                         bad guy (with Justin Bieber)     Billie Eilish
25                                 If I Can't Have You      Shawn Mendes
26                                        Dance Monkey       Tones and I
27                                            It's You         Ali Gatie
28                                         Con Calma      Daddy Yankee
29                                       QUE PRETENDES          J Balvin
30                                            Takeaway  The Chainsmokers
31                                             7 rings     Ariana Grande
32                                        0.958333333            Maluma
33         The London (feat. J. Cole & Travis Scott)        Young Thug
34                                   Never Really Over        Katy Perry
35  Summer Days (feat. Macklemore & Patrick Stump …     Martin Garrix
36                                        Otro Trago              Sech
37                       Antisocial (with Travis Scott)        Ed Sheeran
38                                            Sucker    Jonas Brothers
39  fuck, i'm lonely (with Anne-Marie) - from "13 …              Lauv
40                                        Higher Love              Kygo
41                               You Need To Calm Down      Taylor Swift
42                                            Shallow         Lady Gaga
43                                               Talk             Khalid
44                                        Con Altura           ROSALÍA
45                                     One Thing Right        Marshmello
46                                           Te Robaré         Nicky Jam
47                                             Happier        Marshmello
48                                      Call You Mine  The Chainsmokers
49         Cross Me (feat. Chance the Rapper & PnB Rock)        Ed Sheeran

                Genre  Beats.Per.Minute  Energy  Danceability  Loudness..dB..  \
0       canadian pop               117      55            76              -6
1     reggaeton flow               105      81            79              -4
2          dance pop               190      80            40              -4
3                pop                93      65            64              -8
4            dfw rap               150      65            58              -4
5                pop               102      68            80              -5
6         trap music               180      64            75              -6
7                pop               111      68            48              -5
8        country rap               136      62            88              -6
```

9	electropop	135	43	70	-11
10	reggaeton	176	62	61	-5
11	dance pop	96	71	82	-4
12	pop	110	41	50	-6
13	panamanian pop	176	79	73	-2
14	canadian hip hop	101	50	83	-4
15	dance pop	93	45	70	-7
16	latin	176	65	75	-6
17	dfw rap	90	48	76	-6
18	canadian hip hop	130	39	84	-8
19	escape room	158	62	72	-3
20	pop house	124	74	68	-7
21	country rap	154	59	70	-6
22	reggaeton flow	92	79	81	-4
23	latin	92	78	80	-4
24	electropop	135	45	67	-11
25	canadian pop	124	82	69	-4
26	australian pop	98	59	82	-6
27	canadian hip hop	96	46	73	-7
28	latin	94	86	74	-3
29	latin	93	79	64	-4
30	edm	85	51	29	-8
31	dance pop	140	32	78	-11
32	reggaeton	96	71	78	-5
33	atl hip hop	98	59	80	-7
34	dance pop	100	88	77	-5
35	big room	114	72	66	-7
36	panamanian pop	176	70	75	-5
37	pop	152	82	72	-5
38	boy band	138	73	84	-5
39	dance pop	95	56	81	-6
40	edm	104	68	69	-7
41	dance pop	85	68	77	-6
42	dance pop	96	39	57	-6
43	pop	136	40	90	-9
44	r&b en espanol	98	69	88	-4
45	brostep	88	62	66	-2
46	latin	176	75	67	-4
47	brostep	100	79	69	-3
48	edm	104	70	59	-6
49	pop	95	79	75	-6

	Liveness	Valence.	Length.	Acousticness..	Speechiness.	Popularity
0	8	75	191	4	3	79
1	8	61	302	8	9	92
2	16	70	186	12	46	85
3	8	55	198	12	19	86
4	11	18	175	45	7	94

5	9	84	220	9	4	84
6	7	23	131	2	29	92
7	8	35	202	15	9	90
8	11	64	157	5	10	87
9	10	56	194	33	38	95
10	24	24	251	60	31	93
11	15	38	185	28	7	86
12	11	45	182	75	3	88
13	6	76	288	7	20	87
14	12	10	205	10	5	92
15	16	14	261	12	15	82
16	11	43	243	15	32	90
17	7	91	158	56	5	91
18	14	50	161	18	8	88
19	12	41	173	11	11	91
20	7	63	153	4	3	91
21	12	48	115	34	8	91
22	9	58	309	14	7	83
23	44	80	266	36	4	91
24	12	68	195	25	30	89
25	13	87	191	49	6	70
26	18	54	210	69	10	83
27	19	40	213	37	3	89
28	6	66	193	11	6	91
29	36	94	222	3	25	89
30	10	36	210	12	4	84
31	9	33	179	59	33	89
32	9	68	176	22	28	89
33	13	18	200	2	15	89
34	32	39	224	19	6	89
35	14	32	164	18	6	89
36	11	62	226	14	34	91
37	36	91	162	13	5	87
38	11	95	181	4	6	80
39	6	68	199	48	7	78
40	10	40	228	2	3	88
41	7	73	171	1	5	90
42	23	32	216	37	3	87
43	6	35	198	5	13	84
44	5	75	162	39	12	88
45	58	44	182	7	5	88
46	8	80	202	24	6	88
47	17	67	214	19	5	88
48	41	50	218	23	3	88
49	7	61	206	21	12	82

[13]:
```
# Create the DataFrame first:
df = pd.DataFrame(data)
df
```

[13]:

	English	History	Geography	Mathematics	Science
Sam	60.0	65.0	NaN	99.0	89.0
Jackson	74.0	NaN	92.0	89.0	NaN
Ahree	85.0	NaN	76.0	85.0	87.0
Gloria	NaN	83.0	95.0	74.0	NaN
Isla	NaN	78.0	82.0	NaN	93.0
Aron	NaN	72.0	75.0	NaN	82.0
Gray	NaN	61.0	NaN	95.0	78.0

[14]:
```
# 3.Transpose the DataFrame and create a new column 'Average' and fill the␣
 ↪values in it by calculating the average of all subjects
import pandas as pd

# Assuming df is your original DataFrame after completing tasks 1 and 2

# Step 1: Transpose the DataFrame
df_transposed = df.transpose()

# Step 2: Convert dictionary values to numeric type before calculating the mean
df_transposed = df_transposed.applymap(lambda x: sum(x.values()) if␣
 ↪isinstance(x, dict) else x)

# Step 3: Calculate the average for each student
df_transposed['Average'] = df_transposed.mean(axis=1)

# Display the transposed DataFrame with the new 'Average' column
print("Transposed DataFrame with 'Average' column:")
print(df_transposed)
```

```
Transposed DataFrame with 'Average' column:
              Sam  Jackson  Ahree  Gloria  Isla  Aron  Gray  Average
English      60.0     74.0   85.0     NaN   NaN   NaN   NaN     73.0
History      65.0      NaN    NaN    83.0  78.0  72.0  61.0     71.8
Geography     NaN     92.0   76.0    95.0  82.0  75.0   NaN     84.0
Mathematics  99.0     89.0   85.0    74.0   NaN   NaN  95.0     88.4
Science      89.0      NaN   87.0     NaN  93.0  82.0  78.0     85.8
```

Problem Statement 3: Write a Python program to create a series from 1 to 1000 and select only numbers divisible by 7 and 17.

[15]:
```
#Create a series from 1 to 1000 that are divisibile by 7 and 17
import pandas as pd
series = pd.Series(range(1, 1001))
result = series[(series % 7 == 0) & (series % 17 == 0)]
```

```
print(result)
```

```
118    119
237    238
356    357
475    476
594    595
713    714
832    833
951    952
dtype: int64
```

Problem Statement 4: Sylphia has a dataset of various cereals sold in the supermarket. Dataset Description: cereal.csv - The dataset contains 16 features. Here's a brief description of 3 columns in the dataset: • name - Brand name of the cereals • MFR - Manufacturer of the brands • rating - Rating of the cereals Syliphia wants to visualize the quality of cereals and determine which manufacturer delivers the best quality. Tasks to be performed: 1. Import the dataset. 2. Plot ratings of different types of manufacturers. 3. Use xticks range form 0-100. 4. Change the style of the graph to seaborn

[17]:
```
import pandas as pd
import numpy as np
import seaborn as sb
#1.Import the dataset
df=pd.read_csv('/content/cereal.csv')
df
```

[17]:

	name	mfr	type	calories	protein	fat	sodium	fiber
0	100% Bran	N	C	70	4	1	130	10.0
1	100% Natural Bran	Q	C	120	3	5	15	2.0
2	All-Bran	K	C	70	4	1	260	9.0
3	All-Bran with Extra Fiber	K	C	50	4	0	140	14.0
4	Almond Delight	R	C	110	2	2	200	1.0
..	…	..	…	…	…	…	…	…
72	Triples	G	C	110	2	1	250	0.0
73	Trix	G	C	110	1	1	140	0.0
74	Wheat Chex	R	C	100	3	1	230	3.0
75	Wheaties	G	C	100	3	1	200	3.0
76	Wheaties Honey Gold	G	C	110	2	1	200	1.0

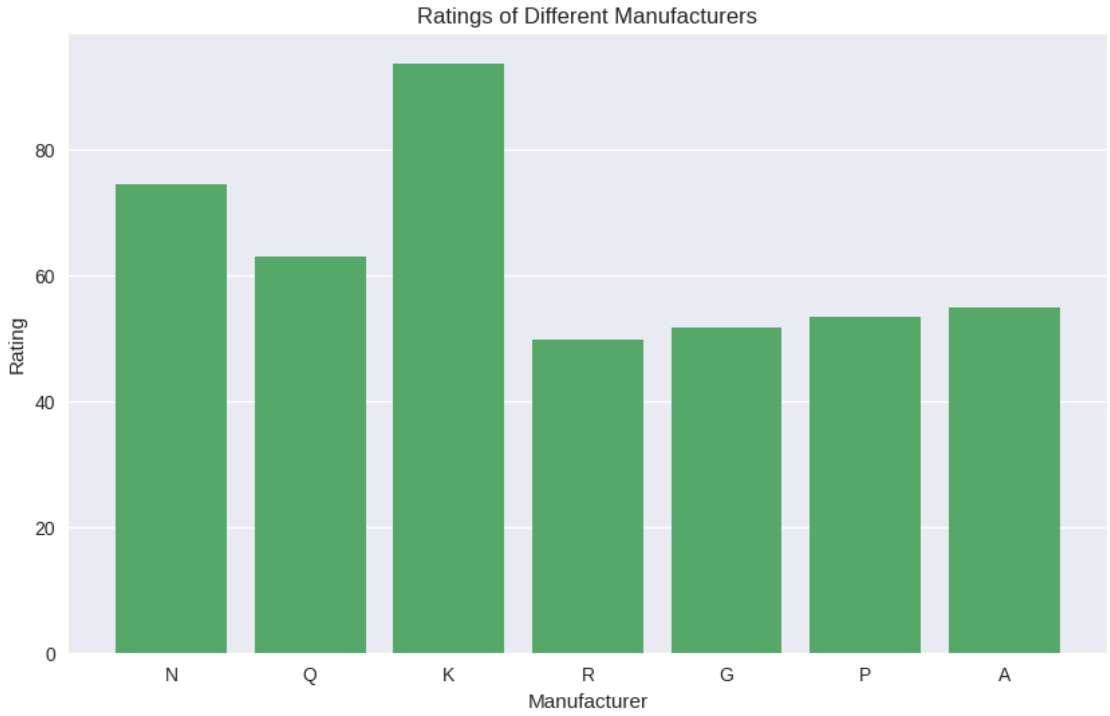
	carbo	sugars	potass	vitamins	shelf	weight	cups	rating
0	5.0	6	280	25	3	1.0	0.33	68.402973
1	8.0	8	135	0	3	1.0	1.00	33.983679
2	7.0	5	320	25	3	1.0	0.33	59.425505
3	8.0	0	330	25	3	1.0	0.50	93.704912
4	14.0	8	-1	25	3	1.0	0.75	34.384843
..	…	…	…	…	…	…	…	…
72	21.0	3	60	25	3	1.0	0.75	39.106174

```
73   13.0      12      25        25      2     1.0  1.00  27.753301
74   17.0       3     115        25      1     1.0  0.67  49.787445
75   17.0       3     110        25      1     1.0  1.00  51.592193
76   16.0       8      60        25      1     1.0  0.75  36.187559

[77 rows x 16 columns]
```

[24]:
```
#2.Plot ratings of different types of manufacturers:
import matplotlib.pyplot as plt
import seaborn as sns
plt.figure(figsize=(10, 6))
sns.barplot(x='mfr', y='rating', data=df,errorbar=("ci",0))
plt.bar(df['mfr'], df['rating'])
plt.style.use('seaborn')
plt.xlabel('Manufacturer')
plt.ylabel('Rating')
plt.title('Ratings of Different Manufacturers')
plt.show()
```

```
<ipython-input-24-4be02591e6af>:7: MatplotlibDeprecationWarning: The seaborn
styles shipped by Matplotlib are deprecated since 3.6, as they no longer
correspond to the styles shipped by seaborn. However, they will remain available
as 'seaborn-v0_8-<style>'. Alternatively, directly use the seaborn API instead.
  plt.style.use('seaborn')
```



[32]:
```
import matplotlib.pyplot as plt
import seaborn as sns

plt.figure(figsize=(20, 12))
#3.Assuming the column name is 'mfr' (lowercase), correct the groupby operation
df.groupby('mfr')['rating'].mean().plot(kind='bar', xticks=range(0, 101))
plt.style.use('seaborn')
# 4.Display the plot
plt.show()
```

```
<ipython-input-32-e2a362f1cbc7>:7: MatplotlibDeprecationWarning: The seaborn
styles shipped by Matplotlib are deprecated since 3.6, as they no longer
correspond to the styles shipped by seaborn. However, they will remain available
as 'seaborn-v0_8-<style>'. Alternatively, directly use the seaborn API instead.
  plt.style.use('seaborn')
```