

Configuration Manual

MSc Research Project
Anti-CSRF Token Using Linear Congruential Generator

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MSc Project Submission Sheet



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MSc Research Project

Module:

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Anti-CSRF Token Using Linear Congruential Generator

Project Title:

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09/08/2023

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1 Installation

Install Python, Pycharm and MySQL Work bench

Python: <https://www.python.org/downloads/>

Pycharm : <https://www.jetbrains.com/pycharm/download/?section=windows>

MySQL Work bench: <https://dev.mysql.com/downloads/windows/installer/8.0.html>

2 Import Files

Step 1: Download the Project Files Named: Thesis, Final_Analysis.py and Output_file.sql

Step 2: Open MySQL work bench, Connect to the database server and Click on Import the Output_file.sql

Step 3: Open Pycharm , File >> Open >> and navigate to the file name Output_File and load the data_user.sql

Step 4: Open Pycharm , File >> Open >> and navigate to the file name Thesis and Load it

3 Setup Database And Install Python Packages

Step 1: Open Project name Final_Thesis in PyCharm and in that there is a file name App.py. Install all the modules used in program.

Step 3: In the app.py replace the Database Details with your username and password

```
db_config = {  
    'host': '127.0.0.1',  
    'user': 'root',  
    'passwd': 'Abg1298$',  
    'db': 'data_user',  
}
```

Step 2: Open the Project name Statistical_Test and Open the Final_Analysis.py Install all the modules used in program.

4 Run Final_Analysis.py

Step1: Lets run the Final_Analysis.py first

Step2: Once Running, it will ask the number of Numbers you want to generate, type any number & hit enter.

```
Run: Final_Analysis (1)
C:\Users\HP\PycharmProjects\Thesis\venv\Scripts\python.exe C:/Users/HP/PycharmProjects/Thesis/Final_Analysis.py
Enter the number of CSRF numbers you want to generate: 100
```

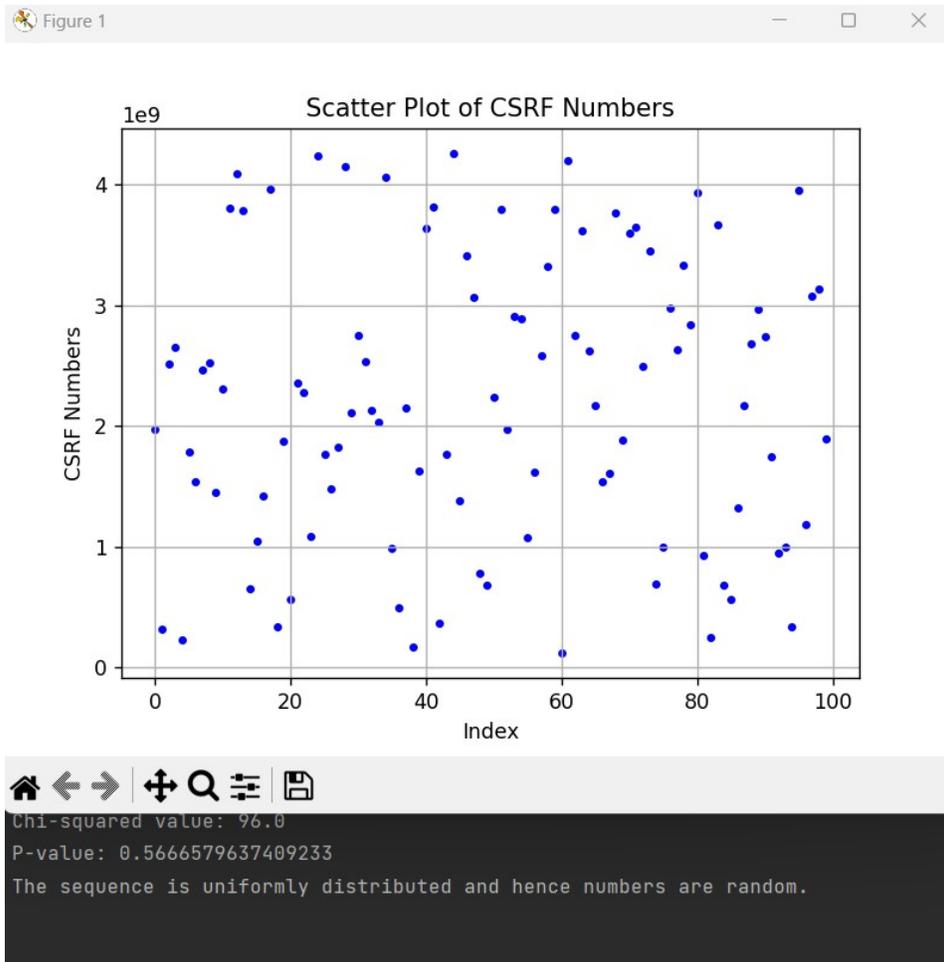
Step 3: if you are running the program for the first time it will give you this below output

```
Final_Analysis
C:\Users\HP\PycharmProjects\Thesis\venv\Scripts\python.exe C:/Users/HP/PycharmProjects/Statistical_Test/Final_Analysis.py
Enter the number of CSRF numbers you want to generate: 100
LCG-generated Numbers using HMAC_DRBG: [441300805, 2016262165, 1138042148, 1986069151, 2566819082, 722949141, 341549932, 1478887892, 3837599802, 4049924881, 296251087, 97825272,
CSRF numbers saved to Excel file: CSRF_Numbers.xlsx
No previous CSRF numbers found. Please run the program again to perform statistical tests.

Process finished with exit code 0
```

Step 4: Run the program again and type the number of CSRF Numbers to generated. Now You will see a scatter Plot for the generated numbers

NOTE: For accurate results please use same numbers to be generated, say as per my screen shot I have used 100 CSRF numbers to be generated. So you choose the numbers you want to generate, but make sure to type same number you typed on first time when you executed the program



Step 4: Close the Scatter Plot. Once Closing the scatter plot, programm runs further to generate statistical Test of the generated numbers as shown below in the figure. This generated numbers and statistical Test automatically both would be saved in Excell Sheet where the Final_Analysis.py is located. The excell sheet further could be utilized to do Data Analysis Purpose.

```

Statistical Tests Results:
      Test      Statistic    P-value  Result
0   Auto-Correlation Test (Lag 1)  -0.028514  0.977252  Pass
1   Auto-Correlation Test (Lag 2)  -0.103093  0.917890  Pass
2   Auto-Correlation Test (Lag 3)  -0.006522  0.994797  Pass
3   Auto-Correlation Test (Lag 4)  -0.079522  0.936617  Pass
4   Auto-Correlation Test (Lag 5)  -0.057034  0.954518  Pass
5           Gap Test      0.000000  1.000000  Pass
6           Chi-squared Test  96.000000  0.566658  Pass
7   Serial Overlapping Patterns Test  0.000000  1.000000  Pass
CSRF numbers and Test Results saved to Excel file: CSRF_Numbers_20230809_115852.xlsx
Serial Overlapping Patterns Test Results:
Pattern: 1010100111
Number of overlapping occurrences in the sequence: 0
Critical value (Chi-squared): 114.26786767719355
The sequence appears to be randomly generated.

```

5 Run App.py

Step 1: Open the Project Name Thesis and run the app.py

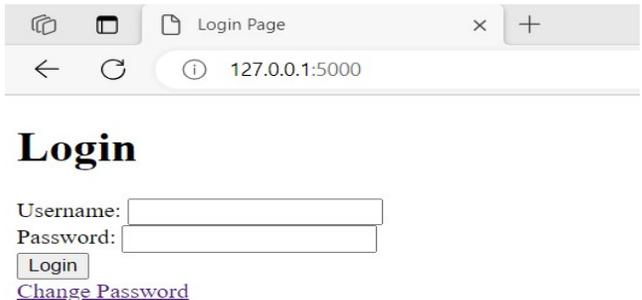
Step 2: Click on link in the output

```

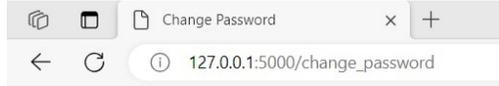
C:\Users\HP\PycharmProjects\ThesisTest2\venv\Scripts\python.exe C:/Users/HP/PycharmProjects/ThesisTest2/app.py
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 108-046-707

```

Step 3: The CSRF TOKEN is enabled only on the change password page hence click on change password.



Step 4: If the wrong old password is used then the Token the new token would be generated. If the password is not changed within 30 seconds, the token expires and takes back to login screen.



Change Password

CSRF Token is expired. Please try again.

Username:
Old Password:
New Password:

CSRF Token: }qMsQ4opp4EkpO=E

Time remaining: 15 seconds