



College of Engineering, Construction and Living Sciences  
Bachelor of Information Technology  
IN721: Mobile Application Development  
Level 7, Credits 15  
**Project**

## Assessment Overview

In this assessment, you will develop & publish a travelling application using **Kotlin** in **Android Studio** & **Google Play Store**. **Android** topics such as **ViewModel**, **LiveData**, **Room Database** & **Google Map** were formally covered in the teaching sessions. The main purpose of this assessment is not just to build a mobile application, rather to demonstrate your ability to effectively implement intermediate/advanced **Android** features & other application development topics. In addition, marks will be allocated for code elegance, documentation & **Git/GitHub** usage.

The travelling application will help you sound like a local & adapt to a new culture. You will begin by selecting a country you wish to travel to. For example, if you wish to travel to Italy, you would be provided with all the necessary tools such as text translation & text to speech support, a selection of well-known Italian phrases, an interactive quiz to test your knowledge of Italian culture & a map containing locations of Italy's top-rated tourist attractions. A user of your travelling application **must** be able to select from at least **six** countries with at least **one** country per **continent** **excluding** Antarctica.

## Learning Outcomes

At the successful completion of this course, learners will be able to:

1. Implement & publish complete, non-trivial, industry-standard mobile applications following sound architectural & code-quality standards.
2. Identify relevant use cases for a mobile computing scenario & incorporate them into an effective user experience design.
3. Follow industry standard software engineering practice in the design of mobile applications.

## Assessment Table

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme	Completion Requirements
Project	80%	1, 2, 3	CRA	Cumulative
Presentation	20%	2, 3	CRA	Cumulative

## Conditions of Assessment

You will complete this assessment during your learner managed time, however, there will be availability during the weekly meetings to discuss the requirements & your progress of this assessment. This assessment is due on **11/02/2022 at 5:00 PM**.

## Pass Criteria

This assessment is criterion-referenced (CRA) with a cumulative pass mark of **50%** over all assessments in **IN721: Mobile Application Development**.

## Authenticity

All parts of your submitted assessment **must** be completely your work & any references **must** be cited appropriately including, externally-sourced graphic elements using **APA 7th edition**. Provide your references in a **README.md** file. All media **must** be royalty free (or legally purchased) for educational use. Failure to do this will result in a mark of **zero** for this assessment.

## Policy on Submissions, Extensions, Resubmissions & Resits

The school's process concerning submissions, extensions, resubmissions & resits complies with **Otago Polytechnic** policies. Learners can view policies on the **Otago Polytechnic** website located at <https://www.op.ac.nz/about-us/governance-and-management/policies>.

## Submissions

You **must** submit all program files via **GitHub Classroom**. Here is the URL to the repository you will use for your submission – <https://classroom.github.com/a/YvRoxlAh>. The latest program files in the **main** branch will be used to mark against the **Functionality** criterion. Please test your **main** branch application before you submit. Partial marks **are not** given for functionality in other branches. Late submissions will incur a **10% penalty per day**, rolling over at **5:00 PM**.

## Extensions

Familiarise yourself with the assessment due date. If you need an extension, contact the course lecturer before the due date. If you require more than a week's extension, a medical certificate or support letter from your manager may be needed.

## Resubmissions

Learners may be requested to resubmit an assessment following a rework of part/s of the original assessment. Resubmissions are to be completed within a negotiable short time frame & usually **must** be completed within the timing of the course to which the assessment relates. Resubmissions will be available to learners who have

made a genuine attempt at the first assessment opportunity & achieved a **D grade (40-49%)**. The maximum grade awarded for resubmission will be **C-**.

## Resits

Resits & reassessments **are not** applicable in **IN721: Mobile Application Development**.

## Instructions

You have been provided starter code called **project-starter-code** located in the **code-resources** directory in the course materials repository. Carefully look at the given code & understand what is happening. If you are unsure about anything, do not hesitate to contact the course lecturer.

You will need to submit an application & documentation that meet the following requirements:

### Functionality (Features) - Learning Outcomes 1, 2, 3 (40%)

- Application **must** open without file structure modification in **Android Studio**.
- Application **must** run without code modification on a mobile device.
- Application **must** run on **API 28: Android 9.0 (Pie)**.
- **Independent Research:** Text translation support. If a country is multilingual (use of more than one language), choose one language. For example, Canada's main languages are English & French. You would choose either English or French.
  - Use **Retrofit** & the **Yandex Translate API** to translate text from one language to another. To use the **Yandex Translate API**, you will need an **API key**. A key will be privately given to you on **Microsoft Teams**. Ensure that the **API key** is not publicly exposed in your program files.
  - Display some feedback while the text is being translated.
  - Handle incorrectly formatted input fields. For example, an **EditText** is blank or empty.
- **Independent Research:** Text to speech support.
  - Handle incorrectly formatted input fields. For example, an **EditText** is blank or empty, or the country is not supported.
- **Independent Research:** Selection of three well-known phrases. For example, "No worries, mate, she'll be right" is well-known phrase in Australia.
- **Independent Research:** Register a new user on **Firebase**.
- Log into the application with an **email** & **password** using **Firebase**.
- **Independent Research:** Logout of the application. The user **should** be navigated to the login screen.
- **Independent Research:** An interactive quiz for each country.
  - Quiz data **must** be fetched from a **GitHub Gist**.
  - Quiz topics may include animals, culture, food, drink, geography & sport.
  - Each quiz **must** have at least three questions.
  - Questions are multi-choice & **must** have four answers.
  - Each question **must** have an image.
  - Display appropriate feedback in a **Toast** when a question is answered correctly or incorrectly. If an answer is incorrect, display the correct answer.

- A quiz **must** be completed within a **1.5 minute** time limit.
- At the end the quiz, store the user's **score** in a **Room Database** table.
- Display the user's highest **score** in a **TextView**.
- **Switch** which toggles between light & dark mode.
  - The state (true or false) value of the **Switch must** be stored in a **DataStore**.
  - The mode will be based off the state value of the **Switch**. For example, true equals dark mode & false equals light mode.
  - The mode must be persistence across **all** screens, i.e., if a user kills & starts the application, the mode will be retrieved from a **DataStore**.
- **Google Map** displaying top-rated tourist attractions.
  - Display **only** two tourist attractions per continent.
  - Top-rated tourist attraction data **must** be fetched from a **GitHub Gist**.
  - Each data object will represent a marker.
  - The marker's information window **must** display the attraction's name & city/town.
  - **Independent Research:** If dark mode, set the map's style to a dark theme. If not, set the map's style to light theme.
    - \* **Resource:** <https://mapstyle.withgoogle.com>
- Splash screen using a **Lottie** animation.
- Adaptive launcher icon which is displayed in a variety of shapes. The icon **must** be the same as the **Lottie** animation icon.
- Visually attractive UI with a coherent graphical theme & style using **Material Design**.
- Application is published to **Google Play Store**.
  - To published to **Google Play Store**, you will need a **Google Play Console** account. The account's credentials will be privately given to you on **Microsoft Teams**. **Do not** disable any applications published on this account.
  - When you create your application, name the package appropriately. For example, **op.mobile.app.dev.<username>.travelling**. **Note:** replace **username** with your **Otago Polytechnic** username.
- Ability to download your application from **Google Play Store** on to a mobile device.
- UI tests which verify that the register, login & logout is functioning correctly.

### Code Elegance - Learning Outcomes 1, 3 (40%)

- **Kotlin & XML** files contain no magic numbers/strings. Store the values in the appropriate **XML** files. For example, numbers **must** be stored in an **integer.xml** or a **dimens.xml** file & strings **must** be stored in a **strings.xml**.
- Idiomatic use of control flow, data structures & in-built functions.
- Code adheres to **DRY**, **KISS** & the **Model-View-ViewModel** architectural pattern.
- Efficient algorithmic approach.
- Commented code is documented using **KDoc**. The purpose of each class and function **must** be explained.
- **Kotlin & XML** files are code formatted.
- No unused code & resources.

## Documentation & Git/GitHub Usage - Learning Outcomes 2, 3 (20%)

- Code commented is generated to **Markdown** using **Dokka**.
- Provide the following in your repository **README.md** file:
  - URL to your application's privacy policy.
  - URL to commented code **Markdown** files.
  - URL to your application on **Google Play Store**.
- Commit messages **must**:
  - Reflect the context of each functional requirement change.
  - Be formatted using the naming conventions outlined in the following:
    - \* **Resource:** <https://dev.to/i5han3/git-commit-message-convention-that-you-can-follow-1709>
- You **must** commit at least **ten** times per week. By the end of this assessment, you should have at least **100** commits.
- **Do not** rewrite your **Git** history. It is important that the course lecturer can see how you worked on your assessment over time.