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R.A.: 22.218.019-2

Para facilitar a identificação durante a resolução do exercício, as chaves foram indexadas iniciando em zero e seguindo a ordem em que se encontram presentes no arquivo fornecido.

Para melhor identificar qual indice representa qual chave, os 5 primeiros digitos de cada chave se encontram associados na tabela a seguir:

5 Primeiros dígitos	Índice
142B4	0
F7683	1
FBFA4	2
1AA8D	3
2682C	4
A0CA0	5
52F21	6
7CE25	7
E6D12	8
4E161	9
CCF78	10
8B759	11
E5848	12
CD268	13
CB0BE	14
5F165	15
72552	16
87417	17
7C279	18
FAA55	19

- As chaves que podem ser consideradas aleatórias são as relativas aos índices **1, 3, 5, 11, 12, 13, 14, 15, 16, 19**, pois passaram em todos os 4 testes.

Os resultados de cada um dos testes (output do código) estão apresentados abaixo:

```
TESTANDO CHAVE   0
        |-> MONOBIT: Reprovou (X = 10580)
        |-> POKER: Reprovou (X = 341.70880000000034)
{
  "0000": 3,
  "0001": 355,
  "0010": 322,
  "0011": 331,
  "0100": 383,
  "0101": 333,
  "0110": 313,
  "0111": 329,
  "1000": 326,
  "1001": 323,
  "1010": 352,
  "1011": 319,
  "1100": 327,
  "1101": 327,
  "1110": 317,
  "1111": 340
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2752,
    "2": 1379,
    "3": 718,
    "4": 292,
    "5": 88,
    "6": 24
  },
  "1": {
    "1": 2633,
    "2": 1320,
    "3": 599,
    "4": 362,
    "5": 167,
    "6": 172
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   1
        |-> MONOBIT: Passou (X = 10052)
        |-> POKER: Passou (X = 34.25280000000021)
{
  "0000": 277,
  "0001": 315,
  "0010": 341,
  "0011": 345,
  "0100": 301,
  "0101": 305,
  "0110": 341,
  "0111": 331,
  "1000": 319,
  "1001": 310,
  "1010": 340,
  "1011": 274,
  "1100": 271,
  "1101": 300,
  "1110": 283,
  "1111": 347
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2515,
    "2": 1241,
    "3": 666,
    "4": 322,
    "5": 137,
    "6": 137
  },
  "1": {
    "1": 2531,
    "2": 1219,
    "3": 627,
    "4": 343,
    "5": 144,
    "6": 155
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   2
        |-> MONOBIT: Reprovou (X = 10665)
        |-> POKER: Reprovou (X = 342.82880000000023)
{
  "0001": 323,
  "0010": 340,
  "0011": 349,
  "0100": 341,
  "0101": 337,
  "0110": 339,
  "0111": 342,
  "1000": 316,
  "1001": 329,
  "1010": 319,
  "1011": 321,
  "1100": 364,
  "1101": 307,
  "1110": 331,
  "1111": 342
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2757,
    "2": 1403,
    "3": 702,
    "4": 268,
    "5": 85,
    "6": 28
  },
  "1": {
    "1": 2555,
    "2": 1325,
    "3": 690,
    "4": 334,
    "5": 163,
    "6": 177
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   3
        |-> MONOBIT: Passou (X = 9944)
        |-> POKER: Passou (X = 13.139200000000528)
{
  "0000": 327,
  "0001": 292,
  "0010": 324,
  "0011": 332,
  "0100": 310,
  "0101": 301,
  "0110": 315,
  "0111": 288,
  "1000": 317,
  "1001": 323,
  "1010": 328,
  "1011": 288,
  "1100": 326,
  "1101": 296,
  "1110": 297,
  "1111": 336
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2427,
    "2": 1274,
    "3": 613,
    "4": 322,
    "5": 168,
    "6": 164
  },
  "1": {
    "1": 2491,
    "2": 1223,
    "3": 632,
    "4": 321,
    "5": 146,
    "6": 154
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   4
        |-> MONOBIT: Reprovou (X = 10346)
        |-> POKER: Reprovou (X = 252.82560000000012)
{
  "0000": 54,
  "0001": 380,
  "0010": 341,
  "0011": 324,
  "0100": 362,
  "0101": 313,
  "0110": 324,
  "0111": 316,
  "1000": 349,
  "1001": 340,
  "1010": 338,
  "1011": 324,
  "1100": 313,
  "1101": 280,
  "1110": 318,
  "1111": 324
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2622,
    "2": 1397,
    "3": 762,
    "4": 268,
    "5": 108,
    "6": 50
  },
  "1": {
    "1": 2648,
    "2": 1321,
    "3": 605,
    "4": 308,
    "5": 163,
    "6": 161
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   5
        |-> MONOBIT: Passou (X = 9853)
        |-> POKER: Passou (X = 24.428800000000592)
{
  "0000": 306,
  "0001": 322,
  "0010": 317,
  "0011": 295,
  "0100": 339,
  "0101": 340,
  "0110": 308,
  "0111": 274,
  "1000": 364,
  "1001": 308,
  "1010": 304,
  "1011": 304,
  "1100": 293,
  "1101": 290,
  "1110": 333,
  "1111": 303
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2489,
    "2": 1241,
    "3": 670,
    "4": 331,
    "5": 145,
    "6": 157
  },
  "1": {
    "1": 2609,
    "2": 1224,
    "3": 620,
    "4": 278,
    "5": 156,
    "6": 147
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   6
        |-> MONOBIT: Reprovou (X = 10761)
        |-> POKER: Reprovou (X = 346.9248000000007)
{
  "0001": 298,
  "0010": 327,
  "0011": 370,
  "0100": 308,
  "0101": 328,
  "0110": 336,
  "0111": 324,
  "1000": 340,
  "1001": 320,
  "1010": 340,
  "1011": 332,
  "1100": 348,
  "1101": 336,
  "1110": 344,
  "1111": 349
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2757,
    "2": 1376,
    "3": 733,
    "4": 238,
    "5": 94,
    "6": 18
  },
  "1": {
    "1": 2529,
    "2": 1295,
    "3": 655,
    "4": 354,
    "5": 200,
    "6": 183
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE   7
        |-> MONOBIT: Reprovou (X = 10677)
        |-> POKER: Reprovou (X = 355.4495999999999)
{
  "0001": 292,
  "0010": 356,
  "0011": 327,
  "0100": 298,
  "0101": 350,
  "0110": 344,
  "0111": 343,
  "1000": 365,
  "1001": 336,
  "1010": 340,
  "1011": 341,
  "1100": 311,
  "1101": 358,
  "1110": 332,
  "1111": 307
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2863,
    "2": 1346,
    "3": 721,
    "4": 272,
    "5": 77,
    "6": 22
  },
  "1": {
    "1": 2628,
    "2": 1314,
    "3": 675,
    "4": 352,
    "5": 181,
    "6": 150
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  8                                TESTANDO CHAVE  9
        |-> MONOBIT: Reprovou (X = 10578)                |-> MONOBIT: Reprovou (X = 10799)
        |-> POKER: Reprovou (X = 345.9200000000001)      |-> POKER: Reprovou (X = 348.1280000000006)
{                                                {
  "0001": 325,                                     "0001": 338,
  "0010": 351,                                     "0010": 308,
  "0011": 357,                                     "0011": 332,
  "0100": 354,                                     "0100": 311,
  "0101": 350,                                     "0101": 341,
  "0110": 317,                                     "0110": 351,
  "0111": 304,                                     "0111": 342,
  "1000": 348,                                     "1000": 296,
  "1001": 337,                                     "1001": 356,
  "1010": 316,                                     "1010": 314,
  "1011": 345,                                     "1011": 342,
  "1100": 323,                                     "1100": 350,
  "1101": 318,                                     "1101": 327,
  "1110": 321,                                     "1110": 343,
  "1111": 334                                      "1111": 349
}                                                }
        |-> RUNS: Reprovou                               |-> RUNS: Reprovou
{                                                {
  "0": {                                           "0": {
    "1": 2732,                                       "1": 2777,
    "2": 1410,                                       "2": 1417,
    "3": 724,                                        "3": 697,
    "4": 263,                                        "4": 237,
    "5": 99,                                         "5": 85,
    "6": 25                                          "6": 21
  },                                               },
  "1": {                                           "1": {
    "1": 2636,                                       "1": 2522,
    "2": 1322,                                       "2": 1330,
    "3": 612,                                        "3": 650,
    "4": 344,                                        "4": 370,
    "5": 161,                                        "5": 180,
    "6": 179                                         "6": 181
  }                                                }
}                                                }
        |-> LONG RUN: Passou                             |-> LONG RUN: Passou


TESTANDO CHAVE  10                               TESTANDO CHAVE  11
        |-> MONOBIT: Reprovou (X = 10685)                |-> MONOBIT: Passou (X = 10047)
        |-> POKER: Reprovou (X = 343.2384000000002)      |-> POKER: Passou (X = 19.539200000000164)
{                                                {
  "0001": 309,                                     "0000": 257,
  "0010": 333,                                     "0001": 308,
  "0011": 323,                                     "0010": 328,
  "0100": 321,                                     "0011": 305,
  "0101": 327,                                     "0100": 317,
  "0110": 362,                                     "0101": 319,
  "0111": 325,                                     "0110": 334,
  "1000": 345,                                     "0111": 307,
  "1001": 336,                                     "1000": 326,
  "1010": 347,                                     "1001": 319,
  "1011": 321,                                     "1010": 309,
  "1100": 334,                                     "1011": 306,
  "1101": 326,                                     "1100": 347,
  "1110": 361,                                     "1101": 288,
  "1111": 330                                      "1110": 321,
}                                                  "1111": 309
        |-> RUNS: Reprovou                       }
{                                                        |-> RUNS: Passou
  "0": {                                         {
    "1": 2771,                                     "0": {
    "2": 1415,                                       "1": 2476,
    "3": 693,                                        "2": 1285,
    "4": 283,                                        "3": 629,
    "5": 79,                                         "4": 328,
    "6": 18                                          "5": 160,
  },                                                 "6": 133
  "1": {                                           },
    "1": 2552,                                     "1": {
    "2": 1317,                                       "1": 2504,
    "3": 694,                                        "2": 1246,
    "4": 361,                                        "3": 635,
    "5": 184,                                        "4": 308,
    "6": 151                                         "5": 163,
  }                                                  "6": 156
}                                                  }
        |-> LONG RUN: Passou                     }
                                                         |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  12
        |-> MONOBIT: Passou (X = 10065)
        |-> POKER: Passou (X = 19.123199999999997)
{
  "0000": 282,
  "0001": 314,
  "0010": 307,
  "0011": 311,
  "0100": 309,
  "0101": 353,
  "0110": 314,
  "0111": 311,
  "1000": 296,
  "1001": 321,
  "1010": 329,
  "1011": 330,
  "1100": 294,
  "1101": 346,
  "1110": 298,
  "1111": 285
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2643,
    "2": 1265,
    "3": 614,
    "4": 301,
    "5": 155,
    "6": 135
  },
  "1": {
    "1": 2557,
    "2": 1323,
    "3": 636,
    "4": 323,
    "5": 133,
    "6": 141
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  13
        |-> MONOBIT: Passou (X = 9971)
        |-> POKER: Passou (X = 11.488000000000284)
{
  "0000": 295,
  "0001": 329,
  "0010": 321,
  "0011": 323,
  "0100": 326,
  "0101": 293,
  "0110": 315,
  "0111": 328,
  "1000": 308,
  "1001": 339,
  "1010": 297,
  "1011": 328,
  "1100": 302,
  "1101": 308,
  "1110": 295,
  "1111": 293
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2461,
    "2": 1306,
    "3": 630,
    "4": 302,
    "5": 157,
    "6": 150
  },
  "1": {
    "1": 2449,
    "2": 1294,
    "3": 664,
    "4": 322,
    "5": 138,
    "6": 140
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  14
        |-> MONOBIT: Passou (X = 10081)
        |-> POKER: Passou (X = 23.993599999999788)
{
  "0000": 286,
  "0001": 311,
  "0010": 325,
  "0011": 295,
  "0100": 308,
  "0101": 319,
  "0110": 334,
  "0111": 280,
  "1000": 331,
  "1001": 303,
  "1010": 278,
  "1011": 316,
  "1100": 310,
  "1101": 366,
  "1110": 310,
  "1111": 328
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2488,
    "2": 1253,
    "3": 634,
    "4": 341,
    "5": 131,
    "6": 145
  },
  "1": {
    "1": 2435,
    "2": 1307,
    "3": 609,
    "4": 330,
    "5": 150,
    "6": 162
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  15
        |-> MONOBIT: Passou (X = 9926)
        |-> POKER: Passou (X = 10.969600000000355)
{
  "0000": 337,
  "0001": 328,
  "0010": 327,
  "0011": 300,
  "0100": 295,
  "0101": 320,
  "0110": 292,
  "0111": 341,
  "1000": 314,
  "1001": 307,
  "1010": 314,
  "1011": 306,
  "1100": 309,
  "1101": 313,
  "1110": 290,
  "1111": 307
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2462,
    "2": 1221,
    "3": 600,
    "4": 329,
    "5": 163,
    "6": 178
  },
  "1": {
    "1": 2478,
    "2": 1249,
    "3": 615,
    "4": 302,
    "5": 143,
    "6": 166
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  16
        |-> MONOBIT: Passou (X = 10167)
        |-> POKER: Passou (X = 17.011199999999917)
{
  "0000": 293,
  "0001": 280,
  "0010": 303,
  "0011": 345,
  "0100": 314,
  "0101": 295,
  "0110": 327,
  "0111": 337,
  "1000": 293,
  "1001": 295,
  "1010": 327,
  "1011": 325,
  "1100": 300,
  "1101": 331,
  "1110": 320,
  "1111": 315
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2564,
    "2": 1215,
    "3": 602,
    "4": 312,
    "5": 152,
    "6": 148
  },
  "1": {
    "1": 2410,
    "2": 1298,
    "3": 624,
    "4": 340,
    "5": 156,
    "6": 165
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  17
        |-> MONOBIT: Reprovou (X = 10564)
        |-> POKER: Reprovou (X = 347.9360000000006)
{
  "0001": 352,
  "0010": 331,
  "0011": 299,
  "0100": 347,
  "0101": 328,
  "0110": 355,
  "0111": 343,
  "1000": 351,
  "1001": 339,
  "1010": 342,
  "1011": 295,
  "1100": 331,
  "1101": 324,
  "1110": 343,
  "1111": 320
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2726,
    "2": 1374,
    "3": 741,
    "4": 266,
    "5": 99,
    "6": 30
  },
  "1": {
    "1": 2634,
    "2": 1259,
    "3": 633,
    "4": 363,
    "5": 177,
    "6": 170
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  18
        |-> MONOBIT: Reprovou (X = 10593)
        |-> POKER: Reprovou (X = 349.71520000000055)
{
  "0000": 4,
  "0001": 366,
  "0010": 313,
  "0011": 379,
  "0100": 347,
  "0101": 303,
  "0110": 300,
  "0111": 322,
  "1000": 351,
  "1001": 324,
  "1010": 307,
  "1011": 324,
  "1100": 359,
  "1101": 337,
  "1110": 333,
  "1111": 331
}
        |-> RUNS: Reprovou
{
  "0": {
    "1": 2601,
    "2": 1370,
    "3": 778,
    "4": 271,
    "5": 97,
    "6": 25
  },
  "1": {
    "1": 2510,
    "2": 1253,
    "3": 663,
    "4": 331,
    "5": 202,
    "6": 182
  }
}
        |-> LONG RUN: Passou
```

```
TESTANDO CHAVE  19
        |-> MONOBIT: Passou (X = 10034)
        |-> POKER: Passou (X = 11.846400000000358)
{
  "0000": 297,
  "0001": 318,
  "0010": 307,
  "0011": 325,
  "0100": 299,
  "0101": 292,
  "0110": 330,
  "0111": 300,
  "1000": 326,
  "1001": 334,
  "1010": 305,
  "1011": 334,
  "1100": 317,
  "1101": 300,
  "1110": 288,
  "1111": 328
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2487,
    "2": 1261,
    "3": 607,
    "4": 297,
    "5": 182,
    "6": 151
  },
  "1": {
    "1": 2478,
    "2": 1260,
    "3": 605,
    "4": 305,
    "5": 184,
    "6": 153
  }
}
        |-> LONG RUN: Passou
```

- O output do teste runs foi formatado da seguinte maneira, onde 6 indica 6 ou mais ocorrencias)

```
TESTANDO CHAVE  19
        |-> MONOBIT: Passou (X = 10034)
        |-> POKER: Passou (X = 11.846400000000358)
{
  "0000": 297,
  "0001": 318,
  "0010": 307,
  "0011": 325,
  "0100": 299,
  "0101": 292,
  "0110": 330,
  "0111": 300,
  "1000": 326,
  "1001": 334,
  "1010": 305,
  "1011": 334,
  "1100": 317,
  "1101": 300,
  "1110": 288,
  "1111": 328
}
        |-> RUNS: Passou
{
  "0": {
    "1": 2487,
    "2": 1261,
    "3": 607,
    "4": 297,
    "5": 182,
    "6": 151
  },
  "1": {
    "1": 2478,
    "2": 1260,
    "3": 605,
    "4": 305,
    "5": 184,
    "6": 153
  }
}
        |-> LONG RUN: Passou
```

Bit

Número de ocorrencias desta quantidade de bits seguidos

Número ocorrencias consecutivas do bit