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:
$$\begin{array}{ll} A, & \text{se } F \geq 8.5 \\ B, & \text{se } 7.0 \geq F < 8.5 \\ C, & \text{se } 6.0 \geq F < 7.0 \\ D, & \text{se } 5.0 \geq F < 6.0 \\ F, & \text{se } F < 5.0 \end{array}$$
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 [18]:
```
import pandas as pd
import numpy as np
from IPython.display import display
```

In [19]:
```
notas = pd.read_csv("notas2.csv", sep=";")
display(notas)
```

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
11	145865	DNF	5.4	7.4	6.6	10.5	NaN
12	146532	IFT	3.3	2.0	2.5	5.9	2.6
13	147156	MVM	3.1	4.8	4.1	8.6	NaN
14	147406	MSN	4.9	7.8	6.6	12.3	NaN
15	147458	MCS	7.3	5.9	6.5	7.7	NaN
16	147706	RAT	0.0	0.0	0.0	0.9	NaN
17	148021	TCA	0.0	0.0	0.0	0.0	NaN
18	148296	ARC	1.4	0.0	0.6	0.9	NaN

In [21]:
```
notas.fillna(0.0, inplace=True)
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
0	88967	GLD	3.3	0.0	1.3	4.5	0.0
1	115803	CMS	3.8	6.2	5.2	8.2	0.0
2	118904	VCB	1.3	0.0	0.5	5.0	0.0
3	122124	LHM	4.4	5.0	4.8	5.5	0.0
4	134886	AFB	5.8	6.1	6.0	5.9	0.0
5	137250	PVS	1.0	0.0	0.4	0.9	0.0
6	138277	EMM	2.6	5.5	4.4	4.5	5.5
7	141685	POC	0.0	0.0	0.0	0.0	0.0
8	141703	TAD	3.6	2.0	2.7	4.5	3.1
9	145537	BSF	0.0	0.0	0.0	0.0	0.0
10	145642	CEB	7.8	7.1	7.4	10.0	0.0
11	145865	DNF	5.4	7.4	6.6	10.5	0.0
12	146532	IFT	3.3	2.0	2.5	5.9	2.6
13	147156	MVM	3.1	4.8	4.1	8.6	0.0
14	147406	MSN	4.9	7.8	6.6	12.3	0.0
15	147458	MCS	7.3	5.9	6.5	7.7	0.0
16	147706	RAT	0.0	0.0	0.0	0.9	0.0
17	148021	TCA	0.0	0.0	0.0	0.0	0.0
18	148296	ARC	1.4	0.0	0.6	0.9	0.0
19	149233	JAM	7.5	5.1	6.1	10.5	0.0
20	149281	LIM	3.8	0.0	1.5	5.5	0.0
21	150553	AKI	4.0	5.5	4.9	8.6	0.0
22	150724	LSH	0.3	0.8	0.6	0.0	0.0
23	150740	ETC	0.0	0.0	0.0	0.0	0.0
24	154995	ABC	4.1	3.8	3.9	11.8	0.0
25	155208	EBS	4.8	6.3	5.7	5.5	0.0
26	156236	LAH	2.4	7.9	5.7	6.4	0.0
27	156515	MFS	0.0	0.0	0.0	1.8	0.0
28	157404	TBG	4.5	5.0	4.8	7.7	0.0
29	158081	KST	4.9	0.0	2.0	2.7	0.0
30	158260	MMG	2.5	0.0	1.0	3.2	0.0
31	160233	MMA	5.4	0.0	2.2	3.6	3.4
32	160278	ARS	0.8	0.0	0.3	8.2	0.0
33	160313	BBB	5.3	5.5	5.4	9.1	0.0
34	163244	APT	8.8	8.5	8.6	12.3	0.0
35	163861	RAT	7.3	9.6	8.7	12.3	0.0

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
36	164598	BAT	4.1	5.0	4.6	10.9	0.0
37	164676	TAM	7.9	6.3	6.9	10.0	0.0
38	164844	LOL	5.5	5.9	5.7	7.7	0.0
39	165308	BUS	3.5	8.6	6.5	7.3	0.0
40	165577	CAN	2.3	7.1	5.2	9.1	0.0
41	165680	TRE	7.6	7.4	7.5	5.0	0.0
42	166541	UFA	3.5	8.0	6.2	10.0	0.0
43	166659	BCT	3.6	2.5	3.0	6.8	2.5
44	166723	BCH	4.3	6.2	5.4	8.2	0.0
45	166756	TSX	9.6	6.0	7.5	11.4	0.0
46	167084	KMP	3.0	4.0	3.6	8.2	3.8
47	167276	LIS	0.3	7.8	4.8	10.9	0.0
48	167326	GRU	6.1	6.1	6.1	5.5	0.0
49	167407	MGA	8.3	6.5	7.2	10.0	0.0
50	167653	SBS	6.5	9.0	8.0	12.3	0.0
51	167788	STA	3.5	0.0	1.4	3.6	0.0

In [22]:
```
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
0	88967	GLD	3.3	0.0	1.3	4.5	0.0
1	115803	CMS	3.8	6.2	5.2	8.2	0.0
2	118904	VCB	1.3	0.0	0.5	5.0	0.0
3	122124	LHM	4.4	5.0	4.8	5.5	0.0
4	134886	AFB	5.8	6.1	6.0	5.9	0.0
5	137250	PVS	1.0	0.0	0.4	0.9	0.0
6	138277	EMM	2.6	5.5	4.4	4.5	5.5
7	141685	POC	0.0	0.0	0.0	0.0	0.0
8	141703	TAD	3.6	2.0	2.7	4.5	3.1
9	145537	BSF	0.0	0.0	0.0	0.0	0.0
10	145642	CEB	7.8	7.1	7.4	10.0	0.0
11	145865	DNF	5.4	7.4	6.6	10.0	0.0
12	146532	IFT	3.3	2.0	2.5	5.9	2.6
13	147156	MVM	3.1	4.8	4.1	8.6	0.0
14	147406	MSN	4.9	7.8	6.6	10.0	0.0
15	147458	MCS	7.3	5.9	6.5	7.7	0.0
16	147706	RAT	0.0	0.0	0.0	0.9	0.0
17	148021	TCA	0.0	0.0	0.0	0.0	0.0
18	148296	ARC	1.4	0.0	0.6	0.9	0.0
19	149233	JAM	7.5	5.1	6.1	10.0	0.0
20	149281	LIM	3.8	0.0	1.5	5.5	0.0
21	150553	AKI	4.0	5.5	4.9	8.6	0.0
22	150724	LSH	0.3	0.8	0.6	0.0	0.0
23	150740	ETC	0.0	0.0	0.0	0.0	0.0
24	154995	ABC	4.1	3.8	3.9	10.0	0.0
25	155208	EBS	4.8	6.3	5.7	5.5	0.0
26	156236	LAH	2.4	7.9	5.7	6.4	0.0
27	156515	MFS	0.0	0.0	0.0	1.8	0.0
28	157404	TBG	4.5	5.0	4.8	7.7	0.0
29	158081	KST	4.9	0.0	2.0	2.7	0.0
30	158260	MMG	2.5	0.0	1.0	3.2	0.0
31	160233	MMA	5.4	0.0	2.2	3.6	3.4
32	160278	ARS	0.8	0.0	0.3	8.2	0.0
33	160313	BBB	5.3	5.5	5.4	9.1	0.0
34	163244	APT	8.8	8.5	8.6	10.0	0.0

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
35	163861	RAT	7.3	9.6	8.7	10.0	0.0
36	164598	BAT	4.1	5.0	4.6	10.0	0.0
37	164676	TAM	7.9	6.3	6.9	10.0	0.0
38	164844	LOL	5.5	5.9	5.7	7.7	0.0
39	165308	BUS	3.5	8.6	6.5	7.3	0.0
40	165577	CAN	2.3	7.1	5.2	9.1	0.0
41	165680	TRE	7.6	7.4	7.5	5.0	0.0
42	166541	UFA	3.5	8.0	6.2	10.0	0.0
43	166659	BCT	3.6	2.5	3.0	6.8	2.5
44	166723	BCH	4.3	6.2	5.4	8.2	0.0
45	166756	TSX	9.6	6.0	7.5	10.0	0.0
46	167084	KMP	3.0	4.0	3.6	8.2	3.8
47	167276	LIS	0.3	7.8	4.8	10.0	0.0
48	167326	GRU	6.1	6.1	6.1	5.5	0.0
49	167407	MGA	8.3	6.5	7.2	10.0	0.0
50	167653	SBS	6.5	9.0	8.0	10.0	0.0
51	167788	STA	3.5	0.0	1.4	3.6	0.0

In [23]:
```
notas["Provas"] = ((2 * notas["Prova 1"]) + (3 * notas["Prova 2"])) /5
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
0	88967	GLD	3.3	0.0	1.32	4.5	0.0
1	115803	CMS	3.8	6.2	5.24	8.2	0.0
2	118904	VCB	1.3	0.0	0.52	5.0	0.0
3	122124	LHM	4.4	5.0	4.76	5.5	0.0
4	134886	AFB	5.8	6.1	5.98	5.9	0.0
5	137250	PVS	1.0	0.0	0.40	0.9	0.0
6	138277	EMM	2.6	5.5	4.34	4.5	5.5
7	141685	POC	0.0	0.0	0.00	0.0	0.0
8	141703	TAD	3.6	2.0	2.64	4.5	3.1
9	145537	BSF	0.0	0.0	0.00	0.0	0.0
10	145642	CEB	7.8	7.1	7.38	10.0	0.0
11	145865	DNF	5.4	7.4	6.60	10.0	0.0
12	146532	IFT	3.3	2.0	2.52	5.9	2.6
13	147156	MVM	3.1	4.8	4.12	8.6	0.0
14	147406	MSN	4.9	7.8	6.64	10.0	0.0
15	147458	MCS	7.3	5.9	6.46	7.7	0.0
16	147706	RAT	0.0	0.0	0.00	0.9	0.0
17	148021	TCA	0.0	0.0	0.00	0.0	0.0
18	148296	ARC	1.4	0.0	0.56	0.9	0.0
19	149233	JAM	7.5	5.1	6.06	10.0	0.0
20	149281	LIM	3.8	0.0	1.52	5.5	0.0
21	150553	AKI	4.0	5.5	4.90	8.6	0.0
22	150724	LSH	0.3	0.8	0.60	0.0	0.0
23	150740	ETC	0.0	0.0	0.00	0.0	0.0
24	154995	ABC	4.1	3.8	3.92	10.0	0.0
25	155208	EBS	4.8	6.3	5.70	5.5	0.0
26	156236	LAH	2.4	7.9	5.70	6.4	0.0
27	156515	MFS	0.0	0.0	0.00	1.8	0.0
28	157404	TBG	4.5	5.0	4.80	7.7	0.0
29	158081	KST	4.9	0.0	1.96	2.7	0.0
30	158260	MMG	2.5	0.0	1.00	3.2	0.0
31	160233	MMA	5.4	0.0	2.16	3.6	3.4
32	160278	ARS	0.8	0.0	0.32	8.2	0.0
33	160313	BBB	5.3	5.5	5.42	9.1	0.0
34	163244	APT	8.8	8.5	8.62	10.0	0.0
35	163861	RAT	7.3	9.6	8.68	10.0	0.0

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame
36	164598	BAT	4.1	5.0	4.64	10.0	0.0
37	164676	TAM	7.9	6.3	6.94	10.0	0.0
38	164844	LOL	5.5	5.9	5.74	7.7	0.0
39	165308	BUS	3.5	8.6	6.56	7.3	0.0
40	165577	CAN	2.3	7.1	5.18	9.1	0.0
41	165680	TRE	7.6	7.4	7.48	5.0	0.0
42	166541	UFA	3.5	8.0	6.20	10.0	0.0
43	166659	BCT	3.6	2.5	2.94	6.8	2.5
44	166723	BCH	4.3	6.2	5.44	8.2	0.0
45	166756	TSX	9.6	6.0	7.44	10.0	0.0
46	167084	KMP	3.0	4.0	3.60	8.2	3.8
47	167276	LIS	0.3	7.8	4.80	10.0	0.0
48	167326	GRU	6.1	6.1	6.10	5.5	0.0
49	167407	MGA	8.3	6.5	7.22	10.0	0.0
50	167653	SBS	6.5	9.0	8.00	10.0	0.0
51	167788	STA	3.5	0.0	1.40	3.6	0.0

In [24]:
```
notas["Nota antes do exame"] = 0.0
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	0.0
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	0.0
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	0.0
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	0.0
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	0.0
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.0
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	0.0
7	141685	POC	0.0	0.0	0.00	0.0	0.0	0.0
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	0.0
9	145537	BSF	0.0	0.0	0.00	0.0	0.0	0.0
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	0.0
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	0.0
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	0.0
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	0.0
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	0.0
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	0.0
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.0
17	148021	TCA	0.0	0.0	0.00	0.0	0.0	0.0
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.0
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	0.0
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	0.0
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	0.0
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.0
23	150740	ETC	0.0	0.0	0.00	0.0	0.0	0.0
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	0.0
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	0.0
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	0.0
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.0
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	0.0
29	158081	KST	4.9	0.0	1.96	2.7	0.0	0.0
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	0.0
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	0.0
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	0.0
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	0.0
34	163244	APT	8.8	8.5	8.62	10.0	0.0	0.0
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	0.0

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	0.0
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	0.0
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	0.0
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	0.0
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	0.0
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	0.0
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	0.0
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	0.0
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	0.0
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	0.0
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	0.0
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	0.0
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	0.0
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	0.0
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	0.0
51	167788	STA	3.5	0.0	1.40	3.6	0.0	0.0

In [25]:
```
#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)

for i in list(notas.index.values):
    if notas.at[i, "Provas"] != 0 and notas.at[i, "Listas"] != 0:

        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"])

        m = max(m1, m2)
        notas.at[i, "Nota antes do exame"] = m

display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054
7	141685	POC	0.0	0.0	0.00	0.0	0.0	0.000000
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000
9	145537	BSF	0.0	0.0	0.00	0.0	0.0	0.000000
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000
17	148021	TCA	0.0	0.0	0.00	0.0	0.0	0.000000
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000
23	150740	ETC	0.0	0.0	0.00	0.0	0.0	0.000000
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000

In [26]:
```
notas["Nota final"] = 0.0
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	0.0
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	0.0
2	118904	VCB	1.3	0.0	0.52	5.0	0.0	1.864000	0.0
3	122124	LHM	4.4	5.0	4.76	5.5	0.0	4.983503	0.0
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	0.0
5	137250	PVS	1.0	0.0	0.40	0.9	0.0	0.550000	0.0
6	138277	EMM	2.6	5.5	4.34	4.5	5.5	4.392054	0.0
7	141685	POC	0.0	0.0	0.00	0.0	0.0	0.000000	0.0
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	0.0
9	145537	BSF	0.0	0.0	0.00	0.0	0.0	0.000000	0.0
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	0.0
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	0.0
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	0.0
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	0.0
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	0.0
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	0.0
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.0
17	148021	TCA	0.0	0.0	0.00	0.0	0.0	0.000000	0.0
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.0
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	0.0
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	0.0
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	0.0
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.0
23	150740	ETC	0.0	0.0	0.00	0.0	0.0	0.000000	0.0
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	0.0
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	0.0
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	0.0
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.0
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	0.0
29	158081	KST	4.9	0.0	1.96	2.7	0.0	2.182000	0.0
30	158260	MMG	2.5	0.0	1.00	3.2	0.0	1.660000	0.0
31	160233	MMA	5.4	0.0	2.16	3.6	3.4	2.592000	0.0
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	0.0
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	0.0
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	0.0
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	0.0

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	0.0
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	0.0
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	0.0
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	0.0
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	0.0
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	0.0
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	0.0
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	0.0
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	0.0
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	0.0
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	0.0
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	0.0
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	0.0
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	0.0
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	0.0
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	0.0

In [28]:
```
#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

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
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000
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
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000
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
7	141685	POC	0.0	0.0	0.00	0.0	0.0	0.000000	0.000000
8	141703	TAD	3.6	2.0	2.64	4.5	3.1	3.198000	3.149000
9	145537	BSF	0.0	0.0	0.00	0.0	0.0	0.000000	0.000000
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000
17	148021	TCA	0.0	0.0	0.00	0.0	0.0	0.000000	0.000000
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000
23	150740	ETC	0.0	0.0	0.00	0.0	0.0	0.000000	0.000000
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000
25	155208	EBS	4.8	6.3	5.70	5.5	0.0	5.640000	5.640000

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final
26	156236	LAH	2.4	7.9	5.70	6.4	0.0	5.915676	5.915676
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000
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
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000

In [29]:
```
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
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000
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
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000
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
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000
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
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000
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
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000

In [30]:
```
notas["Conceito Final"] = ""
display(notas)
```

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	
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	
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	
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	
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	
16	147706	RAT	0.0	0.0	0.00	0.9	0.0	0.000000	0.000000	
18	148296	ARC	1.4	0.0	0.56	0.9	0.0	0.662000	0.662000	
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	
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	
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	
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	
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	
39	165308	BUS	3.5	8.6	6.56	7.3	0.0	6.789414	6.789414	

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
40	165577	CAN	2.3	7.1	5.18	9.1	0.0	6.356000	6.356000	
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	

In [31]:
```
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
0	88967	GLD	3.3	0.0	1.32	4.5	0.0	2.274000	2.274000	F
1	115803	CMS	3.8	6.2	5.24	8.2	0.0	6.128000	6.128000	C
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
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	D
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
10	145642	CEB	7.8	7.1	7.38	10.0	0.0	8.166000	8.166000	B
11	145865	DNF	5.4	7.4	6.60	10.0	0.0	7.620000	7.620000	B
12	146532	IFT	3.3	2.0	2.52	5.9	2.6	3.534000	3.067000	F
13	147156	MVM	3.1	4.8	4.12	8.6	0.0	5.464000	5.464000	D
14	147406	MSN	4.9	7.8	6.64	10.0	0.0	7.648000	7.648000	B
15	147458	MCS	7.3	5.9	6.46	7.7	0.0	6.832000	6.832000	C
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
19	149233	JAM	7.5	5.1	6.06	10.0	0.0	7.242000	7.242000	B
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	F
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	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
27	156515	MFS	0.0	0.0	0.00	1.8	0.0	0.000000	0.000000	F
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	D
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
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
33	160313	BBB	5.3	5.5	5.42	9.1	0.0	6.524000	6.524000	C
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
36	164598	BAT	4.1	5.0	4.64	10.0	0.0	6.248000	6.248000	C
37	164676	TAM	7.9	6.3	6.94	10.0	0.0	7.858000	7.858000	B
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	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
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	C
42	166541	UFA	3.5	8.0	6.20	10.0	0.0	7.340000	7.340000	B
43	166659	BCT	3.6	2.5	2.94	6.8	2.5	4.098000	3.299000	F
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
45	166756	TSX	9.6	6.0	7.44	10.0	0.0	8.208000	8.208000	B
46	167084	KMP	3.0	4.0	3.60	8.2	3.8	4.980000	4.390000	F
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
48	167326	GRU	6.1	6.1	6.10	5.5	0.0	5.920000	5.920000	D
49	167407	MGA	8.3	6.5	7.22	10.0	0.0	8.054000	8.054000	B
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

In [32]:
```
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
34	163244	APT	8.8	8.5	8.62	10.0	0.0	9.035639	9.035639	A
35	163861	RAT	7.3	9.6	8.68	10.0	0.0	9.079498	9.079498	A
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	A

In [33]:
```
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
50	167653	SBS	6.5	9.0	8.00	10.0	0.0	8.600000	8.600000	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
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
21	150553	AKI	4.0	5.5	4.90	8.6	0.0	6.010000	6.010000	C
38	164844	LOL	5.5	5.9	5.74	7.7	0.0	6.328000	6.328000	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
41	165680	TRE	7.6	7.4	7.48	5.0	0.0	6.736000	6.736000	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
47	167276	LIS	0.3	7.8	4.80	10.0	0.0	6.360000	6.360000	C
44	166723	BCH	4.3	6.2	5.44	8.2	0.0	6.268000	6.268000	C
4	134886	AFB	5.8	6.1	5.98	5.9	0.0	5.956000	5.956000	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
28	157404	TBG	4.5	5.0	4.80	7.7	0.0	5.670000	5.670000	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
24	154995	ABC	4.1	3.8	3.92	10.0	0.0	5.744000	5.744000	D
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

	RA	Aluno	Prova 1	Prova 2	Provas	Listas	Exame	Nota antes do exame	Nota final	Conceito Final
22	150724	LSH	0.3	0.8	0.60	0.0	0.0	0.000000	0.000000	F
20	149281	LIM	3.8	0.0	1.52	5.5	0.0	2.714000	2.714000	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
32	160278	ARS	0.8	0.0	0.32	8.2	0.0	2.684000	2.684000	F
51	167788	STA	3.5	0.0	1.40	3.6	0.0	2.060000	2.060000	F

In [34]:
```
notas.to_csv("notas2_final.csv", sep=";")
```