Project Thor

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Milestone 1 Task Matrix

Task	Progress	Adonay	Jared	Josh	Luke	To Do
1. Compare and select technical tools	100%	30%	10%	30%	30%	None
2. “Hello world” demos	100%	Small presentation showing the entropy found thus far	Small presentation showing the entropy found thus far	Entering raw data to database	Showing connection from website to database working	None
3. Resolve technical challenges	55%	5%	15%	10%	25%	Continue exploring the data set and setting up the web application
4. Compare and select collaboration tools	100%	25%	25%	25%	25%	None
5. Requirement document	100%	Wrote 25%	Wrote 25%	Wrote 25%	Wrote 25%	None
6. Design document	100%	Review & Proofread	Wrote 10% Review & Proofread	Wrote 50%	Wrote 40%	None
7. Test plan	100%	Wrote 15%	Wrote 20% Review & Proofread	Wrote 30%	Wrote 35%	None

Task 1: Select Tools

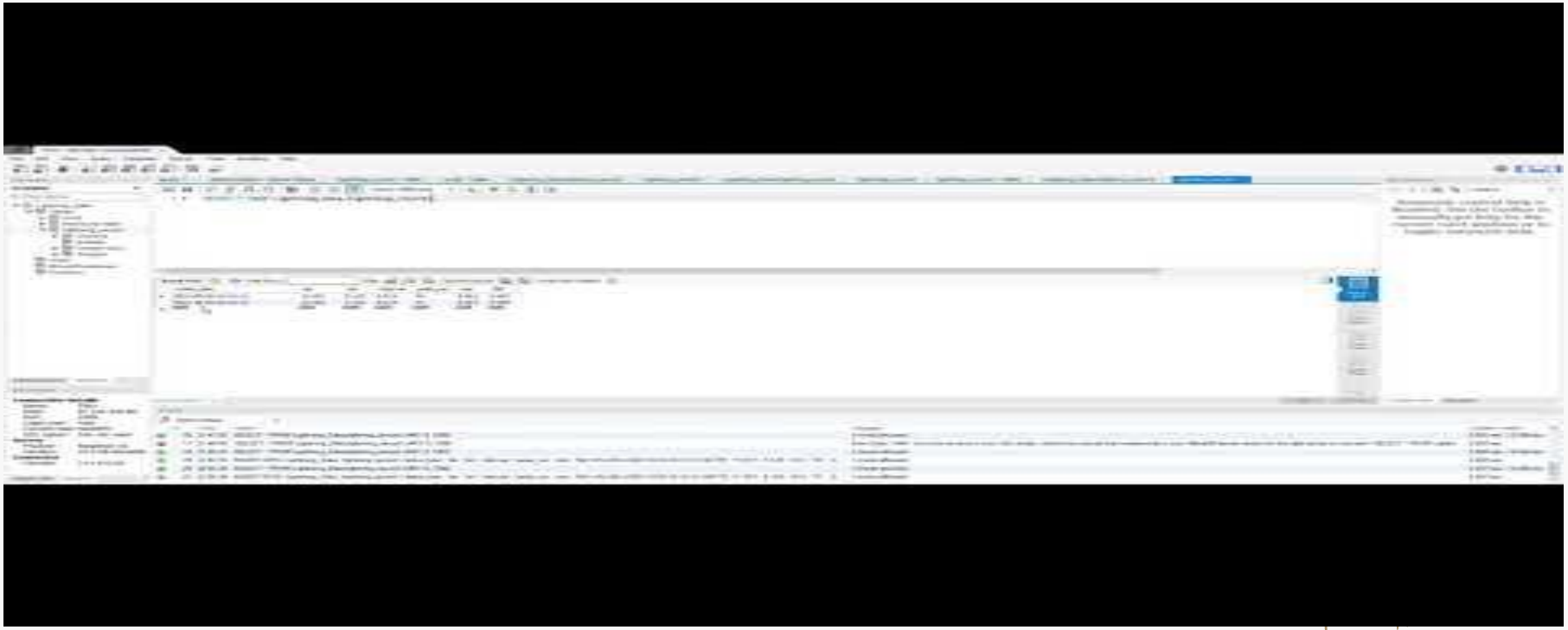
- Backend
  - Local Raspberry Pi server, PHP
- Frontend
  - Ajax, with PHP, HTML, CSS, JavaScript
- Database
  - mySQL
- Algorithm
  - MD5

Task 2: Demos

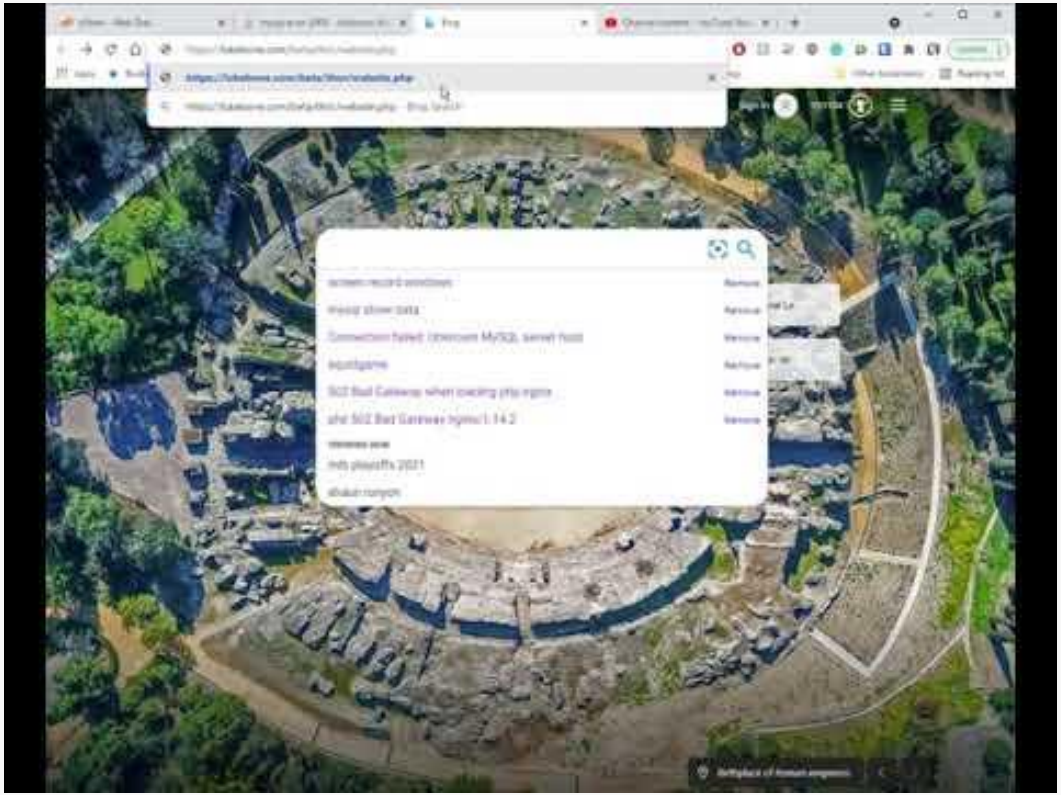
- 3 demos
  1. Importing raw data to database
  2. Display data from database on website
  3. Explore entropy of dataset

Demo 1: Database Input

Enter 1 lightning strike record into database



Demo 2: Web App



Get 1 entry from database

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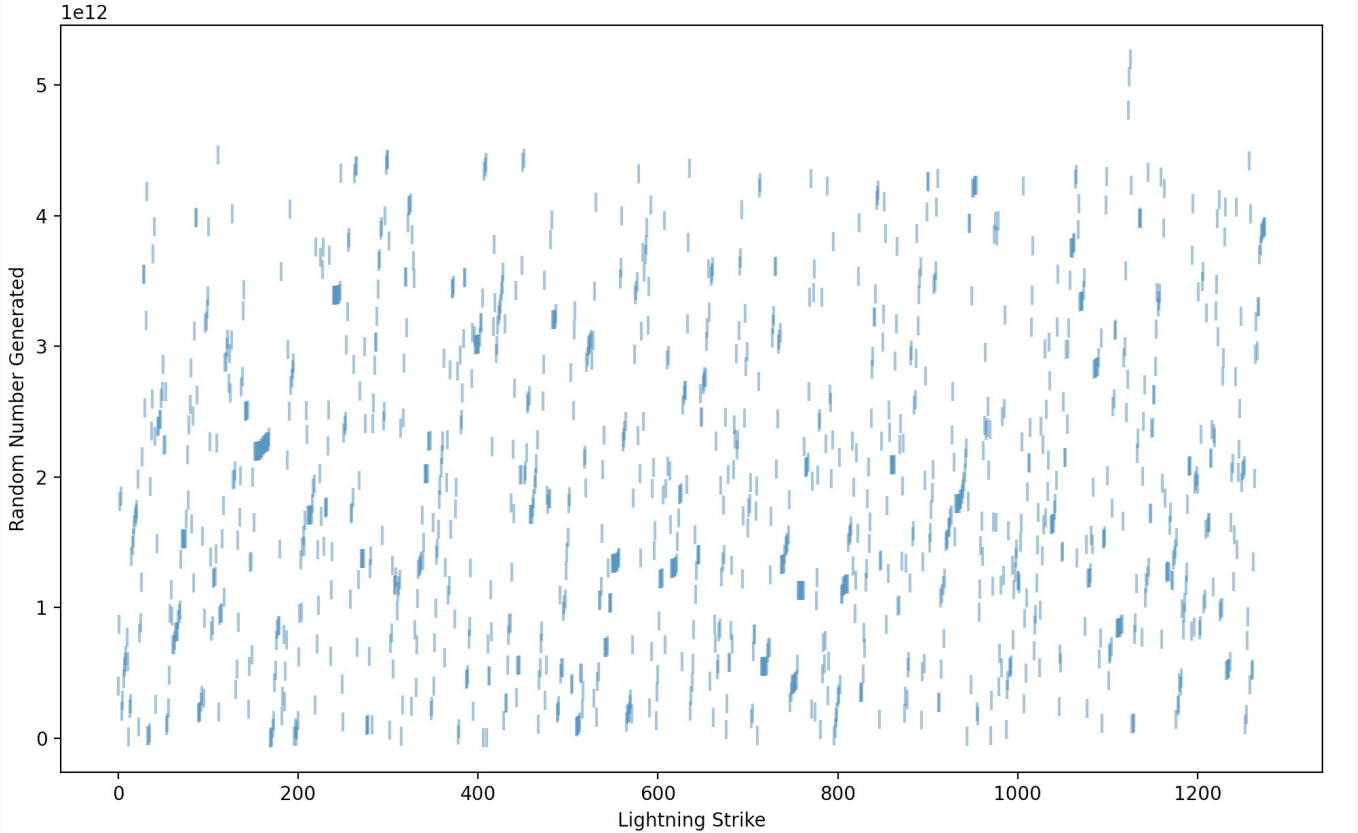
Demo 3- Number Generated vs Strike Number



Steps made to prove entropy

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Task 3: Resolve Technical Challenges

- Creating server
  - We setup a Raspberry Pi to host server
- Setting up database
  - We resolved this problem by implementing a database solution (MariaDB) to host MySQL on our Raspberry Pi
- Designing key generator
  - This will be done using the MD5 encryption algorithm
- Exploring entropy of the dataset
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Task 4: Collaboration Tools

- Software Development: GitHub
- Documents/Presentation Collaboration: Google Drive
- Team Communication: Discord
- Task Calendar: Github Projects/Google Calendar

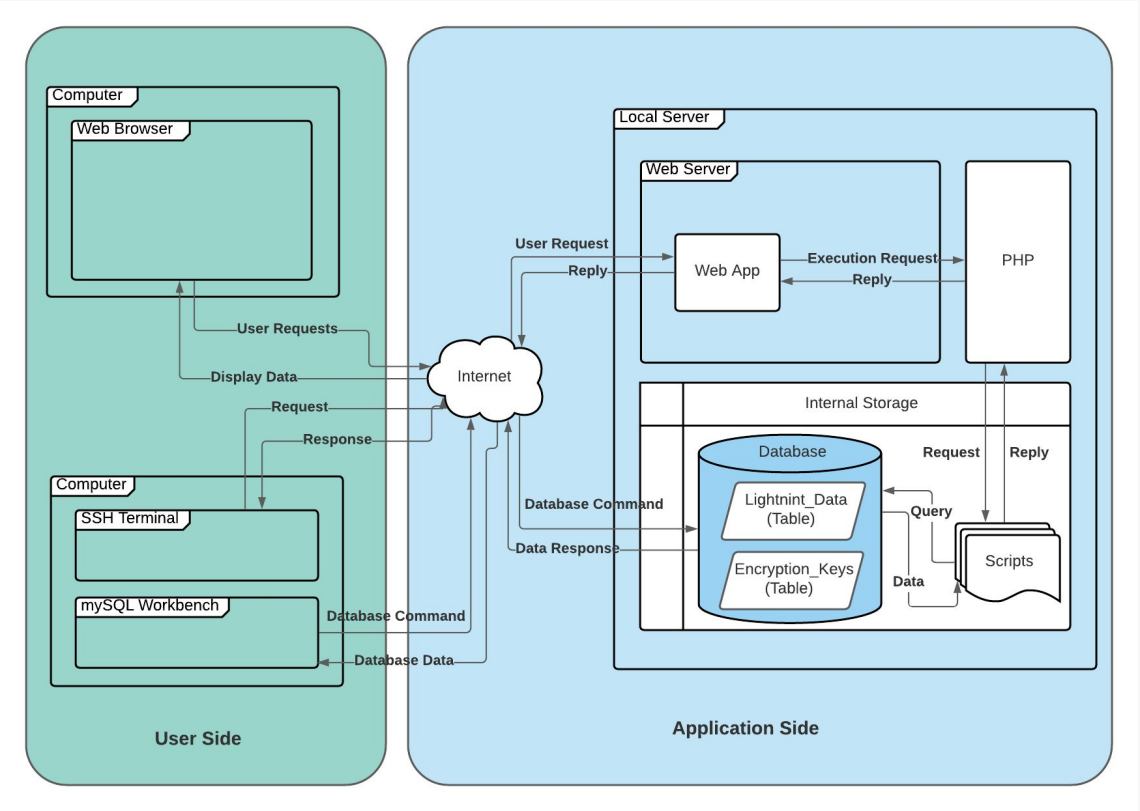
Task 5: Requirements

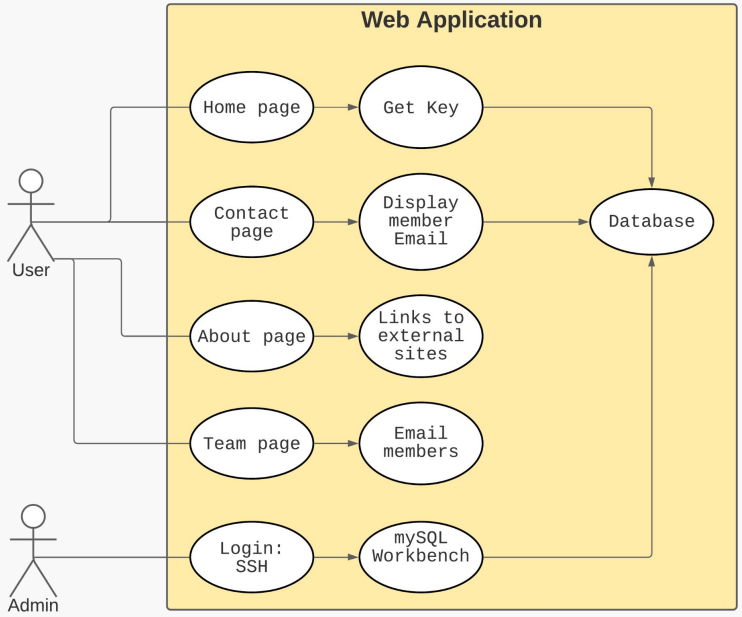
- Defined web application requirements
  - Explained each deliverable into functional and nonfunctional requirements
- Define database requirements
  - Defined requirements for security, performance, and maintainability.

Task 6: Design

- Created system architecture, use case diagram & database diagram
- Defined methods
- Designed mockups for web application

Task 6: System Architecture & Use Case Diagram





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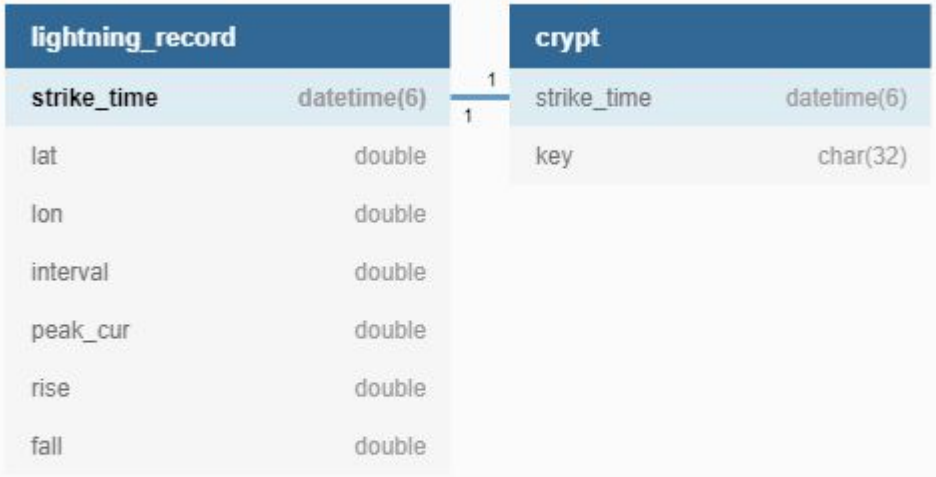
Task 6: Database Design*



Database will continue to be updated as we adjust our data to increase randomness.

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Task 7: Test Plan

- Defined test cases based on 2 categories
  - Acceptance testing
  - Use case testing
- Input values were defined for users point of view

Current Technical Challenges

- Measuring entropy of dataset
  - Exploring algorithms to quantify randomness of our dataset
  - Communicating with Mathematics department to ensure our approach is valid
- Implementing MD5 algorithm
- Creating interactive features of website for key attributes

Milestone 2 Task Matrix

Task	Adonay	Jared	Josh	Luke
1.Update “Hello World” demos	Update data set demo 25%	Update data set demo 25%	Update database demo 25%	Update web application demo 25%
2. Update documentation	Read and review edits	Read and review edits	Update	Read and review edits
3. Setup school provided server environment	Work with Josh to set up server 50%	None	Work with dr sid to obtain hardware. Work with Adonay to set up 50%	None
4. Automated data transfer script creation	Offer help / troubleshoot	Offer help / troubleshoot	Create and implement	Offer help / troubleshoot
5. Design 25% of website layout (excluding content)	Read and review	Read and review	Work on 50%	Work on 50%
6. Show entropy findings	Work on 50%	Work on 50%	Offer help / troubleshoot	Offer help / troubleshoot
7. Display basic generated key from database to website	Work on calculation 40%	Work on calculation 40%	Offer help / troubleshoot	Work on website implementation 20%

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Milestone 2 - Nov 1

- Implement, test, and demo:
  - automated data transfer from raw data
  - user request for key
    - Ie: show server request for secure key in backend
  - 1 case of random number generator with lightning data implemented
  - use of the random number in encryption