

# CET343 Android Mobile Development Assignment (2022/23)

This assignment contributes 100% to your final module mark and tests learning outcomes 1,2, 3 & 4. The assessment has been designed to enable completion within a **maximum** time frame of **42 hours**.

1. Advanced understanding of the various methodological approaches to native mobile design, including different programming languages, storage designs and appropriate native mobile standards;
2. Comparative knowledge of design and development techniques for the design of native mobile applications and storage systems
3. Ability to plan, analyse, design, build and implement a media and interaction rich native mobile application in a chosen domain
4. Ability to plan, develop and implement an integrated testing and evaluation strategy accounting for user experience, data integrity and network performance issues.

This assignment is split into three parts. Part A is worth 30 marks and is an analysis, design, functionality, testing and evaluation report which offers you the opportunity to discuss your app's life cycle, functionality against the requirements, present your testing results and evaluate the overall success. Part B is worth 60 marks and this offers you the opportunity to create the app you have designed. The final section, Part C, is worth 10 marks and gives you the opportunity to demonstrate your app.

The deadline for this assignment is 9th of December 2022 at 2pm. Please submit to the assignment space on canvas.

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# Scenario

## BabyBuy

You have been commissioned to create an app that will help parents create a list of items they need to buy before the birth of their baby and after. This app will store a list of items they need, as well as a description, price and picture of the item. Extra features will allow optional location tracking of the shop they need to visit as well as item delegation.

### Typical user interactions

Emily is going to be a new mother and she is starting to prepare for the arrival of her new baby. She wants an app that will help her prepare. She searches for baby apps on the play store and finds BabyBuy.

She downloads this app, registers an account and logs in. Inside this app she starts to list all of the things she needs for her new baby, as well as upload/ take a picture of the item. As she has a supportive family, she is not buying all of these things herself. After adding a few items to her list, she delegates one of these items to her Mother, Susan. The app sends her an SMS text message with the name of the item, price and a description.

There is also an option to tag a location of where she can buy the item from, which will be useful for when she is out shopping. Emily also has the ability to maintain her list with edit and delete options for each item as well as being able to mark each item as purchased.

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You are required to develop a prototype application for the Android operating systems which will include at least all of the core requirements.

Core requirements of the app:

- Home screen - the point of entry for your app, suitably branded.
- User registration and login
- Create an item and upload / take a picture
- Manage my items
  - Delete items
  - Edit items
  - Mark as purchased
- Item Delegation
  - The ability to send an item as an SMS to another phone / contact with the item's information.

Optional Desirable Requirements for the app:

- The ability to Geotag an item so the location of the item can be recorded and then viewed on a map.
- To include a full range of appropriate gesture control to improve the management of items. For example, shake to clear an entry, swipe right to mark as purchased, swipe left to delete

There is no associated logo or house style for this app yet so you have free reign over the appearance.



## Part A - Analysis, design, functionality, testing and evaluation (30 marks)

A technical report should be submitted. The document should include the following sections:

- **Front cover.** Include name, userID, registration number and programme.
- **Analysis.** This section requires you to provide a comparative evaluation of the various methodological approaches to native mobile design, including operating systems, options for different programming languages, storage designs and appropriate native mobile standards. Your comparison should consider iOS and Android based solutions at a minimum. This section should be in the region of 1000 words.
- **Design.** This section should show your screen hierarchy / activity flow, plus wireframe design and menu / layout details. You should also critically evaluate how your design matches material design principles.
- **Functionality.** Provide detail on important elements of your application's functionality with a breakdown of key examples of coding logic. You should give a clear description of the implementation, including storage requirements and external APIs used (if relevant).
- **Test Strategy and Test Results.** Summarise your strategy for testing, including testing for multiple device support, and give results of your tests. A test table with a list of tests, expected results and actual results should be included.
- **Evaluation.** Comment on the success of your implementation and make recommendations for improvements.

## Part B - Build of the mobile Android app - (60 marks)

The completed prototype app should be submitted. The application should be native and work well on an Android phone or tablet device. For the purpose of this project all data persistence can be local but it is encouraged to implement cloud solutions for data persistence.

Your prototype should include all of the core requirements mentioned in the scenario.

**You are also to attempt one of the optional desirable features. Please only attempt one desirable feature as marks will only be awarded for one. You must make it clear which desirable requirement you have attempted.**

Please ensure that all code (XML and Java / Kotlin) is commented appropriately and that you have packaged the app successfully before submitting a zipped project file to canvas.

## Part C - Demo (10 marks)

You are required to demonstrate your app with a screencast recording. This should be no longer than 10 minutes. The purpose of this demonstration is to:

- To showcase the application and how well you have met the core requirements.
- To showcase the application and how well you have met the desirable requirement of your choice.
- To demonstrate any issues identified during testing which have not yet been resolved.

# Submission

The deadline for submission is the 9th of December 2022 at 2pm. This excludes anyone who has a support memo and may be entitled to extra time.

Please submit the 3 files to canvas. A PDF for your report, a Zip file containing your android studio project and an MP4 file of your screencast.

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## Marking Criteria

### Part A

#### **Analysis (4 marks)**

Full marks will be awarded for a clear, detailed and accurate analysis and evaluation of the various methods and approaches to native app development.

#### **Design (10 marks)**

Full marks will be awarded for a full collection of wireframe designs that follow current material design standards and follow current trends in application design. User interaction needs to be fully considered to ensure a good user experience and marks will reflect this. An explanation of your design and how it matches material design principles must be included to achieve full marks for this section.

#### **Functionality (4 marks)**

Full marks for clearly explaining your app's core functionality including explaining the storage of data and any APIs you might have used.

#### **Testing and Evaluation (8 marks)**

Full marks awarded for detailing your chosen test strategy, presenting your findings and critically evaluating how successful your app has been.

#### **Presentation and referencing (4 marks)**

Full marks for this section will be awarded for a professional report including a front cover and accurate referencing.

### Part B

#### **Core functionality to include the following (maximum 48 marks):**

- Home screen - the point of entry for your app, suitably branded. (6 marks)
- User registration and login (8 marks)
- Create an item (8 marks)
- Manage my items
  - Delete items (4 marks)

- Edit items (8 marks)
- Mark as purchased (4 marks)
- Item Delegation (10 marks)
  - The ability to send an item as an SMS to another phone / contact including detail of the item.

**Desired functionality (1 to be completed, maximum 12 marks)**

- The ability to Geotag an item so the location of the item can be recorded and then viewed on a map.
- To include a full range of appropriate gesture control to improve the management of items. For example, shake to clear an entry, swipe right to mark as purchased, swipe left to delete

## Part C

**Demonstration (10 marks)**

A short, successful and professional demo of your application explaining how you have met the core and desirable requirement and any issues you had along the way. This is to be submitted as a screencast (mp4) no longer than 10 minutes.

## Marking Grid

|                      |  |   |  |   |
|----------------------|--|---|--|---|
| <b>Analysis</b>      | <b>4 marks</b><br>A fully comprehensive accurate analysis and evaluation that includes the various methods and approaches to native app development.   | <b>2-3 marks</b><br>A good analysis and evaluation of the methods and approaches to native app development. This may be lacking in detail and critical evaluation.                      | <b>1 marks</b><br>A poor analysis of current methods and approaches to app development. This may be significantly lacking in detail and critical evaluation. | <b>0 Marks</b><br>Incorrect / Not submitted |
| <b>Design</b>        | <b>8-10 marks</b><br>A full collection of wireframe designs that follow current material design guidelines and current trends in app design, complete with a detailed critical evaluation of how your design meets these guidelines. | <b>3-7 marks</b><br>A full collection of wireframe designs that partially conform to material design guidelines. Your critical evaluation might be lacking in detail and justification. | <b>1-2 marks</b><br>Partially completed wireframe designs with an evaluation that falls significantly short of what is required.                             | <b>0 Marks</b><br>Incorrect / Not submitted |
| <b>Functionality</b> | <b>4 marks</b><br>A fully comprehensive accurate description of the functionality included in your app.  | <b>2-3 marks</b><br>A description of most of the functionality of your app but some parts may be missing or not described.  | <b>1 marks</b><br>A poor description of the functionality of your app.   | <b>0 Marks</b><br>Incorrect / Not submitted |

|                                     |  |   |   |   |
|-------------------------------------|--|---|---|---|
| <b>Testing and evaluation</b>       | <b>7-8 marks</b><br>A comprehensive test strategy where all tests are relevant and documented, including a detailed documentation of how successful your app has been. | <b>3-6 marks</b><br>A good test strategy where testing is mostly relevant and you have attempted to critically evaluate how successful your app has been. | <b>1-2 marks</b><br>Partially completed test strategy with little or no evaluation. | <b>0 Marks</b><br>Incorrect / Not submitted |
| <b>Presentation and referencing</b> | <b>3-4 marks</b><br>Professional presentation including contents page and front cover with accurate referencing  | <b>1-2 marks</b><br>Presentation of the document might be lacking professionalism and references might not be accurate                                    | <b>0 Marks</b><br>Incorrect / Not submitted   | <b>N/A</b>                                  |

| <b>Core app functionality (maximum 48 marks)</b> |   |  |
|--|---|--|
| <b>Home screen</b>                               | <b>4-6 marks</b><br>A fully or partially working activity.  | <b>0-3 marks</b><br>An incomplete or missing activity. |
| <b>User registration</b>                         | <b>5-8 marks</b><br>A fully or partially working activity.  | <b>0-4 marks</b><br>An incomplete or missing activity. |
| <b>Delete my items</b>                           | <b>3-4 marks</b><br>A fully or partially working activity.  | <b>0-2 marks</b><br>An incomplete or missing activity. |
| <b>Edit my items</b>                             | <b>5-8 marks</b><br>A fully or partially working activity.  | <b>0-4 marks</b><br>An incomplete or missing activity. |
| <b>Purchased my tasks</b>                        | <b>3-4 marks</b><br>A fully or partially working activity.  | <b>0-2 marks</b><br>An incomplete or missing activity. |
| <b>Create an item</b>                            | <b>5-8 marks</b><br>A fully or partially working activity.  | <b>0-4 marks</b><br>An incomplete or missing activity. |
| <b>Delegate an item</b>                          | <b>6-10 marks</b><br>A fully or partially working activity. | <b>0-5 marks</b><br>An incomplete or missing activity. |

| <b>Desired functionality (maximum 12 marks and only one to be attempted)</b> |   |  |  |
|--|---|--|--|
| <b>Location tagging of items</b>   | <b>9-12 marks</b><br>A complete or very good attempt at the functionality | <b>4-8 marks</b><br>A good or partially working attempt at the functionality | <b>0-3 marks</b><br>An incomplete or poor attempt at the functionality |
| <b>Range of gestures and sensors</b>   | <b>9-12 marks</b><br>A complete or very good attempt at the functionality | <b>4-8 marks</b><br>A good or partially working attempt at the functionality | <b>0-3 marks</b><br>An incomplete or poor attempt at the functionality |

| Presentation screencast (maximum 10 marks) |   |   |   |
|--|---|---|---|
| Presentation                               | <b>6-10 marks</b><br>A professional demonstration of your app covering how the app meets the needs of the scenario with the core requirements and any desirable requirements. | <b>1-5 marks</b><br>A demonstration of your app that may fall short of explaining the core requirements of the app to the desired level | <b>0 Marks</b><br>Incorrect / Not submitted |