Exercícios (para serem entregues)

Agora é sua vez: faça os exercícios para praticar os conceitos vistos na aula sobre bases de dados.

Lembre-se de **salvar** sempre o seu notebook. Ele deverá ser **entregue pelo tidia** para que você receba sua nota!

Questão única

Você irá manipular o arquivo `notas2.csv`. Certifique-se de que ele está na mesma pasta deste notebook.

Crie um programa que realize as seguintes tarefas:

1. Importe as devidas bibliotecas.
2. Abra o arquivo.
3. Substituia valores `NaN`.
4. Substituia notas maiores do que 10 da coluna "Listas" por 10.
5. Preencha a coluna "Provas" corretamente com a conta `(2*(nota da prova 1) + 3*(nota da prova 2))/5`.
6. Crie uma coluna nova de rótulo "Nota antes do exame" e a preencha com a nota de cada aluno antes do exame. Essa nota M é calculada da seguinte forma, onde P é a nota das provas e L é a nota das listas:

$$M_1 = (7 \times P + 3 \times L)/10$$
$$M_2 = (3 \times P \times L)/(P + 2 \times L)$$
$$M = \max(M1, M2)$$

7. Crie uma coluna nova de rótulo "Nota final" e a preencha com a nota final de cada aluno após o exame. Essa nota F é calculada da seguinte forma, onde M é a nota antes do exame e E é a nota do exame:

$$F = \min(5, (M + E)/2), \text{ se } \$E > 0\$$$
$$F = M, \text{ caso contrário}$$

8. Remova da tabela os alunos que ficaram com nota 0 em todas as atividades.
9. Crie uma coluna nova de rótulo "Conceito final" e a preencha com o conceito final de cada aluno. Dada a nota final F após o exame, o conceito do aluno é:

$$A, \quad\quad\quad \text{se } F \geq 8.5$$
$$B, \quad \text{se } 7.0 \geq F < 8.5$$
$$C, \quad \text{se } 6.0 \geq F < 7.0$$
$$D, \quad \text{se } 5.0 \geq F < 6.0$$
$$F, \quad\quad\quad \text{se } F < 5.0$$

10. Mostre os alunos que ficaram com conceito A.
11. Ordene a tabela por conceito final.
12. Salve o conteúdo da tabela em um arquivo chamado "notas2_final.csv".

```
In [14]:  import pandas as pd
          import numpy as np
          from IPython.display import display
```

In [15]:
```python
notas = pd.read_csv("notas2.csv", sep=";")
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
0	88967	GLD	3.3	0.0	1.3	4.5	NaN
1	115803	CMS	3.8	6.2	5.2	8.2	NaN
2	118904	VCB	1.3	0.0	0.5	5.0	NaN
3	122124	LHM	4.4	5.0	4.8	5.5	NaN
4	134886	AFB	5.8	6.1	6.0	5.9	NaN
5	137250	PVS	1.0	0.0	0.4	0.9	NaN
6	138277	EMM	2.6	5.5	4.4	4.5	5.5
7	141685	POC	0.0	0.0	0.0	0.0	NaN
8	141703	TAD	3.6	2.0	2.7	4.5	3.1
9	145537	BSF	0.0	0.0	0.0	0.0	NaN
10	145642	CEB	7.8	7.1	7.4	10.0	NaN

```
In [58]: #linhas = [0, 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 16, 17, 18 , 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34,
         #          35, 36, 37, 38, 39, 40, 41 ,42, 44, 45, 47, 48, 49, 50, 51]

         #exame = [5.50, 6.45, 3.60, 5.80, 8.20, 1.50, 5.50, 3.70, 3.10, 4.30, 7.20, 3.80, 2.60, 2.90, 5.90, 8.50, 7.40, 6.70, 2.70, 3.70,
         #         8.10, 7.20, 6.30, 4.40, 5.90, 3.70, 4.90, 5.80, 8.70, 8.30, 7.30, 3.40, 5.56, 4.30, 5.90,4.40, 4.40, 5.30, 3.90, 4.90,
         #         4.80, 5.20 ,5.10, 2.50, 6.80, 9.00, 3.80, 8.90, 7.50 ,6.80, 8.90, 9.12]

         #for i in range(len(linhas)):
         #    notas.at[linhas[i], "Exame"] = exame[i]

         notas.fillna(0, inplace=True)
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	B
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	B
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	B
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	B
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	B
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	B
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	B
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	B
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	C
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	C
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	C
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	C
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	C
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	C
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	C
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	C
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	D
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	D
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	D
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	D
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	D
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	D
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	D

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

```
In [40]:  for i in list(notas.index.values):
              if notas.at[i, "Listas"] > 10.0:
                  notas.at[i, "Listas"] = 10.0
          display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	0.0	0.00	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	0.0	0.00	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	0.0	0.00	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	0.0	0.00	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	0.0	0.00	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	0.0	0.00	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	0.0	0.00	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	0.0	0.00	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	0.0	0.00	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	0.0	0.00	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	0.0	0.00	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	0.0	0.00	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	0.0	0.00	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	0.0	0.00	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	0.0	0.00	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	0.0	0.00	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	0.0	0.00	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	0.0	0.00	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	0.0	0.00	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	0.0	0.00	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	0.0	0.00	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	0.0	0.00	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	0.0	0.00	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	0.0	0.00	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	0.0	0.00	F
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	0.0	0.00	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	0.0	0.00	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	0.0	0.00	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	0.0	0.00	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	0.0	0.00	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	0.0	0.00	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.0	0.00	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	0.0	2.75	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	0.0	1.55	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	0.0	1.30	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.0	0.00	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.0	0.00	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.0	0.00	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	0.0	0.00	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	0.0	0.00	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	0.0	1.70	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.0	0.00	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	0.0	0.00	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	0.0	1.25	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	0.0	1.90	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	0.0	0.00	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	0.0	0.00	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	0.0	0.00	F

```
In [41]: notas["Provas"] = ((2 * notas["Prova 1"]) + (3 * notas["Prova 2"])) /5
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	0.0	0.00	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	0.0	0.00	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	0.0	0.00	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	0.0	0.00	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	0.0	0.00	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	0.0	0.00	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	0.0	0.00	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	0.0	0.00	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	0.0	0.00	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	0.0	0.00	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	0.0	0.00	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	0.0	0.00	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	0.0	0.00	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	0.0	0.00	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	0.0	0.00	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	0.0	0.00	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	0.0	0.00	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	0.0	0.00	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	0.0	0.00	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	0.0	0.00	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	0.0	0.00	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	0.0	0.00	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	0.0	0.00	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	0.0	0.00	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	0.0	0.00	F
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	0.0	0.00	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	0.0	0.00	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	0.0	0.00	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	0.0	0.00	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	0.0	0.00	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	0.0	0.00	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.0	0.00	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	0.0	2.75	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	0.0	1.55	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	0.0	1.30	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.0	0.00	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.0	0.00	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.0	0.00	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	0.0	0.00	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	0.0	0.00	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	0.0	1.70	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.0	0.00	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	0.0	0.00	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	0.0	1.25	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	0.0	1.90	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	0.0	0.00	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	0.0	0.00	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	0.0	0.00	F

```
In [42]: notas["Nota antes do exame"] = 0.0
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	0.0	0.00	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	0.0	0.00	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	0.0	0.00	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	0.0	0.00	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	0.0	0.00	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	0.0	0.00	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	0.0	0.00	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	0.0	0.00	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	0.0	0.00	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	0.0	0.00	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	0.0	0.00	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	0.0	0.00	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	0.0	0.00	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	0.0	0.00	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	0.0	0.00	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	0.0	0.00	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	0.0	0.00	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	0.0	0.00	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	0.0	0.00	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	0.0	0.00	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	0.0	0.00	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	0.0	0.00	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	0.0	0.00	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	0.0	0.00	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	0.0	0.00	F
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	0.0	0.00	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	0.0	0.00	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	0.0	0.00	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	0.0	0.00	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	0.0	0.00	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	0.0	0.00	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.0	0.00	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	0.0	2.75	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	0.0	1.55	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	0.0	1.30	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.0	0.00	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.0	0.00	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.0	0.00	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	0.0	0.00	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	0.0	0.00	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	0.0	1.70	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.0	0.00	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	0.0	0.00	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	0.0	1.25	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	0.0	1.90	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	0.0	0.00	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	0.0	0.00	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	0.0	0.00	F

In [43]:
```python
#M1=(7×P+3×L)/10
#M2=(3×P×L)/(P+2×L)M=max(M1,M2)
#M1 = (7 × Provas + 3 × Listas) / 10
#M2 = (3 × Provas × Listas) / (Provas + 2 × Listas)
#M = max(M1,M2)

# M1 = (7 * notas.at[i, "Provas"] + 3 * notas.at[i, "Listas"]) / 10
# M2 = (3 * notas.at[i, "Provas"] * notas.at[i, "Listas"]) / (notas.at[i, "Provas"] + 2 * notas.at[i, "Listas"])

for i in list(notas.index.values):
    if notas.at[i, "Provas"] != 0 and notas.at[i, "Listas"] != 0: #porque se o aluno tirou 0 em ambas notas,
                                                                   #a média final dele é 0 (e se tentasse fazer a
                                                                   #conta do M2 daria divisão por 0, o que não pode)

        m1 = (7 * notas.at[i, "Provas"] + 3 * notas.at[i, "Listas"]) / 10
        #cálculo usando notas.at[i, "Provas"] e notas.at[i, "Listas"] porque aqui você está podendo acessar de um
        #aluno específico

        m2 = (3 * notas.at[i, "Provas"] * notas.at[i, "Listas"]) / (notas.at[i, "Provas"] + 2 * notas.at[i, "Listas"])
        #o outro cálculo usando notas.at[i, "Provas"] e notas.at["Listas"]

        m = max(m1, m2) #Podemos fazer isso porque agora m1 e m2 são dois números
        notas.at[i, "Nota antes do exame"] = m

display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	0.00	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	0.00	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	0.00	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	0.00	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	0.00	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	0.00	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	0.00	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	0.00	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	0.00	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	0.00	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	0.00	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	0.00	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	0.00	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	0.00	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	0.00	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	0.00	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	0.00	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	0.00	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	0.00	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	0.00	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	0.00	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	0.00	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	0.00	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	0.00	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	0.00	F
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	0.00	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	0.00	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	0.00	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	0.00	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	0.00	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	0.00	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.00	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	2.75	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	1.55	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	1.30	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.00	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.00	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.00	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	0.00	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	0.00	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	1.70	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.00	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	0.00	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	1.25	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	1.90	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	0.00	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	0.00	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	0.00	F

```
In [44]: notas["Nota final"] = 0.0
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	0.0	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	0.0	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	0.0	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	0.0	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	0.0	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	0.0	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	0.0	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	0.0	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	0.0	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	0.0	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	0.0	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	0.0	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	0.0	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	0.0	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	0.0	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	0.0	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	0.0	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	0.0	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	0.0	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	0.0	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	0.0	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	0.0	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	0.0	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	0.0	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	0.0	F
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	0.0	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	0.0	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	0.0	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	0.0	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	0.0	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	0.0	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.0	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	0.0	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	0.0	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	0.0	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.0	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.0	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.0	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	0.0	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	0.0	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	0.0	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.0	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	0.0	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	0.0	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	0.0	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	0.0	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	0.0	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	0.0	F

In [45]:
```python
#F = min(5,(M + E) / 2), se $E > 0$
#F = M, caso contrário

#se $Exame > 0$
#     F = min(5,(Nota antes do exame + Exame) / 2)
#else
#     F = Nota antes do exame

#Já criei notas["Nota final"] = 0 na célula acima

for i in list(notas.index.values):
    if notas.at[i, "Exame"] > 0:
        f = min(5,(notas.at[i, "Nota antes do exame"] + notas.at[i, "Exame"]) / 2)
        notas.at[i, "Nota final"] = f
    else:
        f = notas.at[i, "Nota antes do exame"]
        notas.at[i, "Nota final"] = f
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	F
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	F
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	F
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	F
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	F
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	F
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	F
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	F
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	F
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	F
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	F
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	F
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	F
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	F
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	F
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	F
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	F
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	F
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	F
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	F
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

In [49]:
```python
#condicao = notas["Aluno"].str.contains("POC" and "BSF" and "TCA" and "ETC")
#linhas = list(notas[condicao].index.values)
#notas.drop(linhas, axis=0, inplace=True)
#display(notas)

condicao = (notas["Prova 1"] <= 0.0) & (notas["Prova 2"] <= 0.0) & (notas["Provas"] <= 0.0) & (notas["Listas"] <= 0.0)
linhas = list(notas[condicao].index.values)
notas.drop(linhas, axis=0, inplace=True)

display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	B
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	B
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	B
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	B
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	B
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	B
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	B
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	B
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	C
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	C
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	C
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	C
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	C
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	C
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	C
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	C
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	D
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	D
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	D
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	D
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	D
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	D
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	D
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

```
In [50]: notas["Conceito Final"] = ""
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	

In [53]:
```python
for i in list(notas.index.values):
    if notas.at[i, "Nota final"] < 5.0:
        notas.at[i, "Conceito Final"] = "F"
    elif notas.at[i, "Nota final"] < 6.0:
        notas.at[i, "Conceito Final"] = "D"
    elif notas.at[i, "Nota final"] < 7.0:
        notas.at[i, "Conceito Final"] = "C"
    elif notas.at[i, "Nota final"] < 8.5:
        notas.at[i, "Conceito Final"] = "B"
    else:
        notas.at[i, "Conceito Final"] = "A"
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	B
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	B
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	B
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	B
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	B
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	B
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	B
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	B
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	C
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	C
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	C
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	C
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	C
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	C
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	C
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	C
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	D
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	D
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	D
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	D
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	D
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	D
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	D

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

```
In [54]: condicao = notas["Conceito Final"] == "A"
         display(notas[condicao])
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A

```
In [55]: notas.sort_values(by=["Conceito Final"], ascending = True, inplace = True)
         display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	B
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	B
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	B
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	B
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	B
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	B
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	B
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	B
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	C
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	C
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	C
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	C
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	C
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	C
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	C
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	C
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	D
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	D
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676	D
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	D
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	D
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	D
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000	D
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	2.996000	F
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	1.660000	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	2.182000	F
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	F
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	F
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000	F
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	4.946027	F
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.550000	F
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	4.983503	F
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	1.864000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

In [28]:
```python
notas.to_csv("notas2_final.csv", sep=";")
```

In [ ]: