**Final Project – Assessment Software**

**Introduction/Executive Summary**

This software aims to allow people to take exams on the application. Unlike most other software in this area, this application will be an offline application not wholly dependent on the internet or the web to run. During a long examination that a student might have to undertake, their ability to submit is wholly reliant on having a spotless connection with the internet which may be unfeasible for some due to unforeseen circumstances. Therefore, this application aims to fill a niche that other systems do not provide.

With this at hand, security is the most Important part of this application to prevent unscrupulous submissions due to its offline nature as students through exploitation could change the submissions to be what they more desire. There will be multiple types of users for the application which include Students, Teachers and Admins, each with their own roles in the application and able to do certain things.

**Background**

This project idea took root during my time at university where I had to take assessments using their portal. Doing those exams were stressful and sometimes unintuitive, not because of the content of the exams but the system in general. There were many inconsistencies with how things were done, how things had to be submitted and in general, the UI was unintuitive when it comes to finding the page that you need. Most importantly, you needed a stable internet connection, which during my time at university, I did not fully have. Sometimes an emergency would pop up and I would lose connection which would result in me losing minutes of time doing a time-sensitive assessment, meaning I wouldn’t be able to go to the next page of the assessment to see the next question and more. I was pretty fortunate in my case that I only lost a few minutes of time but for others that I have heard it happen to, them minutes lost resulted in them not being able to submit an assignment on time, thus resulting in them having to deal with the lecturers or even having to ask for an extension, which was unreliable in most cases.

In my second year of university, for our software engineering module, my group and I actually tackled a task with the same concept of the one that is proposed now. That application was developed in Java and had a simple GUI. This project serves to expand on that original idea, focusing more on the security aspects needed of this software and allowing for more functionality by adding more ways to complete an assessment.

**Outline of Project**

Each and every step taken during this project will focus on the security aspects of the application. Due to the nature of the application, verification is required and data needs to be validated on not only the user end, but the server end. Encryption would also be an important aspect of the application when transmitting and receiving data as erroneous data on both ends would make the application less secure.

The application should allow the teacher to set assessments to be done in many ways i.e. submission through text boxes, submission of document of certain types, quizzes and more. On the student end, they should have the facilities to be able to work on those assessments in a way that is required of them. The application should be an offline application where users choose when they connect to the server to gather the information needed. Connection to a server therefore isn’t a constant need for the user to do their assessments. This should make the application more secure as it reduces the avenues for attack and should make the application more secure.

The application should use offline APIs that handle validation and those APIs should be examined to see whether they are fit enough for the purpose of this application. Security analysis should be done at every stage of documentation and development.

**Conclusion**

The projects scope is quite small, focusing primarily on security which is a key requirement of the project, therefore the project is quite expandable and should be developed in a modular fashion, allowing for the pieces to fit together and work seamlessly. Due to the small scope of the project and the fact that I have done something similar during my time at university, the project should be feasible. An emphasis on security is what makes this project challenging which in turn requires me to do a lot of research, analysis and learn new skills which I have not before. That information is easily accessible and many security guidelines and procedures are already available via OWASP and more.