CA400 - Technical Manual

A close up of a logo

Description automatically generated

# Project Title: Mini Mental State Examination Application

|  |  |
| --- | --- |
| Student Name: | Matthew Nolan |
| Student ID: | 16425716 |
| Student Name: | Michael O’Hara |
| Student ID: | 16414554 |
| Project Supervisor: | Prof. Gareth Jones |
| Date Completed: |  |

# Table of Contents

## Overview

* 1. Motivation
  2. Research

## Design

## Implementation

## Challenges Overcome

## Future Work

## Appendices

## Overview

### Motivation

Our project is based on the Mini Mental State Exam (MMSE). The MMSE is a 30-point questionnaire which is used in clinical and research practices to measure cognitive impairment in patients. It is also used in medicine to screen for dementia. The main purpose of this exam is to estimate the severity and progression of cognitive impairment and to monitor the course of cognitive changes in a patient over time. This makes the test an effective method to document a patient’s response to treatment. The examination includes questions that gauge the patient’s sense of date and time, sense of location, short-term memory, basic mathematics, naming objects and complex cognitive functions like drawing.

The way in which the exam is currently administered is with pen and paper. Our idea to modernize the way in which the MMSE is conducted by creating an application which will allow the test to be carried out in a more efficient manner. The application we hope to produce will digitise the MMSE and allow for the option, in some cases, for the patient to be able to carry out the exam themselves. We plan on constructing a reliable and user-friendly application that will be able to efficiently predict and monitor levels of cognitive impairments in patients, making the application a suitable information management system for any institution which uses the MMSE

### Research

Before we began work on our application, we first had to do some research and further our knowledge in a few areas.

* Creating and hosting Databases
* Cross platform client development
* Application Security
* Modernize pen and paper to application
* Accessibility and User-Friendly UI Design

We felt we had a basic knowledge and understanding in each of these areas but in order to develop a full stack application encompassing these areas we needed to do some research.

We looked online and found that developing the application using Xamarin and C# would allow us to seamlessly develop for iOS and Android. Xamarin is an open source app platform from Microsoft for building modern & performant iOS and Android apps with C# and .NET. It allowed us to do this by providing tools and libraries for features such as:

* Libraries for common patterns, such as ModelView ViewModel (MVVM)
* **Editor extensions** to provide syntax highlighting, code completion, designers, and other functionality specifically for developing mobile pages

(https://dotnet.microsoft.com/learn/xamarin/what-is-xamarin)

We also found that AWS has a free tier which would allows us to run and host a MySQL database which we could integrate with our code in order to store/update patient and doctor information. AWS is the worlds most comprehensive and broadly adopted cloud platform, offering over 175 fully and featured services from data centres globally. Some of the services offered by AWS cover the areas of:

* Machine Learning
* Databases
* Gaming Technologies
* Blockchain

(<https://aws.amazon.com/products/?pg=WIAWS-N&tile=learn_more>)

The service we were most interested in learning about was what they could offer in terms of Database hosting and management. We investigated it and on the beginner tier they offer 12 months of Relational Database Service. This allowed us to set up a MySQL database for storing records and have them be accessible from any instance of the application (with correct login credentials).