MCAST

ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)

(Note: This version is to be used for an assignment brief issued to students via Classter)

Course Title	**B.Sc. (Hons.) in Software Development** **B.Sc. (Hons.) in Creative Computing**		**Lecturer Name & Surname**	**James Decelis**	
Unit Number & Title	ITMSD-506-2308				
Assignment Number, Title / Type	Using Flutter and Dart				
Date Set	7th March 2025	**Deadline Date**	23rd March 2025		
Student Name	Christa Valentino	**ID Number**	286404(L)	**Class / Group**	SWD-6.2A

Assessment Criteria	Maximum Mark
E&C1 Create a basic cross-platform mobile application.	8
R&U1 Using accessibility tools, evaluate if a mobile application is accessibility-compliant	2
E&C2 Develop user interfaces that adhere to both iOS and Android design guidelines while maintaining a consistent user experience across platforms.	8
A&A1 Create responsive layouts for multiple screen sizes and orientations.	8
R&U2 Optimize rendering and layout performance to reduce overdraw and improve responsiveness.	6
E&C3 Analyse app performance to identify and address performance bottlenecks.	6
A&A2 Use state management solutions to manage state efficiently	6
R&U3 Use device-specific features such as camera, GPS, and sensors using platform APIs.	6
R&U4 Access native device functionalities through platform-specific code.	6
A&A3 Integrate third-party libraries and SDKs effectively into cross-platform applications.	8
A&A4 Implement notifications and background services to enhance app functionality.	6
R&U5 Implement effective version control practices using Git workflows.	6
R&U6 Monitor application performance and user feedback using analytics and monitoring tools.	8
R&U7 Plan app updates and maintenance for execution ensuring backward compatibility.	8
A&A5 Set up continuous integration and delivery pipelines for automated builds and deployments.	8
Total Mark	100

Notes to Students:

- This assignment brief has been approved and released by the Internal Verifier through Classter.
- Assessment marks and feedback by the lecturer will be available online via Classter (Http://mcast.classter.com) following release by the Internal Verifier
- Students submitting their assignment on Moodle/Turnitin will be requested to confirm online the following statements:

Student's declaration prior to handing-in of assignment

- ❖ I certify that the work submitted for this assignment is my own and that I have read and understood the respective Plagiarism Policy

Student's declaration on assessment special arrangements

- ❖ I certify that adequate support was given to me during the assignment through the Institute and/or the Inclusive Education Unit.
- ❖ I declare that I refused the special support offered by the Institute.

ITMSD-506-2308 – Cross Platform Development

B Sc (Hons) in Software Development

B Sc (Hons) in Creative Computing

Instruction to Students

- This is a Home-Based Assignment that Covers all criteria
- The submission deadline is 23rd March 2025
- Develop the required application using Flutter and Dart
- Compress the following folder and files and upload them to the VLE.
    - lib
    - assets (if any)
    - pubspec.yaml
    - info.plist (iOS)
    - AndroidManifest.xml (android)
- All other tasks should be submitted via the link below.
    - https://forms.microsoft.com/e/yv7QxkdNqF

Task Overview

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You are required to develop a fully functional mobile application that differs from the examples demonstrated in class. The application must adhere to best development practices and should only incorporate components covered in class unless otherwise specified. The app must include a minimum of two screens, with at least one screen featuring user interaction.

Submit the application name and description using the following link: Microsoft Forms.

The Application

The developed application must include the following features:

Application Structure & Best Practices (A&A2)

- Implement both **stateless** and **stateful** widgets appropriately.
- Properly manage state by correctly lifting up the state where necessary.
- Follow a modular development approach by creating separate classes for distinct functional components.

Hardware Integration (R&U3, R&U4)

- Integrate either **GPS** or the **Camera** into the application.
- Ensure the appropriate permissions and requirements are set based on the selected hardware component (GPS or Camera).
- Research and document the requirements for implementing push notifications on **iOS**.

Data Management (A&A3)

- Utilize a **third-party API** or integrate **Firebase Realtime Database** to store and retrieve data dynamically.

Notifications (A&A4)

- Research and implement **local notifications** for **Android**.

Version Control (R&U5)

- Use **Git** for version control, ensuring multiple commits throughout the development process.
- Submit the Git repository URL via the provided link.

Additional Requirements – answer the following via the provided link

Accessibility Evaluation (R&U1)

- Select an accessibility evaluation tool and provide **screenshots** or **test results** demonstrating the evaluation.

Future Enhancements (R&U7)

- Outline a **plan** for at least **three future updates** to improve the application.

Design & Prototyping(E&C2)

- Utilize **design tools** such as **Figma** or **Adobe XD** to create wireframes or design prototypes of the proposed application.
- Submit wireframes or prototypes along with the final submission.

Responsive Design(A&A1)

- Implement a **simple responsive screen** and provide **screenshots** showcasing its functionality across **small, medium, and large** screen sizes.

Performance Analysis(R&U2, E&C3)

- Use **Flutter's performance profiling tools** to analyse UI performance and submit logs or reports demonstrating rendering efficiency.
- Identify tools available in **Flutter DevTools** that can assist in performance analysis and apply them to your application.

Analytics (R&U6)

- Research the types of **analytics** that can be collected from a mobile application using **Firebase Analytics**.

GitHub Actions & Workflow Automation (A&A5)

- Provide a **brief description** of **GitHub Actions workflow** and its role in CI/CD.
- Submit **code with descriptions** demonstrating how GitHub Actions can be integrated into a **Flutter application**.

Marking Scheme

E&C1 CREATE A BASIC CROSS-PLATFORM MOBILE APPLICATION. (8 MARKS)	
• Application's name and Description	3 Marks
• Originality	2 Marks
• At least 2 Screens	2 Marks
• Interactive Screen (using the Form Widget)	1 Mark

R&U1 USING ACCESSIBILITY TOOLS, EVALUATE IF A MOBILE APPLICATION IS ACCESSIBILITY-COMPLIANT. 2 MARKS	
Results from tool	2 Marks

E&C2 DEVELOP USER INTERFACES THAT ADHERE TO BOTH IOS AND ANDROID DESIGN GUIDELINES WHILE MAINTAINING A CONSISTENT USER EXPERIENCE ACROSS PLATFORMS. 8 MARKS	
Use of tool (figma etc..)	3 Marks
Wireframes/prototype designs	5 Marks

A&A1 CREATE RESPONSIVE LAYOUTS FOR MULTIPLE SCREEN SIZES AND ORIENTATIONS. 8 MARKS	
Responsive screen	5 Marks
Screenshot of a screen running on small, medium and large screen sizes	3 Marks

R&U2 OPTIMIZE RENDERING AND LAYOUT PERFORMANCE TO REDUCE OVERDRAW AND IMPROVE RESPONSIVENESS. 6 MARKS E&C3 ANALYSE APP PERFORMANCE TO IDENTIFY AND ADDRESS PERFORMANCE BOTTLENECKS. 6 MARKS R&U6 MONITOR APPLICATION PERFORMANCE AND USER FEEDBACK USING ANALYTICS AND MONITORING TOOLS. 8 MARKS	
Use of Flutter's performance profiling tools	4 Marks

Identify tools available in **Flutter DevTools** that can assist in performance analysis and apply them to your application.	2 Marks
Main tools to analyse a flutter app performance using DevTools	6 Marks
What analytics can be gathered from a mobile app when using Firebase analytics	8 Marks

A&A2 USE STATE MANAGEMENT SOLUTIONS TO MANAGE STATE EFFICIENTLY 6 MARKS	
Stateless Widgets	2 Marks
Statefull Widgets	2 Marks
Lifting up the state	1 Marks
Modularity	1 Marks

R&U3 USE DEVICE-SPECIFIC FEATURES SUCH AS CAMERA, GPS, AND SENSORS USING PLATFORM APIS. 6 MARKS	
Correct use of GPS or Camera	6 Marks

R&U4 ACCESS NATIVE DEVICE FUNCTIONALITIES THROUGH PLATFORM-SPECIFIC CODE. 6 MARKS	
Correct permissions and requirement according to the selection between GPS and camera	2 Marks
Outline what is required to implement notifications for iOS	4 Marks

A&A3 INTEGRATE THIRD-PARTY LIBRARIES AND SDKS EFFECTIVELY INTO CROSS-PLATFORM APPLICATIONS. 8 MARKS	
Use of third-Party APIs or Realtime database	8 Marks

A&A4 IMPLEMENT NOTIFICATIONS AND BACKGROUND SERVICES TO ENHANCE APP FUNCTIONALITY. 6 MARKS	
Implement Local Notifications on Android	6 Marks

R&U5 IMPLEMENT EFFECTIVE VERSION CONTROL PRACTICES USING GIT WORKFLOWS. 6 MARKS	
Use of Git	6 Marks

R&U7 PLAN APP UPDATES AND MAINTENANCE FOR EXECUTION ENSURING BACKWARD COMPATIBILITY. 8 MARKS	
Description of 3 future updates	8 Marks

A&A5 SET UP CONTINUOUS INTEGRATION AND DELIVERY PIPELINES FOR AUTOMATED BUILDS AND DEPLOYMENTS. 8 MARKS	
Brief description of GitHub Actions	6 Marks
Code with description demonstrating how GitHub Actions can be integrated	2 Marks