Assignment – Build a Mobile App

	Deliverables	Due Time
Proposal	Electronic submission	**11.59pm, 03/09/2023 (Week 06)**
Final	Electronic submission	**11:59pm, 01/10/2023 (Week 11)**
	Project Presentation & Demo	**11:59pm, 08/10/2023 (Week 12)**

INTRODUCTION

This assignment is worth **40%** of the total assessment of this course, including **10%** for the proposal (Part 1) and **30%** for the final (Part 2).

This is a **group** assignment and each group should have **SEVEN** (**minimum FIVE)** members. If you hope to form a group with more or less members, you should first consult with the course coordinator in written form. Each group member must contribute to the assignment equally and the members will be awarded the same marks. Under certain circumstances, adjustment of marks may happen to group members at the discretion of the course coordinator.

TASK

You are required to design and implement a mobile application (e.g., Productivity, Communication, Entertainment, Education, Finance, Health, Utilities, and Game) for one of the two major mobile platforms: Android and iOS. The final app should be physically deployed/installed in a mobile device.

You are required to pick an application (or a problem) and design a mobile app solution for the application/problem. The proposed app should satisfy the following **minimum feature set**:
• Graphical user interface (GUI) to effectively interact with the user.
• At least one form of data communication using either Cellular, WiFi, Bluetooth, etc.
• At least one technique to save network bandwidth usage, computation resource usage and device battery usage.
• At least one method to secure the communication and data storage, or strategy to protect user privacy in handling user data.

You need to justify the requirement of your app comparing to other apps that are available to provide similar functionality. Novelty and creativity of your solution will be considered in grading the app, i.e. you should not reimplement an app that is already available in the market.

This assignment should be completed in two phases, Proposal Phase and Final Phase. You are highly encouraged to conduct thorough research and come up with a solid plan in the proposal phase, though the final app is not necessary the same as that of the proposal.

You are encouraged to discuss with the course coordinator about your idea before the submission.

PROPOSAL PHASE [10 marks]

The project proposal is a written document that clearly explain:
- What is the problem that your app will solve?
- Why does the problem matter (e.g., motivation and significance)?
- What is the solution? What is the proposed workflow of the app?
- What are your technical approaches?
- How do you plan to implement your solution?
- What could go wrong and how do you plan to overcome them?

The proposal must **NOT** exceed **TWELVE** pages excluding references (single space and font size 12 for body text).

In the proposal, you need to articulate the following components, but not limited to:
1. App: background, justification of the necessity of the app with comparison to other similar apps in the market, significance of your app, and etc;
2. Solution: explain the workflow of the app with wireframe or UI designs for all stakeholders (users) of the app.
3. Technical approach: how you are going to implement your solution, e.g. do you need specific libraries, what is your high level code structure, do you need a server, do you need to develop your own algorithms, etc.
4. Plan: the implementation schedule, workload distribution among the group, how to develop collaboratively; and
5. Potential setbacks: identified risks, threats and proposed solutions;
6. References

Note that it is **NOT necessary** to follow the above headings in your proposal. You could imagine that the purpose of the proposal is **to convince readers of your dream project and explain how you plan to achieve it**.

You need to provide references to resources you have consulted and what guidelines you have applied to prepare your proposal. You are strongly encouraged to obtain some guidance on proposal writing from a wide range of resources (e.g. books, articles, and websites).

Submission

- Only one submission is required from each group.
- For the electronic submission of Proposal, the file should be submitted via Canvas. The proposal file must be of **Adobe Acrobat Portable Document Format (*.pdf)** format. No other file format is accepted.

Marking Scheme for Proposal

1. (3 marks) App: justification of the app, significance and challenge in developing the app.
2. (2 marks) Solution: clear description of the app with workflows
3. (2 marks) Technical approach: clear description of how you plan to implement the app with technical requirements.
4. (1 mark) Plan: **application specific** implementation schedule, appropriate workload distribution and collaborative development approaches.
5. (1 mark) Potential setbacks: identification of **application specific** potential setbacks and solutions.
6. (1 mark) Overall proposal writing.

FINAL PHASE [30 marks]

You are required to implement the app and demo the app through a physical mobile device. The final delivery includes the following components.

Final Report [8 marks]

The purpose of the final report is to show how well you had implemented the primary app features, e.g. minimum feature set, through experimental validation. Furthermore, the report should also contain a section explaining any setbacks in achieving goals proposed in the proposal, and a documentation/manual to guide a potential user on how to set up the working environment of your application and re-compile and re-deploy your app to a mobile device.
You also need to explain the workload distribution among group members as an Appendix to the final report.

The final report can contain the following sections, but not limited to:

1) **[4 marks] Validation of app features**: for **each item** in the following minimum feature set, **clearly explain your strategy** and then **provide an experimental validation** that you have managed to successfully implement the proposed techniques.
   Minimum Feature Set
   a. Graphical user interface (GUI) to effectively interact with the user.
   b. At least one form of data communication using either Cellular, WiFi, Bluetooth, etc.

    c.   At least one technique to save network bandwidth usage, computation resource usage and device battery usage.

    d.   At least one method to secure the communication and data storage, or strategy to protect user privacy in handling user data.

For examples, i) one possible way to show how successful your GUI implementation is to conduct a user study, (ii) to show your effective CPU usage, you can measure the CPU consumption and compare it with a benchmark app.

2) **[2 marks] Challenges and setbacks:** explain whether you were able to achieve goals proposed at the proposal phase. If not, explain reasons for taking different paths.

3) **[1 mark] Documentation and manual:** explain how to set up the working environment to re-compile and re-deploy your app to a mobile device.

4) **[1 mark] Appendix:** Workload distribution among group members.

The final report must be of Adobe Acrobat Portable Document Format (*.pdf) format. No other file format is accepted. The final report must **NOT** exceed **TWELVE** pages excluding references and appendix (single space and font size 12 for body text).

Video [3 marks]

Develop a video to showcase your app to users, and motivating users to download your app. It should include the problem, how your app works and benefits to users. The introduction video must be compatible with the VLC media player and .mp4 file format is preferred. The video should not be longer than 3 minutes. Please make sure video size is not excessively large, e.g. video should be about 100MB.

Presentation [2 marks]

The project presentation is to pitch your app. Each group has maximally **3 minutes** to present the assignment using the presentation material submitted. The presentation will be generally starting at the lecture time (i.e. 5:00pm) from Group 1 in the weekly lecture room. You should be familiar with the presenting via Zoom. The presentation will be marked in terms of clarity, attitude/confidence, presentation skills and content.

Demo [3 marks]

Each group has maximally **2 minutes** after the presentation to demonstrate the key features of the app. The app should be installed on a mobile device. Successful demonstration of the key features of the app, and the readiness to distribute will be evaluated.

It is your responsibility to arrange all technical requirements to successfully demonstrate the key features, e.g. internet access, multiple mobile devices in case of a collaborative app, other supporting devices such as wearables, access to cloud services, etc. prior to the presentation time slot.

Source code of the app [4 marks]

Export of the project development environment as a zip file and an APK file (or a suitable method/format to install the developed app on a mobile device) should be submitted. Successful installation of the app on a real device, testing of key features of the app, challenges and effort in coding will be evaluated.

Submission

- Only one submission is required from each group and all submissions should be submitted via Canvas.
- Final report in PDF format.
- Project video. It is your responsibility to make sure that the video can be played successfully.
- Presentation slides.
- APK file (or a method to install the developed app on a mobile device) for the app.
- Zip of all project source code files. It is your responsibility to ensure that 1) your zip file can be accessed and unzipped successfully, 2) your programs can be compiled and run successfully.

Marking Scheme for Final

15 marks will be allocated by a panel of judges evaluating all deliverables including in-class presentation and demo at Week 12 in-class presentation. These 15 marks are distributed as follows;
1. (2 marks) Novelty and significance of the problem,
2. (4 marks) Creativity of the solution including proper presentation/demonstration of the solution.
3. (2 marks) Challenges involved in developing your app and the amount of effort that you have put in developing the final app.
4. (2 marks) Readiness to distribute the app to users.
5. (2 marks) Presentation.
6. (3 marks) Demo.

15 marks will be allocated by the course coordinator and tutors evaluating the following three deliverables offline.
7. (4 marks) Source code of the app.
8. (8 marks) Final report.
9. (3 marks) Project video.

PLAGIARISM is where you use the work of another person and present it as your own. This is **STRICTLY PROHIBITED. Text-based similarity detecting software (e.g., Turnitin) will be used for all text-based written assignments and source codes. It is your responsibility to understand the Academic Honesty policies of the University of Sydney.**