Project Research Document

TomaNota

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Section 1: Detailed Discussion

The TomaNota project is aimed at a wide range of users as it will be a general solution to spaced repetitive learning of notes, for example, learning language vocabulary. The project should focus on desktop environments where users have both increased control over their documents as well as more time to dedicate to a study session. However it is also possible to support multiple other devices such as mobile devices as the application is planned to be ran server side.

The system’s functional requirements consist of being able to create a list of titles and definitions from a correctly formatted document. These prompts must then be shown to the user to assess the difficulty of recalling the definition. Each prompt must be rated on its difficulty such that harder prompts will occur more often. Results of each session must be stored in a way that relates to the original document allowing multiple documents to be used in a simple ‘plug and play’ fashion.

To accommodate a variety of users of the software, it will also contain a structured collection of notes that can be used as an example of the documents the user can create themselves, or to simply use the provided material without needing to make notes.

The application’s non-functional requirements are to be intuitive and easy to use. Best practices and methods such as the Gestalt laws are applied in such a way that users of the application struggle less when interacting with the interface, as no time should be wasted throughout their study session if avoidable.

Additional advanced features such as voice synthesis or machine learning may also add more opportunities for expanding the functionality of the software and increase options for learning methods.

Finally, the software is also aimed to be created allowing for the interface to be displayed in multiple languages, allowing for increased accessibility to many people from different backgrounds.

Section 2: Existing Applications in this domain

Name	URL	Similarities	Differences
Duolingo	duolingo.com	Solution for learning languages	Unable to choose material covered Single purpose
Memrise	memrise.com	Solution for learning languages	Unable to choose material covered Single purpose
Glean	glean.co	Used for note taking and learning	Not focused on quizzing the user, only on creating notes
Quizlet	quizlet.com	Allows the creation of custom quizzes with multiple options for layout and sharing	Community focused and driven learning of notes

Section 3: Platform, Technologies and Libraries

- Server and client web application
  - Consisting of:
    - HTML, CSS & Boostrap, JS
    - NPM packages
    - Local & cloud based servers

I plan to create a server side web application to communicate with a web front end. Creating the application in this way allows for more streamlined use of files saved in the cloud and increases accessibility of the application. This method will also reduce the local processing power of the user’s machine. Thanks to the flexibility of CSS it will provide many options for creating an intuitive and enjoyable user experience.

Section 4: The Risks

The application will rely on third party cloud service providers and the APIs associated with them to backup notes or work across multiple devices, such as the Google cloud functions, or RESTful web API. Should any issues or significant breaking changes occur with one of these providers it will still be possible to change to the other.

Another risk of the project will be the use of multiple third party C# packages to be used to aid in the creation of the server and client of the application. It is possible that these packages significantly change or lose support during the development of the project and may also introduce security concerns. Generally the use of C# packages should only be used where necessary and chosen based on a history of engagement and stability.

As the service will be provided as a web application it is important that the server is thoroughly tested to ensure that it is stable under intensive workloads so that it remains responsive to the user's interactions, such as waiting times for the user to see if their answer to a question is correct or not. If the server is unable to meet the demand it will result in an unusable user experience due to the delay of waiting for results from the server.

The use of cloud storage for user's notes and information can also be seen as a security concern as it opens more possibilities data leaking. Cloud providers are aware of this and provide environments fit to avoid this issue. However while users gain great convince with cloud solutions, it will still be possible to fully utilise the application without logging in or storing any information in the cloud.