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In [1]:
```
import pandas as pd

pd.set_option('display.max_colwidth',None)
pd.options.display.float_format = '{:,.2f}'.format
```

In [29]:
```
pd.__version__
```

Out[29]:
```
'1.4.4'
```

In [3]:
```
df = pd.read_csv("Casos_Diarios_Estado_Nacional_Confirmados_20230202.csv")
```

In [4]:
```
df.head()
```

Out[4]:

	cve_ent	poblacion	nombre	26-02-2020	27-02-2020	28-02-2020	29-02-2020	01-03-2020	02-03-2020	03-03-2020	...	23-01-2023	24-01-2023	25-01-2023	26-01-2023	27-01-2023	28-01-2023	29-01-2023	30-01-2023	31-01-2023	01-02-2023
0	1	1434635	AGUASCALIENTES	0	0	0	0	0	0	0	...	176	190	136	120	97	22	16	136	102	40
1	2	3634868	BAJA CALIFORNIA	0	0	0	0	0	0	0	...	83	86	71	57	58	18	6	108	80	36
2	3	804708	BAJA CALIFORNIA SUR	0	0	0	0	0	0	0	...	53	27	36	22	13	13	4	40	28	16
3	4	1000617	CAMPECHE	0	0	0	0	0	0	0	...	11	8	6	7	1	0	1	5	3	2
4	7	5730367	CHIAPAS	0	0	0	1	0	0	0	...	5	12	15	4	4	3	0	8	5	2

5 rows × 1075 columns

Pequeño ejercicio para entender los for de abajo

In [34]:
```
df["26-02-2020"] + 1000
```

Out[34]:
```
0     1000
1     1000
2     1000
3     1000
4     1000
5     1000
6     1000
7     1000
8     1000
9     1000
10    1000
11    1000
12    1000
13    1000
14    1000
15    1000
16    1000
17    1000
18    1000
19    1000
20    1000
21    1000
22    1000
23    1000
24    1000
25    1000
26    1000
27    1000
28    1000
29    1000
30    1000
31    1000
32    1000
Name: 26-02-2020, dtype: int64
```

Variables Generales

In [5]:
```
columnas = list(df.columns)
dias = columnas[3:]
min_dia = dias[0]
max_dia = dias[-1]
```

In [7]:
```
meses = []

for dia in dias:
    mes = dia[3:]
    if mes not in meses:
        meses.append(mes) # Añade los meses al arreglo meses[]

print(meses)
```

```
['02-2020', '03-2020', '04-2020', '05-2020', '06-2020', '07-2020', '08-2020', '09-2020', '10-2020', '11-2020', '12-2020', '01-2
021', '02-2021', '03-2021', '04-2021', '05-2021', '06-2021', '07-2021', '08-2021', '09-2021', '10-2021', '11-2021', '12-2021',
'01-2022', '02-2022', '03-2022', '04-2022', '05-2022', '06-2022', '07-2022', '08-2022', '09-2022', '10-2022', '11-2022', '12-20
22', '01-2023', '02-2023']
```

1. Número de casos confirmados por cada mes

In [11]:
```
zero = []
for i in range(0, len(meses)):
    zero.append(0)

#zero
# Pero hay una forma más sencilla de hacer esto: Las listas de comprensión.

zeros1 = [0 for x in range(len(meses))]

print(zero)
print(zeros1)
```

```
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
```

In [27]:
```
# Vamos a hacer un diccionario
def casos_por_mes():
    #1ra Forma # resultados = dict(zip(meses,[0 for x in range(len(meses))])) # zip: Te permite trabajar con 2 listas al mismo t
    zeros = [0 for x in range(len(meses))]
    resultados = dict(zip(meses,zeros))

    for dia in dias:
        mes = dia[3:]
        resultados[mes] = resultados[mes] + df[dia] # Llamo las columnas por la fecha, pero solo se suman los escalares (df[dia]

    return resultados

res = casos_por_mes()
#res  # Imprime el diccionario
res_df = pd.DataFrame(res)

pd.concat([ df["nombre"], res_df], axis = 'columns') # Con el axis lo pegamos por columnas, o sea en vertical
# concat: Sirve para unir dos o más dataframes
```

Out[27]:

	nombre	02-2020	03-2020	04-2020	05-2020	06-2020	07-2020	08-2020	09-2020	10-2020	...	05-2022	06-2022	07-2022	08-2022	09-2022	10-2022	11-2022	12-202
0	AGUASCALIENTES	0	54	261	670	1510	1812	1680	1649	2834	...	1913	3074	9131	3553	502	123	264	138
1	BAJA CALIFORNIA	0	187	2411	3906	4486	4385	3202	2813	3118	...	1022	6483	16412	4788	1748	917	1817	301
2	BAJA CALIFORNIA SUR	0	42	312	339	1055	3059	3080	2523	2349	...	1568	8054	8481	3047	594	259	203	72
3	CAMPECHE	0	8	126	597	1878	2419	958	409	342	...	247	2334	5427	635	93	77	418	59
4	CHIAPAS	1	16	219	1987	2799	1375	643	394	244	...	114	637	3119	4451	1719	218	203	76
5	CHIHUAHUA	0	44	1101	2287	1782	2891	3024	3543	14193	...	445	4906	18435	8290	1228	469	1882	230
6	DISTRITO FEDERAL	2	879	8719	23580	24298	27227	26753	29774	37880	...	12556	101897	177923	35761	8793	3744	6838	3908
7	COAHUILA	1	86	438	1119	4817	8619	8200	4638	8580	...	283	6013	22301	5688	512	169	376	163
8	COLIMA	0	5	28	146	472	1435	1873	1389	1344	...	375	2644	7874	1291	206	140	203	56

2. El promedio de casos confirmados por cada mes

In [32]:
```
def prom_casos_por_mes():
    #1ra Forma # resultados = dict(zip(meses,[0 for x in range(len(meses))])) # zip: Te permite trabajar con 2 listas al mismo t
    zeros = [0 for x in range(len(meses))]
    resultados = dict(zip(meses,zeros))
    num_dias = dict(zip(meses,zeros))

    for dia in dias:
        mes = dia[3:]
        resultados[mes] = resultados[mes] + df[dia]
        num_dias[mes] = num_dias[mes] + 1

    for key in resultados:
        resultados[key] = resultados[key] // num_dias[key]

    return resultados

res = prom_casos_por_mes()
res_df = pd.DataFrame(res)

pd.concat([ df["nombre"], res_df], axis = 'columns')
```

Out[32]:

	nombre	02-2020	03-2020	04-2020	05-2020	06-2020	07-2020	08-2020	09-2020	10-2020	...	05-2022	06-2022	07-2022	08-2022	09-2022	10-2022	11-2022	12-2022	01-2023	02-2023
0	AGUASCALIENTES	0	1	8	21	50	58	54	54	91	...	61	102	294	114	16	3	8	44	105	40
1	BAJA CALIFORNIA	0	6	80	126	149	141	103	93	100	...	32	216	529	154	58	29	60	97	60	36
2	BAJA CALIFORNIA SUR	0	1	10	10	35	98	99	84	75	...	50	268	273	98	19	8	6	23	28	16
3	CAMPECHE	0	0	4	19	62	78	30	13	11	...	7	77	175	20	3	2	13	19	6	2
4	CHIAPAS	0	0	7	64	93	44	20	13	7	...	3	21	100	143	57	7	6	24	14	2
5	CHIHUAHUA	0	1	36	73	59	93	97	118	457	...	14	163	594	267	40	15	62	74	35	8
6	DISTRITO FEDERAL	0	28	290	760	809	878	863	992	1221	...	405	3396	5739	1153	293	120	227	1260	949	401
7	COAHUILA	0	2	14	36	160	278	264	154	276	...	9	200	719	183	17	5	12	52	77	21
8	COLIMA	0	0	0	4	15	46	60	46	43	...	12	88	254	41	6	4	6	18	45	24
9	DURANGO	0	0	2	14	57	72	78	88	198	...	5	92	197	62	5	1	2	17	39	12
10	GUANAJUATO	0	3	9	54	249	438	350	275	280	...	29	276	1527	370	40	10	25	132	194	118
11	GUERRERO	0	1	11	76	133	164	117	145	84	...	2	55	386	75	12	3	14	34	31	14
12	HIDALGO	0	1	11	55	72	101	114	79	89	...	13	155	469	195	31	5	9	53	84	18
13	JALISCO	0	4	11	60	196	227	211	234	239	...	49	293	574	227	60	15	23	116	127	42
14	MEXICO	0	16	200	566	721	600	504	487	391	...	77	1107	2343	516	95	31	56	381	402	181
15	MICHOACAN	0	0	12	61	145	134	184	181	126	...	7	64	326	111	16	5	7	26	74	26
16	MORELOS	0	0	17	50	46	37	37	26	31	...	13	61	407	147	24	9	14	80	95	12
17	NAYARIT	0	0	3	17	40	58	47	33	21	...	13	99	258	53	9	5	6	26	64	18
18	NUEVO LEON	0	3	11	44	205	409	338	372	427	...	74	679	1522	323	66	18	28	142	216	75
19	OAXACA	0	0	6	62	159	165	100	116	109	...	26	210	514	178	20	7	10	58	105	29
20	PUEBLA	0	5	25	98	296	324	207	130	123	...	18	189	761	241	32	13	26	87	155	87
21	QUERETARO	0	1	4	28	39	62	87	87	162	...	17	183	716	166	21	6	12	77	107	51
22	QUINTANA ROO	0	3	28	35	69	135	79	50	39	...	28	364	223	28	10	6	64	115	30	14
23	SAN LUIS POTOSI	0	1	4	28	85	277	241	160	189	...	26	280	1093	318	61	13	25	96	121	26
24	SINALOA	0	2	40	101	183	141	106	91	89	...	76	621	822	194	46	8	8	69	53	14
25	SONORA	0	1	13	118	278	379	234	145	133	...	9	218	528	157	45	14	44	81	39	7
26	TABASCO	0	2	39	114	247	354	184	115	70	...	8	158	560	61	10	2	16	201	37	5
27	TAMAULIPAS	0	0	18	56	212	346	198	145	107	...	18	246	555	143	35	8	14	76	55	17
28	TLAXCALA	0	0	8	31	56	77	52	32	22	...	4	37	271	86	8	3	2	22	53	28
29	VERACRUZ	0	1	29	138	243	366	209	158	107	...	34	355	887	139	30	12	15	117	144	57
30	YUCATAN	0	2	19	44	95	192	148	115	92	...	56	366	396	63	18	15	74	82	22	12
31	ZACATECAS	0	0	3	7	23	61	82	71	126	...	4	50	214	105	21	4	7	25	54	28
32	Nacional	2	100	988	2982	5296	6847	5510	4915	5553	...	1212	10701	24242	6142	1239	421	918	3737	3635	1441

33 rows × 38 columns

In [31]:
```
def prom_casos_por_mes():
    #1ra Forma # resultados = dict(zip(meses,[0 for x in range(len(meses))])) # zip: Te permite trabajar con 2 listas al mismo t
    zeros = [0 for x in range(len(meses))]
    resultados = dict(zip(meses,zeros))
    num_dias = dict(zip(meses,zeros))

    for dia in dias:
        mes = dia[3:]
        resultados[mes] = resultados[mes] + df[dia]
        num_dias[mes] = num_dias[mes] + 1

    #for key in resultados:
    #    resultados[key] = resultados[key] / num_dias[key]

    return resultados, num_dias

res, n = prom_casos_por_mes()
print(n)

pd.concat([ df["nombre"], res_df], axis = 'columns')
```

```
{'02-2020': 4, '03-2020': 31, '04-2020': 30, '05-2020': 31, '06-2020': 30, '07-2020': 31, '08-2020': 31, '09-2020': 30, '10-202
0': 31, '11-2020': 30, '12-2020': 31, '01-2021': 31, '02-2021': 28, '03-2021': 31, '04-2021': 30, '05-2021': 31, '06-2021': 30,
'07-2021': 31, '08-2021': 31, '09-2021': 30, '10-2021': 31, '11-2021': 30, '12-2021': 31, '01-2022': 31, '02-2022': 28, '03-202
2': 31, '04-2022': 30, '05-2022': 31, '06-2022': 30, '07-2022': 31, '08-2022': 31, '09-2022': 30, '10-2022': 31, '11-2022': 30,
'12-2022': 31, '01-2023': 31, '02-2023': 1}
```

Out[31]:

	nombre	02-2020	03-2020	04-2020	05-2020	06-2020	07-2020	08-2020	09-2020	10-2020	...	05-2022	06-2022	07-2022	08-2022	09-2022	2(
0	AGUASCALIENTES	0.00	1.74	8.70	21.61	50.33	58.45	54.19	54.97	91.42	...	61.71	102.47	294.55	114.61	16.73	3
1	BAJA CALIFORNIA	0.00	6.03	80.37	126.00	149.53	141.45	103.29	93.77	100.58	...	32.97	216.10	529.42	154.45	58.27	29
2	BAJA CALIFORNIA SUR	0.00	1.35	10.40	10.94	35.17	98.68	99.35	84.10	75.77	...	50.58	268.47	273.58	98.29	19.80	8
3	CAMPECHE	0.00	0.26	4.20	19.26	62.60	78.03	30.90	13.63	11.03	...	7.97	77.80	175.06	20.48	3.10	2
4	CHIAPAS	0.25	0.52	7.30	64.10	93.30	44.35	20.74	13.13	7.87	...	3.68	21.23	100.61	143.58	57.30	7
5	CHIHUAHUA	0.00	1.42	36.70	73.77	59.40	93.26	97.55	118.10	457.84	...	14.35	163.53	594.68	267.42	40.93	15
6	DISTRITO FEDERAL	0.50	28.35	290.63	760.65	809.93	878.29	863.00	992.47	1,221.94	...	405.03	3,396.57	5,739.45	1,153.58	293.10	120
7	COAHUILA	0.25	2.77	14.60	36.10	160.57	278.03	264.52	154.60	276.77	...	9.13	200.43	719.39	183.48	17.07	5
8	COLIMA	0.00	0.16	0.93	4.71	15.73	46.29	60.42	46.30	43.35	...	12.10	88.13	254.00	41.65	6.87	4
9	DURANGO	0.00	0.48	2.33	14.00	57.43	72.35	78.58	88.00	198.39	...	5.58	92.00	197.97	62.00	5.27	1
10	GUANAJUATO	0.00	3.87	9.77	54.58	249.53	438.10	350.45	275.87	280.61	...	29.55	276.83	1,527.90	370.32	40.20	10
11	GUERRERO	0.00	1.10	11.67	76.39	133.53	164.87	117.23	145.60	84.58	...	2.32	55.93	386.74	75.10	12.70	3
12	HIDALGO	0.25	1.29	11.33	55.03	72.17	101.19	114.13	79.60	89.74	...	13.39	155.23	469.42	195.65	31.33	5
13	JALISCO	0.00	4.06	11.27	60.65	196.27	227.45	211.81	234.13	239.52	...	49.68	293.13	574.42	227.03	60.03	15
14	MEXICO	0.75	16.71	200.07	566.00	721.57	600.87	504.45	487.33	391.71	...	77.19	1,107.13	2,343.32	516.06	95.77	31
15	MICHOACAN	0.00	0.97	12.83	61.32	145.07	134.71	184.42	181.23	126.45	...	7.48	64.10	326.29	111.26	16.77	5
16	MORELOS	0.00	0.71	17.87	50.32	46.50	37.68	37.00	26.13	31.55	...	13.81	61.70	407.94	147.03	24.73	9
17	NAYARIT	0.00	0.39	3.87	17.23	40.50	58.19	47.77	33.53	21.42	...	13.71	99.83	258.39	53.23	9.77	5
18	NUEVO LEON	0.00	3.32	11.20	44.29	205.33	409.77	338.74	372.37	427.61	...	74.13	679.33	1,522.55	323.81	66.73	18
19	OAXACA	0.00	0.94	6.10	62.00	159.83	165.32	100.16	116.03	109.52	...	26.29	210.13	514.58	178.23	20.33	7
20	PUEBLA	0.00	5.42	25.83	98.90	296.00	324.29	207.58	130.87	123.84	...	18.00	189.13	761.26	241.32	32.50	13
21	QUERETARO	0.00	1.23	4.63	28.77	39.77	62.45	87.26	87.10	162.84	...	17.03	183.43	716.10	166.00	21.13	6
22	QUINTANA ROO	0.00	3.65	28.73	35.87	69.30	135.71	79.55	50.73	39.65	...	28.16	364.80	223.42	28.74	10.87	6
23	SAN LUIS POTOSI	0.00	1.42	4.07	28.39	85.43	277.97	241.61	160.20	189.23	...	26.32	280.10	1,093.45	318.32	61.37	13
24	SINALOA	0.00	2.84	40.90	101.26	183.53	141.19	106.10	91.70	89.32	...	76.13	621.10	822.26	194.55	46.67	8
25	SONORA	0.00	1.19	13.70	118.10	278.10	379.90	234.97	145.47	133.23	...	9.35	218.27	528.84	157.00	45.87	14
26	TABASCO	0.00	2.42	39.30	114.03	247.87	354.55	184.10	115.23	70.90	...	8.16	158.63	560.77	61.29	10.40	2
27	TAMAULIPAS	0.00	0.77	18.57	56.16	212.93	346.13	198.68	145.67	107.52	...	18.16	246.47	555.94	143.94	35.77	8
28	TLAXCALA	0.00	0.39	8.43	31.26	56.77	77.45	52.29	32.17	22.90	...	4.65	37.23	271.35	86.29	8.00	3
29	VERACRUZ	0.00	1.71	29.13	138.58	243.27	366.97	209.19	158.73	107.03	...	34.81	355.57	887.35	139.26	30.17	12
30	YUCATAN	0.00	2.42	19.83	44.68	95.07	192.10	148.16	115.07	92.26	...	56.58	366.17	396.94	63.87	18.20	15
31	ZACATECAS	0.00	0.81	3.07	7.97	23.87	61.48	82.10	71.77	126.74	...	4.48	50.77	214.87	105.03	21.70	4
32	Nacional	2.00	100.71	988.33	2,982.90	5,296.20	6,847.55	5,510.29	4,915.60	5,553.13	...	1,212.48	10,701.77	24,242.81	6,142.87	1,239.43	421

33 rows × 38 columns