

UNIVERSIDADE ESTÁCIO DE SÁ FULLSTACK

Mundo 05 - Nível 03

Missão Prática Tratando a imensidão dos dados

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RIO DE JANEIRO – RJ Agosto de 2024

Contextualização

Como Analista de Dados, você recebeu, em um novo projeto, um conjunto de dados. Sua principal tarefa é tratar os dados desse a fim de que possam ser utilizados para a descoberta de conhecimento através de sua posterior análise e interpretação. Para tal tarefa, você deverá utilizar a linguagem Python e a biblioteca Pandas.

Procedimentos

Após ler um conjunto de dados, fornecidos no enunciado da entrega, compostos pelas conlunas ID;Duration;Date;Pulse;Maxpulse;Calories devemos desenvolver a seguinte programação:

```
#Importing pandas library
import pandas as pand

# Fonte de dados ==> formato CSV
csv_dados = 'picoweb_dados.csv'

# pegando os dados no arquivo CSV
df = pand.read_csv(csv_dados, sep=';', engine='python', encoding='utf-8')

# Imprimindo informações gerais do dataframe
print("Imprimindo informações gerais do DataFrame:")
print(df.info())
print("========="")
```

```
picoweb.ipynb
                  picoweb.ipynb (output) ×
       Imprimindo informações gerais do DataFrame:
       <class 'pandas.core.frame.DataFrame'>
       RangeIndex: 32 entries, 0 to 31
       Data columns (total 6 columns):
       #
           Column
                     Non-Null Count Dtype
       0
           ID
                     32 non-null
                                     int64
       1 Duration 32 non-null
                                    int64
        2 Date
                     31 non-null
                                     object
           Pulse
                     32 non-null
                                     int64
           Maxpulse 32 non-null
                                    int64
 11
       4
           Calories 30 non-null
                                     float64
 12
       dtypes: float64(1), int64(4), object(1)
       memory usage: 1.6+ KB
```

```
# Imprimindo as 5 primeiras linhas
print("\nPrint das 5 primeiras Linhas:")
print(df.head())
print("============"")

# Imprimindo as 5 últimas linhas
print("\nPrint das 5 últimas Linhas:")
print(df.tail())
print("=========="")
```

```
Print das 5 primeiras Linhas:
           Duration
        ID
                              Date
                                   Pulse Maxpulse Calories
        0
                  60
                      '2020/12/01'
                                     110
                                               130
                                                      4091.0
     0
                      '2020/12/02'
21
     1
        1
                  60
                                     117
                                               145
                                                      4790.0
        2
                      '2020/12/03'
     2
                                     103
                                               135
22
                  60
                                                      3400.0
        3
                      '2020/12/04'
     3
                  45
                                     109
                                               175
                                                      2824.0
                      '2020/12/05'
     4
        4
                  45
                                     117
                                               148
                                                      4060.0
     Print das 5 Últimas Linhas:
         ID Duration
                               Date
                                     Pulse
                                           Maxpulse Calories
     27 27
                   60
                       '2020/12/27'
                                       92
                                                118
                                                        2410.0
     28 28
                       '2020/12/28'
                                       103
                   60
                                                132
                                                          NaN
     29 29
                   60
                       '2020/12/29'
                                       100
                                                132
                                                        2800.0
     30 30
                       '2020/12/30'
                                      102
                   60
                                                129
                                                        3803.0
     31 31
                   60
                       '2020/12/31'
                                       92
                                                115
                                                        2430.0
```

```
# Criando uma cópia de segurança dos dados
df_copy = df.copy()
```

```
# Substituindo os valores nulos na coluna "Calories" por 0

df_copy['Calories'].fillna(0, inplace=True)
print("\nPrint do DataFrame após substituição dos valores nulos na coluna 'Calories':")
print(df_copy)
print("========="")
```

Pri	nt d	o DataFrame	após substit	uicão d	los valores	nulos na	coluna	'Calories':
	ID	Duration	Date	Pulse	Maxpulse	Calories	0014114	
0	0	60	'2020/12/01'	110	130	4091.0		
1	1	60	'2020/12/02'	117	145	4790.0		
2	2	60	'2020/12/03'	103	135	3400.0		
3	3	45	'2020/12/04'	109	175	2824.0		
4	4	45	'2020/12/05'	117	148	4060.0		
5	5	60	'2020/12/06'	102	127	3000.0		
6	6	60	'2020/12/07'	110	136	3740.0		
7	7	450	'2020/12/08'	104	134	2533.0		
8	8	30	'2020/12/09'	109	133	1951.0		
9	9	60	'2020/12/10'	98	124	2690.0		
10	10	60	'2020/12/11'	103	147	3293.0		
11	11	60	'2020/12/12'	100	120	2507.0		
12	12	60	'2020/12/12'	100	120	2507.0		
13	13	60	'2020/12/13'	106	128	3453.0		
14	14	60	'2020/12/14'	104	132	3793.0		
15	15	60	'2020/12/15'	98	123	2750.0		
16	16	60	'2020/12/16'	98	120	2152.0		
17	17	60	'2020/12/17'	100	120	3000.0		
18	18	45	'2020/12/18'	90	112	0.0		
19	19	60	'2020/12/19'	103	123	3230.0		
20	20	45	'2020/12/20'	97	125	2430.0		
21	21	60	'2020/12/21'	108	131	3642.0		
22	22	45	NaN	100	119	2820.0		
23	23	60	'2020/12/23'	130	101	3000.0		
24	24	45	'2020/12/24'	105	132	2460.0		
25	25	60	'2020/12/25'	102	126	3345.0		
26	26	60	20201226	100	120	2500.0		
27	27	60	'2020/12/27'	92	118	2410.0		
28	28	60	'2020/12/28'	103	132	0.0		
29	29	60	'2020/12/29'	100	132	2800.0		
30	30	60	'2020/12/30'	102	129	3803.0		
31	31	60	'2020/12/31'	92	115	2430.0		
===	====	=======	-========	======	:======:	=======		

```
# Substituindo os valores nulos na coluna "Date" por "1900/01/01"

df_copy['Date'].fillna('1900/01/01', inplace=True)
print("\nPrint do DataFrame após substituição dos valores nulos na coluna 'Date':")
print(df_copy)
print("=======""""")
```

72	Pri	nt d	o DataFram	e após substit	uição d	os valores	nulos na	coluna	'Date':
73		ID	Duration	Date	Pulse	Maxpulse	Calories		
74	0	0	60	'2020/12/01'	110	130	4091.0		
75	1	1	60	'2020/12/02'	117	145	4790.0		
76	2	2	60	'2020/12/03'	103	135	3400.0		
77	3	3	45	'2020/12/04'	109	175	2824.0		
78	4	4	45	'2020/12/05'	117	148	4060.0		
79	5	5	60	'2020/12/06'	102	127	3000.0		
80	6	6	60	'2020/12/07'	110	136	3740.0		
81	7	7	450	'2020/12/08'	104	134	2533.0		
82	8	8	30	'2020/12/09'	109	133	1951.0		
83	9	9	60	'2020/12/10'	98	124	2690.0		
84	10	10	60	'2020/12/11'	103	147	3293.0		
85	11	11	60	'2020/12/12'	100	120	2507.0		
86	12	12	60	'2020/12/12'	100	120	2507.0		
87	13	13	60	'2020/12/13'	106	128	3453.0		
88	14	14	60	'2020/12/14'	104	132	3793.0		
89	15	15	60	'2020/12/15'	98	123	2750.0		
90	16	16	60	'2020/12/16'	98	120	2152.0		
91	17	17	60	'2020/12/17'	100	120	3000.0		
92	18	18	45	'2020/12/18'	90	112	0.0		
93	19	19	60	'2020/12/19'	103	123	3230.0		
94	20	20	45	'2020/12/20'	97	125	2430.0		
95	21	21	60	'2020/12/21'	108	131	3642.0		
96	22	22	45	1900/01/01	100	119	2820.0		
97	23	23	60	'2020/12/23'	130	101	3000.0		
98	24	24	45	'2020/12/24'	105	132	2460.0		
99	25	25	60	'2020/12/25'	102	126	3345.0		
100	26	26	60	20201226	100	120	2500.0		
101	27	27	60	'2020/12/27'	92	118	2410.0		
102	28	28	60	'2020/12/28'	103	132	0.0		
103	29	29	60	'2020/12/29'	100	132	2800.0		
104	30	30	60	'2020/12/30'	102	129	3803.0		
105	31	31	60	'2020/12/31'	92	115	2430.0		
106	===	====	=======	========	======	=======	=======		

```
# Corrigindo o formato das datas
df_copy['Date'] = df_copy['Date'].str.strip("'")
df_copy['Date'] = df_copy['Date'].astype(str).replace({'20201226': '2020/12/26'})
df_copy['Date'] = pand.to_datetime(df_copy['Date'], format='%Y/%m/%d', errors='coerce')
print("\nPrint doDataFrame após correção para o formato data id 26 '20201226':")
print(df_copy)
print("=========="")
```

Pri	nt d						26 '20201226':
	ID	Duration		Pulse		Calories	
0	0		2020-12-01	110	130	4091.0	
1	1		2020-12-02		145	4790.0	
2	2		2020-12-03		135	3400.0	
3	3		2020-12-04		175		
4	4	45	2020-12-05	117	148	4060.0	
5	5	60	2020-12-06	102	127	3000.0	
6	6	60	2020-12-07	110	136	3740.0	
7	7	450	2020-12-08	104	134	2533.0	
8	8	30	2020-12-09	109	133	1951.0	
9	9	60	2020-12-10	98	124	2690.0	
10	10	60	2020-12-11	103	147	3293.0	
11	11	60	2020-12-12	100	120	2507.0	
12	12	60	2020-12-12	100	120	2507.0	
13	13	60	2020-12-13	106	128	3453.0	
14	14	60	2020-12-14	104	132	3793.0	
15	15	60	2020-12-15	98	123	2750.0	
16	16	60	2020-12-16	98	120	2152.0	
17	17	60	2020-12-17	100	120	3000.0	
18	18	45	2020-12-18	90	112	0.0	
19	19	60	2020-12-19	103	123	3230.0	
20	20	45	2020-12-20	97	125	2430.0	
21	21	60	2020-12-21	108	131	3642.0	
22	22	45	1900-01-01	100	119	2820.0	
23	23	60	2020-12-23	130	101	3000.0	
24	24	45	2020-12-24	105	132	2460.0	
25	25	60	2020-12-25	102	126	3345.0	
26	26	60	2020-12-26	100	120	2500.0	
27	27	60	2020-12-27	92	118	2410.0	
28	28	60	2020-12-28	103	132	0.0	
29	29	60	2020-12-29	100	132	2800.0	
30	30	60	2020-12-30	102	129	3803.0	
31	31	60	2020-12-31	92	115	2430.0	
===	====	=======		======	=======	=======	=

```
# Transformando a coluna 'Date' para datetime
df_copy['Date'] = pand.to_datetime(df_copy['Date'], format='%Y/%m/%d', errors='coerce')
print("\nPrint do DataFrame após transformação da coluna 'Date' em datetime:")
print(df_copy)
print("========""")
```

Desi		- D-+-F		C	~- J1	ID-t-I	
Pr1							em datetime:
	ID	Duration	Date		Maxpulse		
0	0		2020-12-01		130	4091.0	
1	1		2020-12-02		145		
2	2		2020-12-03		135	3400.0	
3	3		2020-12-04		175	2824.0	
4	4		2020-12-05		148	4060.0	
5	5		2020-12-06		127	3000.0	
6	6		2020-12-07	110	136	3740.0	
7 8	7 8		2020-12-08 2020-12-09		134	2533.0	
9	9		2020-12-09		133 124	1951.0 2690.0	
10	10		2020-12-10		147	3293.0	
11	11		2020-12-11		120	2507.0	
12	12		2020-12-12		120	2507.0	
13	13		2020-12-12		128	3453.0	
14	14		2020 12 13		132	3793.0	
15	15		2020-12-15		123	2750.0	
16	16		2020-12-16		120	2152.0	
17	17		2020-12-17		120	3000.0	
18	18		2020-12-18		112	0.0	
19	19		2020-12-19		123	3230.0	
20	20		2020-12-20		125	2430.0	
21	21		2020-12-21		131	3642.0	
22	22	45	1900-01-01	100	119	2820.0	
23	23	60	2020-12-23		101	3000.0	
24	24	45	2020-12-24	105	132	2460.0	
25	25	60	2020-12-25	102	126	3345.0	
26	26	60	2020-12-26	100	120	2500.0	
27	27	60	2020-12-27	92	118	2410.0	
28	28	60	2020-12-28	103	132	0.0	
29	29	60	2020-12-29	100	132	2800.0	
30	30	60	2020-12-30	102	129	3803.0	
31	31	60	2020-12-31	92	115	2430.0	
===	====	=======	========	======	=======	=======	===

```
# Mudando, na coluna Date, o valor '1900/01/01' para 'NaN' - Not a Number

df_copy['Date'].replace(pand.Timestamp('1900-01-01'), pand.NaT, inplace=True)

print("\nPrint do DataFrame após alteração, na coluna Date, do valor '1900/01/01' para 'NaN' - Not a Number")

print(df_copy)

print("========"")
```

Pri	int d	lo DataFran	ne após alte	ração,	na coluna	Date, do valor	'1900/01/01'	para	'NaN' - Not a Num	ber
	ID	Duration	Date	Pulse	Maxpulse	Calories				
0	0	60	2020-12-01	110	130	4091.0				
1	1	60	2020-12-02	117	145	4790.0				
2	2	60	2020-12-03	103	135	3400.0				
3	3	45	2020-12-04	109	175	2824.0				
4	4	45	2020-12-05	117	148	4060.0				
5	5	60	2020-12-06	102	127	3000.0				
6	6	60	2020-12-07	110	136	3740.0				
7	7	450	2020-12-08	104	134	2533.0				
8	8	30	2020-12-09	109	133	1951.0				
9	9	60	2020-12-10	98	124	2690.0				
10	10	60	2020-12-11	103	147	3293.0				
11	11	60	2020-12-12	100	120	2507.0				
12	12	60	2020-12-12	100	120	2507.0				
13	13	60	2020-12-13	106	128	3453.0				
14	14	60	2020-12-14	104	132	3793.0				
15	15	60	2020-12-15	98	123	2750.0				
16	16	60	2020-12-16	98	120	2152.0				
17	17	60	2020-12-17	100	120	3000.0				
18	18	45	2020-12-18	90	112	0.0				
19	19	60	2020-12-19	103	123	3230.0				
20	20	45	2020-12-20	97	125	2430.0				
21	21		2020-12-21	108	131	3642.0				
22	22	45	NaT	100	119	2820.0				
23	23		2020-12-23	130	101	3000.0				
24	24	45	2020-12-24	105	132	2460.0				
25	25		2020-12-25	102	126	3345.0				
26	26		2020-12-26	100	120	2500.0				
27	27	60	2020-12-27	92	118	2410.0				
28	28		2020-12-28	103	132	0.0				
29	29	60	2020-12-29	100	132	2800.0				
30	30	60	2020-12-30	102	129	3803.0				
31	31	60	2020-12-31	92	115	2430.0				
===				=====	========					

```
# Excluindo os registros com valores nulos na coluna 'Date'

df_clean = df_copy.dropna(subset=['Date'])
print("\nPrint do DataFrame após remoção dos registros com valores nulos na coluna 'Date':")
print(df_clean)
print("========="")
```

Print do DataFrame após remoção dos registros com valores nulos na coluna 'Date': ID Duration Date Pulse Maxpulse Calories 0	Dni	nt d	a DataEnam	na anás nama	são dos	nogistnos	com valenas	nulos	no	coluna	'Data'ı	
0 0 60 2020-12-01 110 130 4091.0 1 1 60 2020-12-02 117 145 4790.0 2 2 60 2020-12-03 103 135 3400.0 3 3 45 2020-12-04 109 175 2824.0 4 4 4 45 2020-12-05 117 148 4060.0 5 5 60 2020-12-06 102 127 3000.0 6 6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 30 2020-12-09 109 133 1951.0 9 9 60 2020-12-10 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-12 100 120 2507.0 13 13 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-14 104 132 3793.0 15 15 60 2020-12-15 98 123 3750.0 16 16 60 2020-12-16 98 120 2152.0 17 17 60 2020-12-16 98 120 2152.0 17 17 60 2020-12-17 100 120 3000.0 18 18 45 2020-12-18 90 112 0.0 19 19 60 2020-12-19 103 123 3230.0 20 20 45 2020-12-29 103 123 3230.0 21 21 60 2020-12-21 108 131 3642.0 23 23 60 2020-12-23 130 101 3000.0 24 24 45 2020-12-25 102 126 3345.0 25 25 60 2020-12-27 92 118 2410.0 28 28 60 2020-12-27 92 118 2410.0 29 29 60 2020-12-29 100 132 2800.0 30 30 60 2020-12-29 100 132 2800.0	 PLT							nutos	Па	COTUNA	Date:	
1 1 60 2020-12-02 117 145 4790.0 2 2 60 2020-12-03 103 135 3400.0 3 3 45 2020-12-06 109 175 2824.0 4 4 45 2020-12-06 102 127 3000.0 6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 30 2020-12-10 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-15 98 123 2750.0 15 15 60 2020-12-15 98 123 2750.0 16 16 60 2020-12-15 98 123 2750.0	0											
2 2 60 2020-12-03 103 135 3400.0 3 3 45 2020-12-04 109 175 2824.0 4 4 4 45 2020-12-05 117 148 4060.0 5 5 60 2020-12-06 102 127 3000.0 6 6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 30 2020-12-09 109 133 1951.0 9 9 60 2020-12-10 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-12 100 120 2507.0 13 13 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-14 104 132 3793.0 15 15 60 2020-12-16 98 123 2750.0 16 16 60 2020-12-15 98 123 2750.0 17 17 60 2020-12-16 98 120 2152.0 17 17 60 2020-12-17 100 120 3000.0 18 18 18 45 2020-12-18 90 112 0.0 19 19 60 2020-12-19 103 123 3230.0 20 20 45 2020-12-2 108 13 3230.0 21 21 60 2020-12-2 108 31 3642.0 22 20 45 2020-12-2 3 130 101 3000.0 24 24 24 45 2020-12-24 105 132 2460.0 25 25 60 2020-12-24 105 132 2460.0 25 25 60 2020-12-27 92 118 2410.0 28 28 60 2020-12-27 92 118 2410.0 28 28 60 2020-12-27 92 118 2410.0 28 28 60 2020-12-29 100 132 2800.0 30 30 60 2020-12-29 100 132 2800.0												
3												
4 4 45 2020-12-05 117 148 4060.0 5 5 60 2020-12-06 102 127 3000.0 6 6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 8 30 2020-12-09 109 133 1951.0 9 9 60 2020-12-10 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-14 104 132 3793.0 15 15 60 2020-12-15 98 123 2750.0 16 16 60 2020-12-16 98 120 2152.0 17 17 60 2020-12-16 98 120 2152.0 17 17 60 2020-12-18 90 112 0.0 18 18 45 2020-12-18 90 112 0.0 19 19 60 2020-12-19 103 123 3230.0 20 20 45 2020-12-20 97 125 2430.0 21 21 60 2020-12-21 108 131 3642.0 23 23 60 2020-12-24 105 132 2460.0 25 25 60 2020-12-25 102 126 3345.0 26 26 60 2020-12-27 92 118 2410.0 27 77 60 2020-12-27 92 118 2410.0 28 28 60 2020-12-27 92 118 2410.0 29 29 60 2020-12-29 100 132 2800.0 30 30 60 2020-12-30 102 129 3803.0												
5 60 2020-12-06 102 127 3000.0 6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 30 2020-12-09 109 133 1951.0 9 9 60 2020-12-11 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-15 98 123 2750.0 15 15 60 2020-12-15 98 123 2750.0 16 16 60 2020-12-17 100 120 3000.0 18 18 45 2020-12-18 90 112 0.0												
6 6 60 2020-12-07 110 136 3740.0 7 7 450 2020-12-08 104 134 2533.0 8 8 30 2020-12-09 109 133 1951.0 9 9 60 2020-12-10 98 124 2690.0 10 10 60 2020-12-11 103 147 3293.0 11 11 60 2020-12-12 100 120 2507.0 12 12 60 2020-12-13 106 128 3453.0 14 14 60 2020-12-13 106 128 3453.0 15 15 60 2020-12-15 98 123 3750.0 16 16 60 2020-12-15 98 123 2750.0 17 17 60 2020-12-17 100 120 3000.0 18 18 45 2020-12-18 90 112 0.0 19 19 60 2020-12-19 103 123 323												
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