**WARNING:** This is guaranteed to become inaccurate, just an initial planning section (remove this note if structured correctly)

[Assessment Criteria](https://dle.plymouth.ac.uk/pluginfile.php/3242871/mod_resource/content/0/COMP1004%20-%20Assessment.pdf)

[Scenarios](https://dle.plymouth.ac.uk/pluginfile.php/3242873/mod_resource/content/0/COMP1004%20Project%20Scenarios.pdf)

Independently generated concept: Notepad style application  
Webapp with the ability to write, read, save and load text. This is **insufficient** to get full marks but is passable. Additions will improve value, current addition ideas:

* Formatting (bold, italics, underline, etc) – this can be toggled on or off, and likely uses tags (customisable or generic like <b> </b>?)
* Formatter for code

**~~Alternatively, provided games development scenario:~~**

~~The focus of this project is to explore leisure time and consider what might enrich this. Additionally, the project should also record time spent playing the game and output this into a flat file.~~

~~Produce a hand coded hypertext fiction game using HTML, CSS and JavaScript enhancements. Your game must be playable from start to finish. You will need some custom art for the game pages. There should be a clear narrative structure and plot. The game structure should be coded in a clear, logical manner using JavaScript.~~

~~Your application should output to a flat file the following JSON data format. It should have a player username, minutes the player has spent playing, their score and the level.~~

*~~For the story of this, I could always make something vaguely related to RC SiMP. “Custom art” is fine unless they mean character art, I can just make pixel art for the UI.   
If I~~* ***~~do~~*** *~~use RC SiMP for the plot, I am bound to go overboard as always, maybe do something else.~~*

~~Odds are low that a basic choose your own adventure / retro style terminal game will not achieve full marks. Additional features are needed.  
Puzzles? If I use RC SiMP I can certainly cram in a hacking or circuit puzzle somewhere. Helps make it more enjoyable than simply reading a (poorly written) book.~~

~~Modification of the JSON criteria are necessary. Though save name and time played make sense, score and level might be a problem. Level can be used to determine where in the game the player is, but score is difficult to use, perhaps to monitor successes vs failures to enable diverging paths?~~

**Alternatively, provided Cyber Security scenario:**

The focus of this project is to provide a password account management system for a user accessed via a browser.

Produce a hand coded application whereby an individual can manage their own passwords and accounts for different applications. As a minimum your application should provide the following functionality:

* Use local storage to store personal account data such as username and password.
* Read a JSON file using the format above to identify a matching username in your system.
* Indicate password strength to the end user.

You will need to determine what additional features this application should have and the best way to visualise this information for the user.

Encrypt personal information (cannot hash as it needs to be reused) using a high end encryption method.  
Search for open source statistics on commonly used passwords and characters in passwords to determine password strength.  
Login requires a set password which is stored in a separate file. This may be used to calculate the key for encrypting the other passwords. Both the username and password can be hashed, as they don’t need to be accessed.

Use different keys for login and normal password.

**Research:**

“Identify why your project might be of importance (not just that you are going to be assessed on it!).”

**User stories:**

As a user, I want to have easy access to my passwords so that I can spend less time signing in and won’t lose them.

As a user, I want my log in information to remain secure, so it is unlikely for my accounts to be breached.

As a user, I want secure information (such as my passwords) to be behind a sign in, so malicious actors cannot access them even if they gain access to my computer.

As a user, I want to be able to reset my login password, so if I forget it, I can still access my other passwords.

As a user, I want the application to be easily accessible, preferably without requiring any prerequisites, so it is easier to install and use.  
Note: As this is a web based project, the JavaScript is visible to anyone using inspect element. It may be necessary to find a way of hiding the encryption method.

**Design:**

Detailed design refers to the operations needed, data structures used, algorithms, data storage and program flow/sequence.

Style regards the architecture.

Template is for the **design document**.

**Password manager research:**

Most password managers use AES-256 (src: <https://nordpass.com/features/xchacha20-encryption/>)

Chrome:

* List of websites
* Clicking prompts sign in
* Saves username + password (password obfuscated)
* Click to copy / unhide password
* On sign-in, do not need to sign in again
* [Passwords are encrypted](https://support.google.com/chrome/answer/10311524?hl=en-GB#zippy=%2Chow-we-protect-your-data)

Nordpass (#1 apparently):

* [Passwords stored off-device, but local key.](https://nordpass.com/features/zero-knowledge-architecture/)
* [Special encryption algorithm](https://nordpass.com/features/xchacha20-encryption/) (C or C++ by the looks of things)

<https://gist.github.com/jo/8619441> has a list of JS cryptography libraries.  
WebCryptoAPI (<https://www.w3.org/TR/WebCryptoAPI/>) is a common one.

**For limitations:** As we are not allowed to use languages other than HTML, JavaScript and CSS, the security of this manager is incredibly limited.

### FOR VIDEO

Project Vision:  
A web application that stores usernames and passwords in a secure format locally, which can only be accessed by signing in.

Background:  
Other such password managers exist (EXPAND)

Project Plans and Sprints:  
I have done three sprints, performing research on the topic in the first, designs for the application in the second, and prototyping and initial code development in the third.

UML Models:  
*Show class diagram, make more?*

Prototype:  
Show prototype, ideally semi-functional.

Description of challenges / issues faced:  
Cannot use other languages for the security side, meaning the encryption algorithm is exposed.

## Mark Scheme

Interim Practice (Video):

A screenshot of a computer

Description automatically generated  
A grid of text boxes

Description automatically generated with medium confidence

Final Practice (Presentation):  
A white sheet with black text

Description automatically generated  
A white rectangular box with black text

Description automatically generated with medium confidence

**Final Portfolio:**  
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