

Milestone 4 Task Matrix Progress

| Task | Adonay | Jared | Josh | Luke |
|---|--------|-------|------|------|
| Update Demos | 20% | | | 80% |
| Update documentation | | | 100% | |
| Draft Problem web page | | | 95% | |
| Solution web page | | | 10% | |
| Find and implement better ways of combining the data fields | | 100% | | |
| Detailed test plan | 100% | | | |
| Store keys in Database | 50% | 50% | | |
| Log used combinations and display to webpage | 100% | | | |
| Display key and encryption algorithm used | 50% | | | 50% |
| Handshake scripts with web application | | | | 100% |

Demos

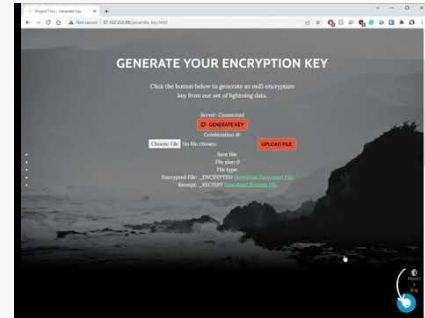
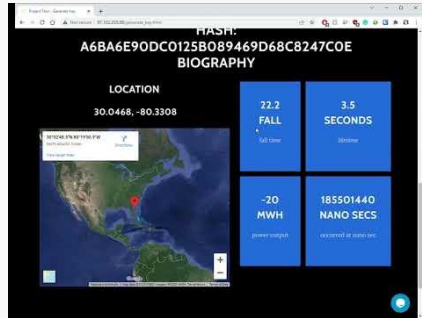
1. [Live Web Application](#)

2. generateKey.py, Database updated
link: [_> https://youtu.be/_bYX-QZw6aA](https://youtu.be/_bYX-QZw6aA)

3. encryptUserFile.py, local directory updated
link: [_> https://youtu.be/uEr4uEO7Yng](https://youtu.be/uEr4uEO7Yng)

Demo 1: Live Web Application

1. Live Web Application



Key Generation/File upload & Bug Report feature

Demo 2: generateKey.py

```
Command Prompt - python3 keyGenerator.py
INSERT INTO Lightning_Data.combinations VALUES (921781104,'2021-8-7 2:0:17',126831104,32.365,-112.1,3.6,3.5,9.0);
INSERT INTO Lightning_Data.combinations VALUES (990966528,'2021-8-7 2:0:17',135068928,32.3865,-112.0326,4.2,10.3,-6.0);
INSERT INTO Lightning_Data.combinations VALUES (1352408900,'2021-8-7 2:0:17',1461760,43.4873,-101.4319,6.7,31.4,35.0);
INSERT INTO Lightning_Data.combinations VALUES (999644712,'2021-8-7 2:0:17',163283712,43.4983,-101.458,3.0,25.4,7.0);
INSERT INTO Lightning_Data.combinations VALUES (1007627400,'2021-8-7 2:0:17',16376320,44.2029,-101.8352,3.0,3.5,3.0);
INSERT INTO Lightning_Data.combinations VALUES (1766857000,'2021-8-7 2:0:17',1936640,41.4264,-86.8929,2.9,31.1,-14.0);
INSERT INTO Lightning_Data.combinations VALUES (914843096,'2021-8-7 2:0:17',209168896,32.3583,-112.0912,2.7,25.9,-17.0);
INSERT INTO Lightning_Data.combinations VALUES (981905244,'2021-8-7 2:0:17',236236544,32.3577,-112.0917,3.1,22.6,-12.0);
INSERT INTO Lightning_Data.combinations VALUES (1709756192,'2021-8-7 2:0:17',239816192,42.8847,-89.1093,1.5,3.9,5.0);
INSERT INTO Lightning_Data.combinations VALUES (1547077364,'2021-8-7 2:0:17',251166464,44.3788,-102.1229,7.5,39.1,-7.0);
INSERT INTO Lightning_Data.combinations VALUES (1177194176,'2021-8-7 2:0:17',284952576,26.372,-108.5216,5.2,17.7,-22.0);
INSERT INTO Lightning_Data.combinations VALUES (1044345164,'2021-8-7 2:0:17',358667264,32.3587,-112.0909,2.5,21.9,-9.0);
INSERT INTO Lightning_Data.combinations VALUES (1146900724,'2021-8-7 2:0:17',502797824,43.7526,-101.5769,10.5,2.5,7.0);
INSERT INTO Lightning_Data.combinations VALUES (1154444220,'2021-8-7 2:0:17',50380032,40.8879,-101.7649,14.8,6.8,-5.0);
INSERT INTO Lightning_Data.combinations VALUES (2005435200,'2021-8-7 2:0:17',5217536,44.1898,-101.7836,9.4,1.9,-8.0);
INSERT INTO Lightning_Data.combinations VALUES (1368950584,'2021-8-7 2:0:17',708925184,43.7382,-101.6434,12.1,3.4,5.0);
INSERT INTO Lightning_Data.combinations VALUES (1452718976,'2021-8-7 2:0:17',75707776,43.3621,-101.3902,1.6,2.2,3.0);
INSERT INTO Lightning_Data.combinations VALUES (2550654782,'2021-8-7 2:0:17',778230784,42.7349,-88.5075,4.6,2.5,5.0);
INSERT INTO Lightning_Data.combinations VALUES (1921385112,'2021-8-7 2:0:17',778861312,40.007,-101.5538,6.4,16.3,-3.0);
INSERT INTO Lightning_Data.combinations VALUES (2627806928,'2021-8-7 2:0:17',795388928,42.7359,-88.5059,5.2,2.1,6.0);
INSERT INTO Lightning_Data.combinations VALUES (2708967591,'2021-8-7 2:0:17',836590592,42.733,-88.5047,5.6,2.2,6.0);
INSERT INTO Lightning_Data.combinations VALUES (1698862832,'2021-8-7 2:0:17',848671232,43.765,-101.7116,3.1,5.1,-5.0);
INSERT INTO Lightning_Data.combinations VALUES (2768585304,'2021-8-7 2:0:17',85162304,42.7327,-88.5096,6.0,2.2,3.0);
INSERT INTO Lightning_Data.combinations VALUES (2808725576,'2021-8-7 2:0:17',86299576,42.7358,-88.5071,6.3,2.6,8.0);
INSERT INTO Lightning_Data.combinations VALUES (2752641088,'2021-8-7 2:0:17',880217088,42.7373,-88.5051,5.6,2.2,6.0);
INSERT INTO Lightning_Data.combinations VALUES (3096484824,'2021-8-7 2:0:17',904077824,42.7328,-88.5079,8.0,4.8,6.0);
INSERT INTO Lightning_Data.combinations VALUES (3210991664,'2021-8-7 2:0:17',918673664,42.7416,-88.4902,9.8,1.8,3.0);
INSERT INTO Lightning_Data.combinations VALUES (2936087799,'2021-8-7 2:0:17',943660800,42.7386,-88.5041,6.0,2.1,5.0);
INSERT INTO Lightning_Data.combinations VALUES (749331912,'2021-8-7 2:0:18',139014912,39.6021,-102.296,11.2,4.1,-5.0);
INSERT INTO Lightning_Data.combinations VALUES (1174704368,'2021-8-7 2:0:18',184768768,40.4647,-105.2886,4.8,1.9,3.0);
INSERT INTO Lightning_Data.combinations VALUES (876623300,'2021-8-7 2:0:18',233670400,34.2566,-109.3869,19.1,3.2,7.0);
INSERT INTO Lightning_Data.combinations VALUES (908140236,'2021-8-7 2:0:18',236193536,34.2558,-109.3887,2.2,4.1,6.0);
```

The screenshot shows the MySQL Workbench interface. The top window displays a query: `SELECT * FROM Lightning_Data.permutations;`. The left sidebar shows the database schema with tables like `combinations`, `generated_keys`, `keys`, `keys_used`, `lightning_record`, `md5_hashes`, and `permutations`. The main area shows the 'Result Grid' with a list of permutation IDs. A blue bracket highlights a range of these IDs. Below the grid, the 'Action Output' table shows the execution details:

| Action | Time | Action | Message | Duration / Feat |
|--------|----------|--|---------|-----------------------|
| 1 | 07:57:13 | SELECT * FROM Lightning_Data.permutations LIMIT 0 row(s) returned | | 0.022 sec / 0.000 sec |
| 2 | 07:57:28 | SELECT * FROM Lightning_Data.permutations LIMIT 1000 row(s) returned | | 0.031 sec / 0.016 sec |

Demo 3: encryptUserFile.py

The screenshot displays two windows side-by-side on a Windows desktop. The left window is a Command Prompt, and the right window is MySQL Workbench.

Command Prompt Output:

```
D:\VloTech_2021_FALL\thor-repo\src\python_scripts>dir ..\..\uploads
Volume in drive D is HDD
Volume Serial Number is D2DB-6CD1

Directory of D:\VloTech_2021_FALL\thor-repo\uploads
14-Feb-22 08:07 <DIR>          .
14-Feb-22 08:07 <DIR>          ..
14-Feb-22 07:35                75 sampleUpload.txt
14-Feb-22 08:07                1 File(s)              75 bytes
                           2 Dir(s)            283,567,722,496 bytes free

D:\VloTech_2021_FALL\thor-repo\src\python_scripts>python3 encryptUserFile.py sampleUpload.txt
1007627400

more fake data to test the AES encryption, this is a super secret message

D:\VloTech_2021_FALL\thor-repo\src\python_scripts>dir ..\..\uploads
Volume in drive D is HDD
Volume Serial Number is D2DB-6CD1

Directory of D:\VloTech_2021_FALL\thor-repo\uploads
14-Feb-22 08:07 <DIR>          .
14-Feb-22 08:07 <DIR>          ..
14-Feb-22 07:35                75 sampleUpload.txt
14-Feb-22 08:07                106 sampleUpload.txt_ENCRYPTED
14-Feb-22 08:07                68 sampleUpload.txt_RECEIPT
14-Feb-22 08:07                3 File(s)              249 bytes
                           2 Dir(s)            283,560,677,376 bytes free

D:\VloTech_2021_FALL\thor-repo\src\python_scripts>type ..\..\uploads\sampleUpload.txt
more fake data to test the AES encryption, this is a super secret message

D:\VloTech_2021_FALL\thor-repo\src\python_scripts>type ..\..\uploads\sampleUpload.txt_ENCRYPTED
+-----+-----+
D:\VloTech_2021_FALL\thor-repo\src\python_scripts>type ..\..\uploads\sampleUpload.txt_RECEIPT
File: -> sampleUpload.txt
Encryption -> AES
Key: -> 1007627400100762

D:\VloTech_2021_FALL\thor-repo\src\python_scripts>
```

MySQL Workbench Output:

The MySQL Workbench interface shows a query window with the following SQL query:

```
SELECT * FROM Lightning_Data.keys_used;
```

The result grid displays the following data:

| used_key |
|------------------|
| 1007627400100762 |

The Action Output window shows the following message:

```
1 08:07:45 SELECT * FROM Lightning_Data.keys_used LIMIT 0. 1 row(s) returned 0.015 sec / 0.000 sec
```

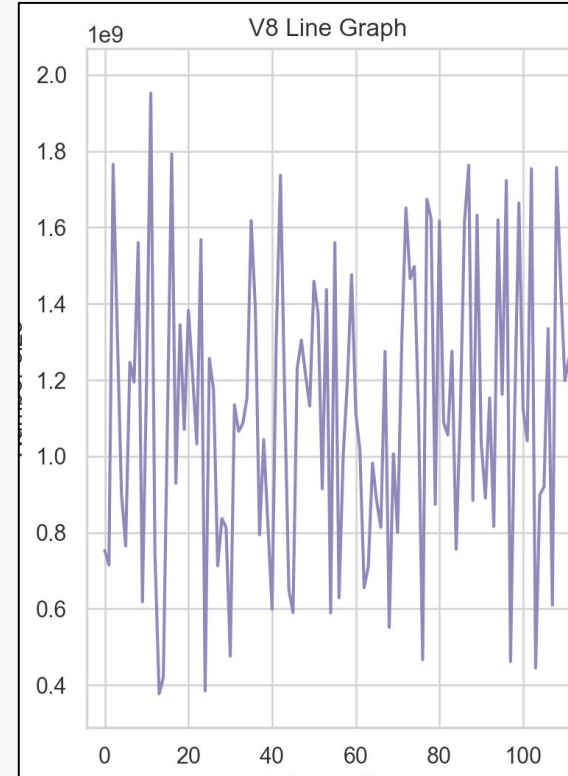
The table information for the result set is:

Table: keys_used
Columns: used_key varchar(256)

Demo 4- New Random Key Generation Feature

- Iterative no longer a problem
 - Used for addressing repeating values
- Highest Entropy Level to date
 - Now at .9906
- Can produce larger than N key values
 - No longer limited to 1 key per lighting strike

| Lon | Lat | NanoSecond | ect |
|-----|-----|------------|-----|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Current Technical Challenges

- Measuring entropy of dataset
 - Exporting our data in a format acceptable to the test suite
- Creating interactive features of website for key attributes
- Handshake between scripts and web application visual representation

Meetings

- Faculty Advisor
 - Feb 14th, 2022
 - Feedback on Milestone 4
 - Next Meeting:
 - 3rd week in March
- Client
 - Verbally planned 2/14/2022 for 3rd week in march

Milestone 5

| Task | Adonay | Jared | Josh | Luke |
|--|--------|-------|------|------|
| Update Demos | 25% | 25% | 25% | 25% |
| Update documentation | 25% | 25% | 25% | 25% |
| Finish writing solution explanation and add to web app | 0% | 0% | 50% | 50% |
| Create draft of data explanation | 100% | 0% | 0% | 0% |
| Finish getting metrics on the data in its various forms | 0% | 100% | 0% | 0% |
| Begin performing requirement and verification testing as specified in the test doc | 50% | 50% | 0% | 0% |
| Analyze the results of the web app testing as bug reports arrive. | 50% | | | 50% |
| Finalize web app and script handshake | | | | 100% |

Web Application Testing

- Bug Report Submissions Accepted beginning 2/16/22
- Review web application test plan doc for rules and instructions
- Bug Reports submission to end with milestone 5 deadline

<https://docs.google.com/document/d/1W7JlarBkfFLAL0e7bBjYfP6f5UhCMRji4oEi9vS-4V4/edit?usp=sharing>

Questions

Demo 3- Milestone 2 vs Milestone 3

