Project Thor

Team Members:
Adonay Pichardo
Jared Blanco
Josh Temel
Luke Bonenberger

Faculty Advisor:
Dr. Sid Bhattacharyya

Client:
Dr. Amitabh Nag

Google Slides

FLORIDA TECH

Milestone 3 Task Matrix

Task	Adonay	Jared	Josh	Luke
1. Update demos	25%	25%	25%	25%
2. Update Documentation	Read & Review	Read & Review	100%	Read & Review
3. Add Content to the Web App (About, Generate Key, Learn more)	Read & Review	Read & Review	75%	25%
4. Full functionality to Generate Key button (Strike info, md5)	50%	Offer help / troubleshoot	Offer help / troubleshoot	50%
5. Fix Webhook bug	Offer help / troubleshoot	Offer help / troubleshoot	100%	Offer help / troubleshoot
6. Create website domain name	Offer help / troubleshoot	Offer help / troubleshoot	Offer help / troubleshoot	100%
7. Create LinkedIn Profiles and link to Web App Team page	25%	25%	25%	25%

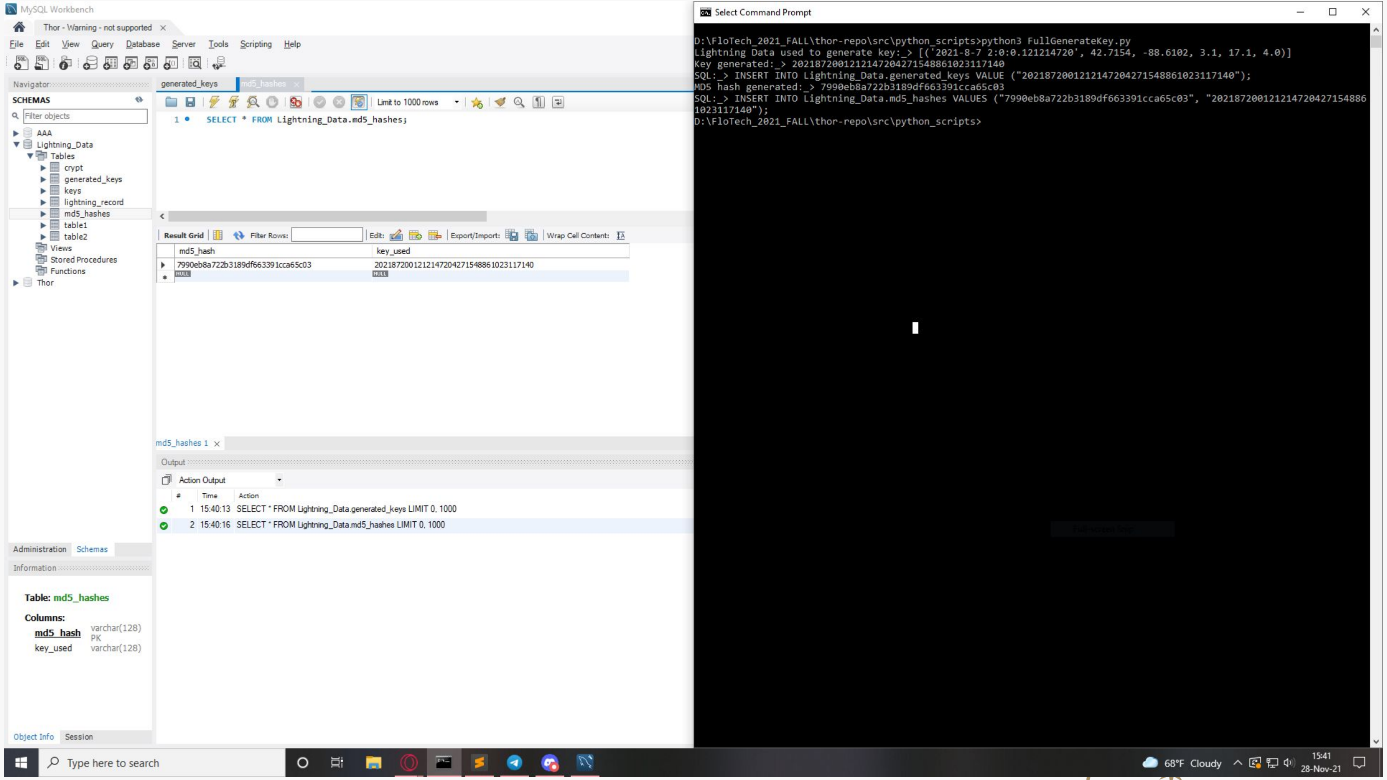
Milestone 3 Task Matrix

8. Automation that stores all generated numbers in database	50%	50%	Offer help / troubleshoot	Offer help / troubleshoot
9. Create documentation explaining the generation of key	Offer help / troubleshoot	50%	50%	Offer help / troubleshoot
10. Generate key from database, insert key into database, MD5 hash, display MD5 hash on website	50%	Offer help / troubleshoot	Offer help / troubleshoot	50%

Demos

1. Live Web Application
2. Full Key Generation
3. Current Data Entropy

Demo 2: Full Key Generation



```
1 ● SELECT * FROM Lightning_Data.md5_hashes;
```

	md5_hash	key_used
▶	7990eb8a722b3189df663391cca65c03	2021872001212147204271548861023117140
*	NULL	NULL

#	Time	Action
1	15:40:13	SELECT * FROM Lightning_Data.generated_keys LIMIT 0, 1000
2	15:40:16	SELECT * FROM Lightning_Data.md5_hashes LIMIT 0, 1000

Table: md5_hashes

Columns:

md5_hash	varchar(128) PK
key_used	varchar(128)

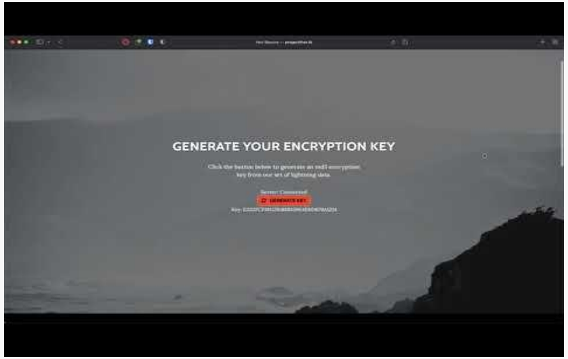
```
D:\FloTech_2021_FALL\thor-repo\src\python_scripts>python3 FullGenerateKey.py
Lightning Data used to generate key:_> [('2021-8-7 2:0:0.121214720', 42.7154, -88.6102, 3.1, 17.1, 4.0)]
Key generated:_> 2021872001212147204271548861023117140
SQL:_> INSERT INTO Lightning_Data.generated_keys VALUE ("2021872001212147204271548861023117140");
MD5 hash generated:_> 7990eb8a722b3189df663391cca65c03
SQL:_> INSERT INTO Lightning_Data.md5_hashes VALUES ("7990eb8a722b3189df663391cca65c03", "202187200121214720427154886
1023117140");
D:\FloTech_2021_FALL\thor-repo\src\python_scripts>
```

Current Technical Challenges

- Removing lightning data used to generate a key so as to avoid regenerating the same key.
- Measuring entropy of dataset
    - Understanding & Selecting Dieharder tests for our data set
    - Exporting our data in a format acceptable to the test suite
- Creating interactive features of website for key attributes
- Fixing Webhooks bug
- Displaying data used for our encryption so it is visually engaging to the user

Demo 1: Live Web Application

1. Live Web Application



GENERATE YOUR ENCRYPTION KEY

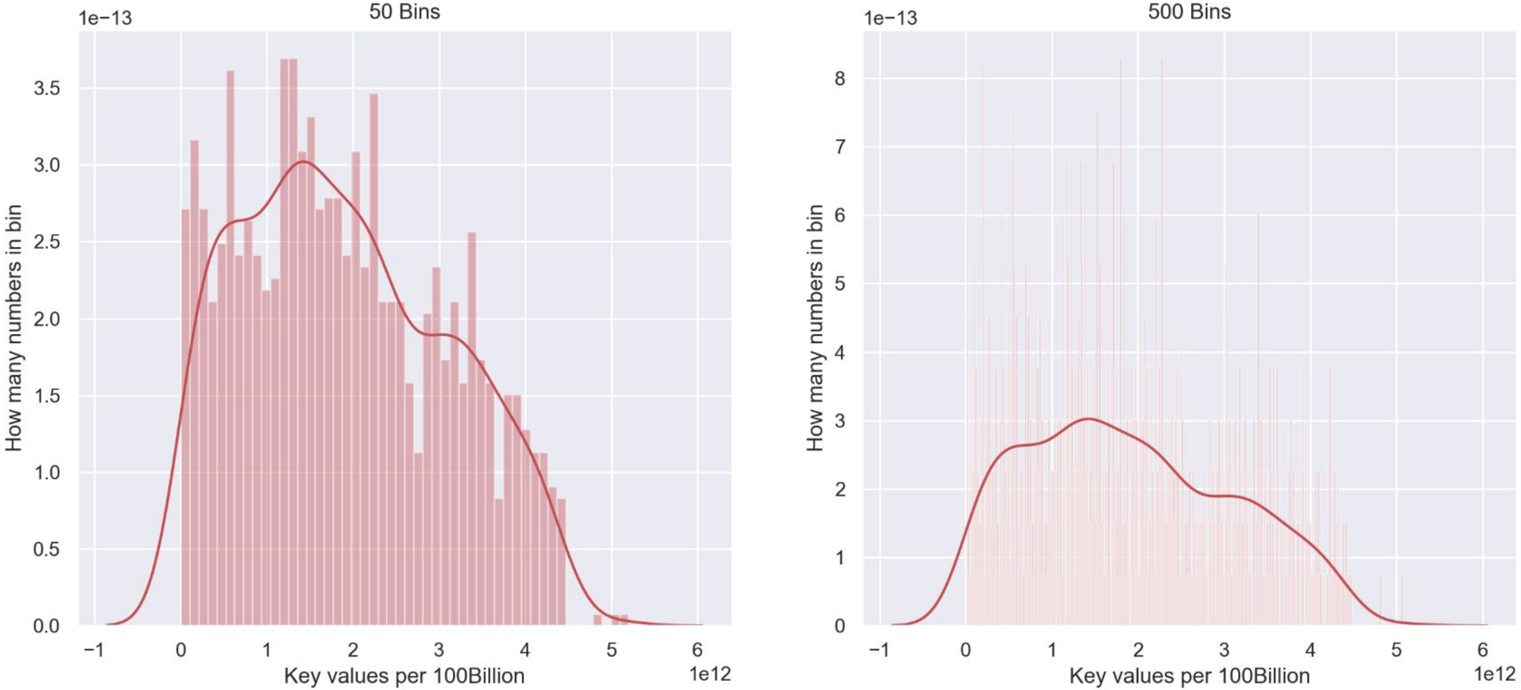
Click the button below to generate an md5 encryption key from our set of lightning data.

Server: Connected

Key: [illegible]

Demo 1 video

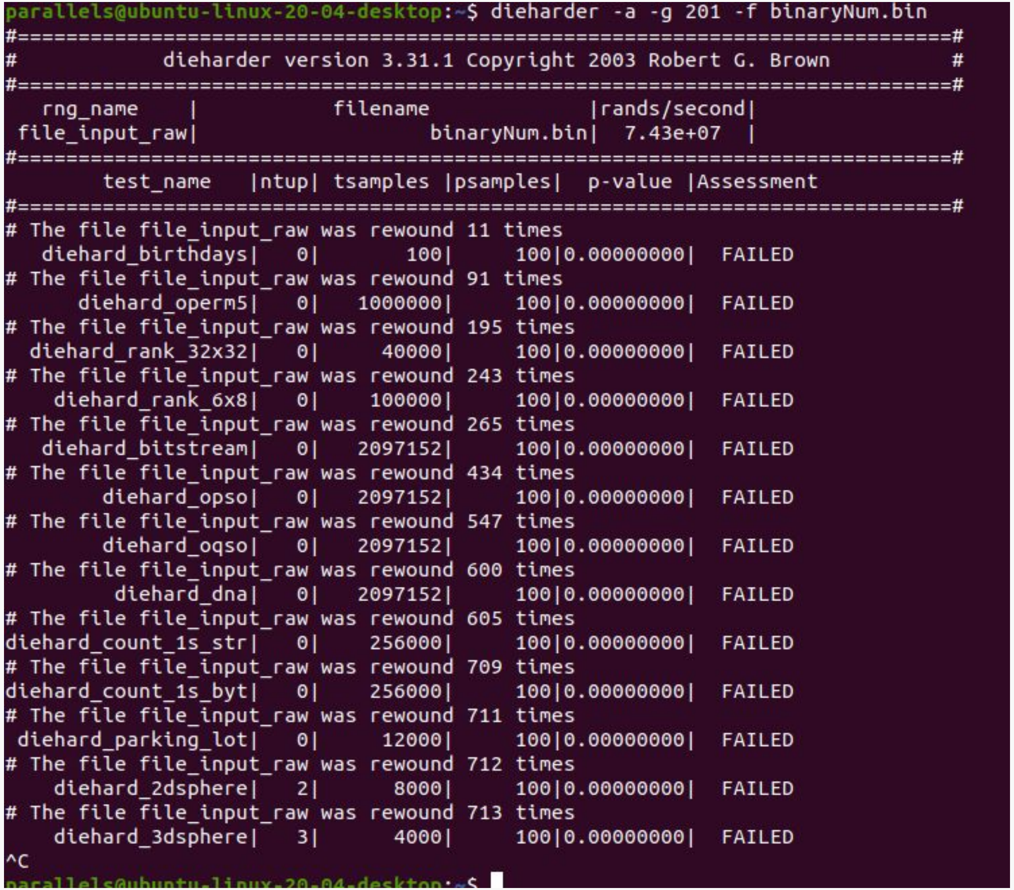
Demo 3- Milestone 2 vs Milestone 3



Demo 3: Data Analysis

Problems To Solve:

- Need more data
- Importing data file
- Understand test results



```
parallels@ubuntu-linux-20-04-desktop:~$ dieharder -a -g 201 -f binaryNum.bin
#=============================================================================#
#            dieharder version 3.31.1 Copyright 2003 Robert G. Brown          #
#=============================================================================#
   rng_name    |           filename             |rands/second|
 file_input_raw|                   binaryNum.bin|  7.43e+07  |
#=============================================================================#
        test_name   |ntup| tsamples |psamples|  p-value |Assessment
#=============================================================================#
# The file file_input_raw was rewound 11 times
   diehard_birthdays|   0|       100|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 91 times
      diehard_operm5|   0|   1000000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 195 times
  diehard_rank_32x32|   0|     40000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 243 times
    diehard_rank_6x8|   0|    100000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 265 times
   diehard_bitstream|   0|   2097152|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 434 times
        diehard_opso|   0|   2097152|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 547 times
        diehard_oqso|   0|   2097152|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 600 times
         diehard_dna|   0|   2097152|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 605 times
diehard_count_1s_str|   0|    256000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 709 times
diehard_count_1s_byt|   0|    256000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 711 times
 diehard_parking_lot|   0|     12000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 712 times
    diehard_2dsphere|   2|      8000|     100|0.00000000|  FAILED
# The file file_input_raw was rewound 713 times
    diehard_3dsphere|   3|      4000|     100|0.00000000|  FAILED
^C
parallels@ubuntu-linux-20-04-desktop:~$
```

Questions