Assignment 5a

The next two labs are an intersection of filesystems and security. This week's lab is like a pre-lab for next week's lab.

Hashing

- A message **digest** is a cryptographic hash function that outputs a string created by a one-way hashing formula.
    - **one-way** means that you take plain text and put it through a 1 -way hash function to produce a hash value but you cannot take the hash value and manipulate it back to the original plain text.
- For this lab we are using a fictitious message digest to prepare for the next lab
    - Please download the tar for the message digest library we will be using
        - Read through the items of the tar file and understand how it works
    - When you get a chance please take a look at OpenSSL EVP Message Digests: https://wiki.openssl.org/index.php/EVP_Message_Digests

Map DS:

- A map is a data structure and its majorly used for fast lookups or searching data.
- It stores data in the form of **key** and **value** pairs where every key is unique.
- Each key here maps to a value and hence the name map

Key: Input	**Value:** hash value

By next lab the following needs to be done:

- Implement a map data structure (implement however you like)
- Program that does the following:
    - Get string from user
        - String limit is 500 bytes
    - Search DS by key (string)
        - If **not found**, insert key (string) and corresponding value (hash value) to a data structure
            - Hash value is generated by Message Digest Library provided on camino
        - If **found**, print out hash value
- Data structure should hold 1,000 Key/Value pairs

Must be written in C and must be completed before the next lab because this builds off of it.