CSC306: Writing Mobile Apps:
Assignment Specification

Part 1 due: 11:00am, Friday 30th October 2020

Part 2 due: 11:00am, Monday 7th December 2020
Part 2 mid-point check due: Week of 16th November 2020

The assignment for *CSC306: Writing Mobile Apps* requires you to design and implement an Android application, following the specification in this document. Part 1 of the assignment accounts for **15%** of the module assessment, and Part 2 accounts for **35%**.

The purpose of this Part 1 is to encourage you to consider some of the design principles required before embarking upon the implementation of a Mobile Application.

The purpose of Part 2 is to build upon lecture examples and enhance your own Android (and Kotlin) development skills.

Assignment Guidance

- Start early in your work, the earlier you start the more prepared you will be for submission. You don't want to be rushing things near the deadline.
- If you encounter a problem, try to solve this yourself first (e.g., Google has been shown to be useful). Lab demonstrators will want you to have tried to solve a problem before simply asking for help at the first hurdle.
- Use the Canvas coursework discussion page to ask questions about the assignment, you can help each other and discuss approaches or queries that you might have. It's a place where general queries will be answered, rather than several private emails.
- Make use of the lab time, you can get guidance there on your design and implementation, along with feedback on the approach you are taking.
- Pay close attention to the marking scheme. Use the rubric to mark your own work and see how you can improve using the next tier of the rubric
- Enjoy yourself, have some fun creating a mobile app and thinking of features you would like to see if this was an app you were to use.

Academic Integrity and Misconduct

By submitting this assignment, electronically and/or hardcopy, you state that you fully understand and are complying with the university's policy on Academic Integrity and Academic Misconduct. The policy can be found at: *https://www.swansea.ac.uk/academic-services/academic-guide/assessment-issues/academic-integrity-academic-misconduct.*

1 Specification

The assignments for CSC306 will require you to design and implement a news aggregator app on the Android platform. In the app users will be able to personalise the type of news that they are interested in and receive alerts when new stories become available.

Your application should allow users to have an account they can enter key terms that they are interested in, with the app fetching news from multiple sources using a service such as https://newsapi.org/ (**be sure to check daily usage limits**) to pull news data and be able to present key information to a user in an attractive way. Key information to include would be news publisher, article title, article image and summary text.

The app should also be able to setup alerts that can be pushed to a user when stories they are interested in become available. Within the app, the user should configure which topics they would like to receive alerts for.

2 Part 1 - Design

In the first part of the assessment you will specify the application you will build, propose bonus features and present GUI screens that you have prepared. **You should complete this step before moving onto any implementation (i.e. Kotlin programming) tasks**.

2.1 Task

In the first part of the assignment, worth **15%** of the module assessment, you should produce a report of no more than **5 pages** that sets out design decisions and example GUI elements for your proposed application.

In your report, you should flesh out the details of the specification given in Section 1, which is broad and leaves scope for several finer decisions to be made. By the end of your report, there should be a clear foundation to build upon for your later implementation task.

Additionally, you should consider what features should be added to enhance the appeal of the application. There is no specific guidance or criteria on what you should include here, but be creative in the capabilities of the Android platform when considering your features. You should also consider what will enhance the usability / appeal of the application. These features should be substantial, and not simple aesthetic additions.

The mark for bonus features will be calculated as the product of a base mark and a richness factor. For example, if your chosen features are very basic then this will attract a low richness factor, say 0.6. If you now scored a base mark of 30 (out of 35), then the mark would be (30 / 35) * 0.6 * 35 = 18. If your features are more complex then this will attract a richness factor of 1.0 resulting in an overall mark that would be (30 / 35) * 1.0 * 35 = 30.

Finally, you are required to produce examples of activity screens that you have prepared. At this stage, it is likely the case that you may need to populate layouts with *'dummy'* data, as your app should have no implementation at this stage.

2.2 Marking

The overall mark will be calculated as the product of a base mark and a richness factor. The base mark will be awarded based on the following rubric:

1. **Design choices - 20%** - The specification you have been given is brief, and there is plenty of scope for more clarification on how the app will work. Some questions (this list is not comprehensive, you should add to these questions) you might want to consider include:

    - How will a user enter their preferred news topics?
    - How will users be alerted to new stories being posted that they are interested in?
    - What information is important to be displayed?
    - What information can be hidden, and how would you do this?
    - How often will the app look for new articles?

2. **Bonus features - 40%** - You are expected to add a minimum of 2 bonus features to your app. Your submission should clearly identify what these are. Marks will be allocated here based on the added value provided by the bonus features which you offer. Are they just some additional decorations or do they actually make the application more interesting to use, or more rewarding?

3. **Activity GUIs- 40%** - You should include screenshots and XML scripts of **2** of your in-progress activities that clarify aspects of your design expressed in your design decisions. Think here of adhering to Design Guidelines discussed in lectures. You should strive to create a look that suits the purpose of the app, and have a consistent look-and-feel throughout. For this part of the assignment, you may have to use dummy data (as there may be no implementation at this stage) which is suitable for this section. **The focus here on your design ideas, rather than a functioning app at this stage.**

2.3 Submission

You should submit a **single PDF document** containing no more than 5 pages to the CSC306 Canvas module page before **11:00am, 30th October 2020**.

Any content beyond 5 pages will not be marked as it does not follow the submission instructions.

3 Part 2 - Implementation

Part 2 should follow directly on from the work you complete in Part 1. The implementation section should largely follow the decisions you made in your design document, unless you received feedback advising a change of direction. You should target an emulator device that uses **API level 27**, this is what the marker will be using when assessing your submission, potentially alongside an actual Android device running the same API level.

3.1 Task

Your task for Part 2 is to fully implement the application you proposed in Part 1, including your bonus features. The app you submit should conform to the outline specification given in Section 1 and follow the fundamental elements of the application.

3.1.1 Video Demonstration

You are required to create a video to demonstrate the features of your mobile app. If your app were to be published on the Play Store, it would usually have a trailer showing off key features, perhaps use this thinking as a good approach for how you structure your video. Use this video as an opportunity to demonstrate all of the features described in this document that you have implemented, along with the bonus features you have added.

Your video should clearly highlight the bonus features that you have implemented.

For your video, you could consider a structure of spending the **first 2 minutes demonstrating the core functionality of the app, with the final minute demonstrating your bonus features**. You should **clearly indicate** when you are demonstrating your bonus features (with text on screen for example).

Several links to (free) screen capturing software can be found on pages such as ScreenRec or by Googling for a solution that meets your needs.

Your file should be named based on your student number, e.g.:

*STUDENT_NUMBER*_applicationDemo.mpg.

The movie files are saved in MPEG or MP4 format. You may use as many screen capture files as necessary to capture the features of your application. **Only submit 1 video that show all features**. Your animated screen captures are placed in a folder called demo that resides in root directory of your .zip folder.

Your video should not exceed 3 minutes in length, the marker will not view any content that is beyond the 3 minute mark of a video.

3.1.2 Progression Demonstration

During the week beginning **16th of November 2020** you should use the weekly labs to demonstrate your work showing the progress of your app. A key part of software engineering, especially in the competitive world of mobile application development, is making sure projects are delivered on time. This mid-point check of your progress will give a sense of how likely your app development will the final deadline. At this time, your app should be able to demonstrate:

- A method of collecting and storing user preferences for new topics
- A method of supporting user accounts
- Information that has been pulled from an API source is displayed in a meaningful way to a user

3.2 Final Marking

1. **Functionality** - You will be marked here on how complete of an app you submit that meets the specification detailed above, in that a user will be able to use the application fully in its basic form - **40%**
2. **Bonus Features** - For this category, you will be marked on how complete and rich the implementation of your extra features proposed in Part 1 are. You can add to or extend the features you proposed in Part 1 here - **20%**
3. **Interface** - Here you will be assessed on the design of your application - have you followed the Android Design Principles, is your app simple to use and have you put together a good looking User Interface? - **10%**
4. **Code Quality** - Here, you will be marked on how well you have externalised your resources (e.g. using /res/values/Strings.xml), as well as general coding principles such as good indentation and commenting - **10%**
5. **Video** - A good video will demonstrate features that you have implemented, remember to include the base features and any extra features you have added - **10%**
6. **Mid-Point Demonstration** - A demonstration during the week of **16th of November 2020** displaying the in-progress development of the mobile application - **10%**

3.3 Final Submission

You should submit a **single .zip file** which conforms the following structure:

- all of your project .java and .xml in a directory named **ProjectSource**
- A project .apk file in directory named **ProjectAPK**
- A (maximum) 3 minute long video demonstrating your application in the root directory of your submission

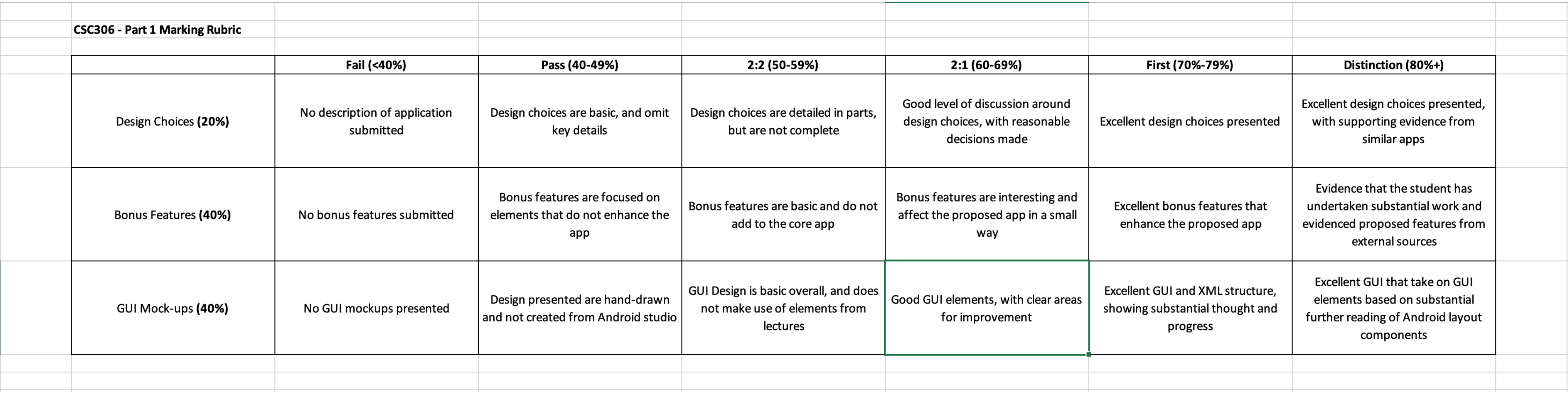
to Canvas before **11:00am, Monday 7th December 2020**. Failing to submit all of the files will lose you marks as the marker won't be able to test all features of your app. Your .zip folder should be named:

*STUDENT_NUMBER_*.zip.

This is an **individual** assignment and must be completed by you alone. If you copy files or methods from another source these must be referenced in comments in the usual way.

4 Marking

Marking for Parts 1 and 2 will follow the attached marking rubrics. Use these rubrics to mark your own work before you submit.



CSC306 - Part 1 Marking Rubric

	Fail (<40%)	Pass (40-49%)	2:2 (50-59%)	2:1 (60-69%)	First (70%-79%)	Distinction (80%+)
Design Choices **(20%)**	No description of application submitted	Design choices are basic, and omit key details	Design choices are detailed in parts, but are not complete	Good level of discussion around design choices, with reasonable decisions made	Excellent design choices presented	Excellent design choices presented, with supporting evidence from similar apps
Bonus Features **(40%)**	No bonus features submitted	Bonus features are focused on elements that do not enhance the app	Bonus features are basic and do not add to the core app	Bonus features are interesting and affect the proposed app in a small way	Excellent bonus features that enhance the proposed app	Evidence that the student has undertaken substantial work and evidenced proposed features from external sources
GUI Mock-ups **(40%)**	No GUI mockups presented	Design presented are hand-drawn and not created from Android studio	GUI Design is basic overall, and does not make use of elements from lectures	Good GUI elements, with clear areas for improvement	Excellent GUI and XML structure, showing substantial thought and progress	Excellent GUI that take on GUI elements based on substantial further reading of Android layout components

CSC306 - Part 2 Marking Rubric

	Fail (<40%)	Pass (40-49%)	2:2 (50-59%)	2:1 (60-69%)	First (70%-79%)	Distinction (80%+)
Functionality **(40%)**	Work of very poor quality. Doesn't run, or runs but doesn't have any functionality.	The app is limited in functionality and has clear errors	The app has limited functionality and does not meet all requirements	The app is of good quality, but some key elements are missing	All features described in Coursework Outline have been implemented	Excellent quality of functionality
Bonus Features **(20%)**	No bonus features implemented	Bonus features are of a low quality and do not enhance the app beyond the base functionality	Bonus features are of reasonable quality, but there are errors in use	Bonus features are of good quality, though there is room for improvements in quality	Excellent quality bonus features	Excellent quality of Bonus features with a high number of features added
Interface **(10%)**	Poor GUI using inappropriate principles. Few or no design principles used. Difficult to understand how to use.	User Interface is basic and lacks the appearance of a high quality app	Some attempt at using standard design principles. Moderately easy to understand how to use.	Evidence that the student has considered Material Design and applied them in some cases	Evidence that the student made good use of Material Design and produced a clean, well presented app	App Is presented in a professional style, making full use of Material Design
Code Quality **(10%)**	Strings and colours implemented in code. Some attempt at sensible variable names, whitespace and tabbing etc.	Some resources externalised, though code is difficult to read and understand		Most resources externalised but not into separate files, or not all resources externalised. Reasonable use of whitespace/ names.	Most or all resources externalised but should have used more xml files. Good use of whitespace, fairly easy to understand code.	All resources externalised and separated into appropriate files/directories. Professional quality coding.
Video **(10%)**	No Video submitted	Video is extremely basic and does not show enough content	Simple video highlighting basic features that are reasonably obvious to a viewer	Good video, most features are obvious with narration / text	Excellent quality video, clearly shows features	Video is of a professional level, highlighting all features
Mid-Point Demonstration **(10%)**	No demonstration given	Demonstration is of poor quality, lacking key features	App has some functionality expected at the mid-point of development	App has good features, though not complete	App meets all targets for this stage	App meets all targets to a high standard and offers more functionality