

Mobile-Based Neurocognitive Assessments

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PROBLEM

The Florida international University's MOSAIC lab partnered with healthcare institutions to provide comprehensive diagnostic care for geriatric patients suffering from various physical and mental illnesses. The resulting product provided coverage for illnesses relating to memory, cognitive abilities, coordination, and many others. However, due to issues regarding best practice and maintainability, the project struggled with continued operation until the present issues completely halted progress.

SYSTEM DESIGN

For our system, we followed the original design, utilizing *Dart*, *Flutter*, and *Firebase* to provide a seamless user interface/experience while leveraging *Firebase* to provide authentication, authorization, and data storage. We utilized principles in SOLID and DRY to provide extensibility and maintainability. This involves separating each game into a module with their own model-view-controller pattern.

CURRENT SYSTEM

The new system, following the same tech stack of *Dart*, *Flutter*, and *Firebase*, remodels the games and their associated pages with best practices in object-oriented design, authentication/authorization, and data collection. The old system implemented each of these games, but did not provide nearly the amount of extensibility, maintainability, and readability as this does. In addition, it does not rely on outdated dependencies, providing protection for future updates.

REQUIREMENTS

The requirements we thought were important to our system included:

- Reproduce each functionality laid out in the original *NeuroTask* application
- Refactor each functionality to use best practices in maintainability
- Refactor each functionality to use best practices in object-oriented design
- Provide extensibility frameworks for future development

ORGANIZATION



SUMMARY

By recreating the old system, we were able to provide a better user experience for those receiving a diagnostic care whilst building the new system with best practices and object-oriented design so that developers of the application can better maintain the software. It also allows future developers to more easily add new functionality to the application.