

```
1 "C:\Users\squal\Dropbox\Engenharia Informatica\Projetos\PYTHON\
  TI\Ficha 2\venv\Scripts\python.exe" "C:/Users/squal/Dropbox/
  Engenharia Informatica/Projetos/PYTHON/TI/Ficha 2/main.py"
2 Escolha o ficheiro a ler:
3 1 - "lena.bmp"
4 2 - "binaria.bmp"
5 3 - "ct1.bmp"
6 4 - "texto.txt"
7 5 - "saxriff.wav"
8 OPÇÃO: 2
9 NOME DO FICHEIRO: "binaria.bmp"
10 -----
11 EX 1 a 3
12 Entropia: 0.9755265590544999
13 -----
14 EX 4
15 Média ponderada: 1.0
16 Variância ponderada: 0.0
17 -----
18 EX 5
19 Entropia pares: 0.5424054889083895
20 -----
21 EX 6a
22 QUERY: Exemplo --- TARGET: Exemplo
23 infoMutua: [2.12192809 1.92192809 1.64643934 2.17095059 1.
  97095059 1.77095059
24 2.04643934 2.12192809 2.32192809 2.52192809 2.24643934 2.
  24643934
25 2.24643934 2.24643934 2.44643934 2.44643934 2.52192809 2.
  72192809
26 2.52192809 2.32192809 2.32192809 2.12192809 2.32192809 2.
  32192809
27 2.12192809 2.04643934 2.04643934 2.04643934 2.04643934 2.
  04643934
28 2.32192809 2.32192809 2.04643934 2.12192809 2.12192809 1.
  84643934
29 1.77095059 1.84643934 2.04643934 2.04643934 2.32192809]
30 -----
31 EX 6b
32 QUERY: saxwriff.wav --- TARGET: "target01 - repeat.wav"
33 infoMutua: [0.00120596 0.00152681 0.0021184 0.0013463 ]
34
35 QUERY: saxwriff.wav --- TARGET: "target02 - repeatNoise.wav"
36 infoMutua: [0.00336181 0.01710562 0.00656743 0.0125733 ]
37
38 -----
39 EX 6c
```

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40 QUERY: saxwriff.wav --- TARGET: "Song01.wav"
41 infoMutua: [0.0021016 0.00229903 0.00370348]
42 Inf mútua máxima: 0.003703479615127023
43 Inf mútua ordem decrescente: [0.00370348 0.00229903 0.0021016 ]
44
45 QUERY: saxwriff.wav --- TARGET: "Song02.wav"
46 infoMutua: [0.00360651 0.00289557]
47 Inf mútua máxima: 0.0036065148948534395
48 Inf mútua ordem decrescente: [0.00360651 0.00289557]
49
50 QUERY: saxwriff.wav --- TARGET: "Song03.wav"
51 infoMutua: [0.01569936 0.00347033 0.00419642]
52 Inf mútua máxima: 0.015699362933927753
53 Inf mútua ordem decrescente: [0.01569936 0.00419642 0.00347033]
54
55 QUERY: saxwriff.wav --- TARGET: "Song04.wav"
56 infoMutua: [0.00239526 0.00302713]
57 Inf mútua máxima: 0.0030271348614303245
58 Inf mútua ordem decrescente: [0.00302713 0.00239526]
59
60 QUERY: saxwriff.wav --- TARGET: "Song05.wav"
61 infoMutua: []
62 Traceback (most recent call last):
63   File "C:/Users/squal/Dropbox/Engenharia Informatica/Projetos/
    PYTHON/TI/Ficha 2/main.py", line 445, in <module>
64     main("binaria.bmp")
65   File "C:/Users/squal/Dropbox/Engenharia Informatica/Projetos/
    PYTHON/TI/Ficha 2/main.py", line 418, in main
66     exercicio_6c(data, alfabeto, "Song05.wav")
67   File "C:/Users/squal/Dropbox/Engenharia Informatica/Projetos/
    PYTHON/TI/Ficha 2/main.py", line 345, in exercicio_6c
68     print(f"Inf mútua máxima: {np.amax(inf_mutua)}")
69   File "<__array_function__ internals>", line 6, in amax
70   File "C:\Users\squal\Dropbox\Engenharia Informatica\Projetos\
    PYTHON\TI\Ficha 2\env\lib\site-packages\numpy\core\fromnumeric
    .py", line 2706, in amax
71     keepdims=keepdims, initial=initial, where=where)
72   File "C:\Users\squal\Dropbox\Engenharia Informatica\Projetos\
    PYTHON\TI\Ficha 2\env\lib\site-packages\numpy\core\fromnumeric
    .py", line 87, in _wrapreduction
73     return ufunc.reduce(obj, axis, dtype, out, **passkwargs)
74 ValueError: zero-size array to reduction operation maximum
    which has no identity
75
76 Process finished with exit code 1
77
```