

gynimas2_final_final

December 12, 2022

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[ ]: # Marius Arlauskas MGDMI-0 LAB2 gynimas
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
[ ]: rez = []
for i in range(1, 84):
    rez.append((5 + i) % 83)

len(set(rez)) == 83 # Ar generatorius 5 sudetyje? Taip :)
```

[]: True

```
[ ]: rez = []
for i in range(1, 84):
    rez.append((5 * i) % 83)

len(set(rez)) == 83 # Ar generatorius 5 daugyboje? Taip :)
```

[]: True

```
[ ]: rez = []
for i in range(1, 84):
    rez.append((14 * i) % 83)

len(set(rez)) == 83 # Ar generatorius 14 daugyboje? Taip :) <----  
↪ papildomas generatorius
```

[]: True

```
[ ]: # generate sum table
sum_table = []
for i in range(1, 84):
    for j in range(1, 84):
        sum_table.append((i + j) % 83)

# generate product table
```

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prod_table = []
for i in range(1, 84):
    for j in range(1, 84):
        prod_table.append((i * j) % 83)

# reshape to 83x83
sum_table = np.array(sum_table).reshape(83, 83)
prod_table = np.array(prod_table).reshape(83, 83)

# table to df
sum_df = pd.DataFrame(sum_table)
prod_df = pd.DataFrame(prod_table)

```

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[ ]: sum_df.to_csv('sum_table.csv', index=False)
prod_df.to_csv('prod_table.csv', index=False)

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[ ]:
    0  1  2  3  4  5  6  7  8  9  ... 73 74 75 76 77 78 79 \
0   2  3  4  5  6  7  8  9 10 11  ... 75 76 77 78 79 80 81
1   3  4  5  6  7  8  9 10 11 12  ... 76 77 78 79 80 81 82
2   4  5  6  7  8  9 10 11 12 13  ... 77 78 79 80 81 82  0
3   5  6  7  8  9 10 11 12 13 14  ... 78 79 80 81 82  0  1
4   6  7  8  9 10 11 12 13 14 15  ... 79 80 81 82  0  1  2
..  ..  ..  ..  ..  ..  ..  ..  ..  ..  ... ..  ..  ..  ..  ..  ..
78 80 81 82  0  1  2  3  4  5  6  ... 70 71 72 73 74 75 76
79 81 82  0  1  2  3  4  5  6  7  ... 71 72 73 74 75 76 77
80 82  0  1  2  3  4  5  6  7  8  ... 72 73 74 75 76 77 78
81  0  1  2  3  4  5  6  7  8  9  ... 73 74 75 76 77 78 79
82  1  2  3  4  5  6  7  8  9 10  ... 74 75 76 77 78 79 80

```

```

    80 81 82
0   82  0  1
1    0  1  2
2    1  2  3
3    2  3  4
4    3  4  5
..  ..  ..  ..
78 77 78 79
79 78 79 80
80 79 80 81
81 80 81 82
82 81 82  0

```

[83 rows x 83 columns]

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[ ]: # find inverse of 17
for i in range(1, 84):
    if (17 * i) % 83 == 1:

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print(i) # 51
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44

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[ ]: # find inverse of 21
for i in range(1, 84):
    if (21 * i) % 83 == 1:
        print(i) # 4
```

4

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[ ]: # find opposite of 17
for i in range(1, 84):
    if (17 + i) % 83 == 0:
        print(i) # 66
```

66

```
[ ]: # find opposite of 21
for i in range(1, 84):
    if (21 + i) % 83 == 0:
        print(i) # 62
```

62

```
[ ]:
```