# Abstract

Creating a mobile app that satisfies the end-user and the client is a difficult task to accomplish. Moreover, deciding what software to use for development could be challenging since each software has its own benefits. Comprehending a solution to the underlying problems, the project presented in this paper explores the uses of use cases, react native and agile methodology to create a mobile app that meets both client and user needs. The process in deciding the software, research methods and methodology will be discussed in the later sections.

# 1.Introduction

## Background

The use of smart phones such as iPhone and android has increased exponentially in the recent years, which is proven by the sales of smartphones to the end users increasing from 296 million smartphone sold in a year in 2010 to 1433 million smartphones sold in a year in 2021. And the end-user is expected to grow larger in the near future. Due to the accessibility and versatility in smart phones, they are commonly used than laptops or pc. [[1]](#endnote-1) The vast increase in popularity of smartphones is mostly likely due to the mobile app which is available for any user’s needs. For example, there is a mobile app that tracks the heart rate of a user to provide health advice which could be essential for any user with a weak heart or user that enjoys working out/running. Although the target audiences for mobile apps are huge, developing a mobile app that meets the user needs are challenging.

In this project I will be developing a mobile app for a nail salon called “Sharon” based in Japan Tokyo, Kita-senju. Nail Salon Sharon is a nail salon owned by Kaoru Ogundiran, in which who is my main client for this project. The nail salon does several different services, such as hand nail gradation, foot nail gradation, etc. The prices of each service are dependent on what the customer orders, but it could range from 20 pounds to 60 pounds. Currently the nail salon uses a third-party website called “Hot Pepper Beauty” to list their menu, booking detail and contact detail.

## Problem Statement

# 2.Related Work

There are several software and database used for mobile app development each with its own benefits. However, deciding what framework is best fitting for the project your building is challenging since there are about dozens of frameworks to choose from, few known frameworks being React Native, Flutter, Swiftic, Ionic and Apache Cordova. In this section I will be looking into Flutter and React Native.

## 2.1 React Native

React native is a cross platform framework used in developing mobile applications, it was released in 2015 by Facebook. React Native can be deployed to other platforms, such as Windows, Web and Tizen. The programming language in which React Native is written in is JavaScript however it does not mean that React Native applications are hybrid or html5 applications, the usage of underlying native interface allows for it to render views and access native hardware such as camera and storage. React Native is famous for being open source with a strong community, Facebook developers, individual and even Microsoft and Samsung contribute to developing React Native3. React Native uses JSX which is a special syntax extension of JavaScript to describe how the UI displays. When the application is compiled JSX is also compiled. There are two major data models in React, being Props and State, each having its own distinct feature. Props are set externally and is used to customize the component whereas State are set Internally and is used to initialize values.

## 2.2 Flutter

Flutter is also a cross-platform framework used in developing mobile applications, it was released in 2016 by Google. Not only can Flutter applications run on Android and IOS, but it also runs on Fuchsia. On the contrast Flutter renders every view component using its own high-performance rendering engine instead of relying on web views like React Native. Every application in Flutter is written with Dart which is a programming language developed and maintained by Google, since Dart was developed as a replacement and successor of JavaScript it implements most of the characteristics of JavaScript’s next standard (ES7). When it comes to data structure Flutter is unique, as it uses Widgets instead of props and state, hence the application is essentially a collection of widgets interacting each other. Widgets contain features such as creating input Text Box, Buttons, etc. one of the crucial advantage Flutter has over React Native is that it allows rapid development with the availability of widgets even for animation and gesture detection. Another interesting fact about Flutter is that it allows for hot reload, meaning it allows for quick update of application state when save button is clicked.

## 2.3 Performance Comparison

There is an article by Wenhao Wu comparing React Native and Flutter which are the two-leading framework in mobile app development. Wenhao compares the two frameworks by writing a simple TV show application in React Native and rewriting it in Flutter. Upon using each framework, he discovered that Flutter and React Native both do an excellent job in performance regarding scrolling where the average fps while scrolling being over 60 frame per second (fps)1. Although React Native did an excellent job regarding scrolling, when the list it’s scrolling through is dense it’s said to have a significant drop in fps, whereas flutter remained stable. Wenhao had another comparison regarding the speed of input and output system (I/O) of React Native and Flutter, upon the comparison he found out that React Native has an advantage on both the average time and single time consuming2. The measurement was calculated by calculating the time of an obtained list of epochs from opening a file to successfully writing on a file.

# 3.Methodology

[SUPR-Qm: A Questionnaire to Measure the Mobile App User Experience - JUX (uxpajournal.org)](https://uxpajournal.org/supr-qm-measure-mobile-ux/)

The methodology I will be utilising in this project is agile programming cycle. Agile Programming cycle.

# 4.Project Management

Competitive analysis

In app development, competitive analysis plays a crucial role in the development cycle. Competitive analysis allows the programmer to understand the market, forecast market potential, track competitor pricing and product and many other. For my program I have decided to conduct competitive analysis on two nail salon company, Young LDN and Townhouse nail salon. They are London based nail salon which does other services such as hair and skin.

Young LDN nail salon:

Townhouse nail salon:

# 5.Conclusion

1. (O'Dea, 2022) [↑](#endnote-ref-1)