**ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)**

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| Course  Title | | Advanced Diploma in IT (MQF Level 4) | | | Lecturer Name & Surname | Mr. James Attard / Mr. James Decelis / Mr. Victor John Saliba / Ms. Samantha Mallia | | |
| Unit Number & Title | | | ITSFT-406-2001 | Introduction to Mobile Applications Development | | | | | |
| Assignment Number, Title / Type | | | 02, Create a Functional Ionic-React App / Home Assignment | | | | | |
| Date Set | | | 06/05/2024 | Deadline Date | 02/06/2024 | | | |
| Student Name | Nathan Attard | | | ID Number | 0323406L | | Class / Group | 4.2A |

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| Assessment Criteria | Maximum Mark |
| *KU1.1: Describe different types of mobile devices* | 5 |
| *KU1.2: Identify major types of mobile technologies* | 5 |
| *KU1.5: Outline the strengths and weaknesses of mobile technologies* | 5 |
| *KU2.1: Explain the web / mobile application’s functional requirements* | 5 |
| *KU2.4: Examine the suitability of the UX for the target userbase* | 5 |
| *AA2.3: Construct a workable navigation system* | 7 |
| *AA2.5: Produce a suitable UX that conforms with the requirements of the mobile application* | 7 |
| *AA3.3: Examine the core functionalities of the built prototype* | 7 |
| *SE1.3: Create an application capable of running on a mobile platform using a given technology* | 10 |
| *SE1.4: Evaluate the strengths and weaknesses of a mobile application when compared to another technology* | 10 |
| Total Mark | **66** |

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| **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. |

Advanced Diploma in IT (MQF Level 4)

Introduction to Mobile Applications Development

**Create a Functional Ionic-React Application**

**Assignment Guidelines**

* This assignment is in the form of a **Home Assignment**.
* Fill in **all the details in the cover sheet** (first page of this document) otherwise your submission will not be accepted.
* You are encouraged to attempt **all** questions.
* Submission method: **Soft copy** on **Moodle**. You should upload **two files** – a compressed folder and this document in its entirety, filled with your details. These two files need to be uploaded to VLE using your **class submission link**
  1. **First File - Compressed Folder:**
     + Create a folder with **your** name, surname and class (eg: James\_Attard\_SWD42A)
     + In this folder, you are required to include onlythe code files and any assets required by the assignment questions. **DO NOT UPLOAD THE ENTIRE IONIC PROJECT**. The assets include:
       - The Source Code files – App.tsx, Expenses.tsx, Preferences.tsx (Refer to Section 1)
       - Custom Icon (Refer to Section 2)
       - Market Report (Refer to Section 3)
       - Link to your short Video Demonstration (Refer to Section 4)
     + **Compress** the folder (zip or rar)
  2. **Second File – This Document with your student details:**
     + In addition to the previous compressed folder, you need to also **upload this entire document** *(not just the coversheet)* on VLE. Do not edit this document in any shape or form except to add your student details in the first page.

**Read Carefully**

* **Submissions occurring after the indicated time frame are considered late and thus will not be accepted**.
* All the institute procedures, rules and regulations apply to this assignment.
* **Copying is strictly prohibited and will be penalized** in line with the College’s disciplinary procedures. Note that you might be called for an **interview** to explain your work.

**SCENARIO application**

A local NGO in Malta, *Safe Finance*, is launching a new initiative to help citizens to be more conscientious of their spending habits. As such, Safe Finance has approached you to build their new mobile app, **Expense Tracker**, a minimalistic expense tracker mobile app that allows the user to track their day to day expenses**.**

You were tasked with building this mobile app using Ionic-React and to make strategies to deploy it in the future. The app needs to be built according to the mockup provided (refer to the images below). **A video of the whole functional application is provided on VLE.**

A screenshot of a phone

Description automatically generated A screenshot of a phone

Description automatically generated

Figures 1 – Expenses Screen; Figure 2 – Error on invalid inputs

A screenshot of a mail

Description automatically generated A screenshot of a cell phone

Description automatically generated

Figure 3 (left) – Swipe to Delete; Figure 4 (right) – Preferences Page

A screenshot of a computer

Description automatically generated A white sheet of paper with a white circle

Description automatically generated

Figures 5,6 – Color theme turned off on both screens

**SECTION 1 – App Development in Ionic-React (46 marks)**

Your task in this section is to develop a fully functional mobile app as per the mockups in the images above and the demo video published on VLE. The application must be developed in Ionic React using **at least** the following Ionic components:

* + Toolbar (**IonToolbar**)
  + Layout (**IonFooter, IonHeader, IonContent, IonPage**)
  + Tabs (**IonTabs**)
  + List of Expenses (**IonList, IonItem**)
  + Expense Counter (**IonBadge**)
  + Add Expense (**IonInput**)
  + Delete Expense (**IonButton, IonItemSliding**)
  + Text (**IonText, IonTitle, IonLabel**)
  + Error notification (**IonAlert**)
  + Theme Switcher (**IonToggle**)

**Application Specification Details**

The following is a list of all the specifications required to build this application. The code should reside in two files which need to be included in the folder to be uploaded on VLE. These three files are **App.tsx** for the menu, **Expenses.tsx** for the expense tracker screen, and **Preferences.tsx** for the preferences screen. Complete as many of these challenges as possible to get the most marks!

1. **Navigation Menu** (AA2.3, **7 marks**)
   1. The application needs to have two screens which can be switched through a tab menu inside the <IonFooter />.
   2. Appropriate menu icons must be used as per the mockup provided.
2. **Expense Tracking Screen** (AA2.5, **7 marks**)

The UI for this screen should be developed using **at least** the following Ionic Components:

* + - Toolbar (**IonToolbar**)
    - Layout (**IonFooter, IonHeader, IonContent, IonPage**)
    - List of Expenses (**IonList, IonItem**)
    - Expense Counter (**IonBadge**)
    - Add Expense (**IonInput**)
    - Delete Expense (**IonButton, IonItemSliding**)
    - Text (**IonText, IonTitle, IonLabel**)
    - Error notification (**IonAlert**)

1. **Preferences Screen** (KU2.4, **5 marks**)

This UI for this screen should be developed using **at least** the following Ionic Components:

* + Toolbar (**IonToolbar**)
  + Layout (**IonFooter, IonHeader, IonContent, IonPage**)
  + Text (**IonText, IonTitle, IonLabel**)
  + Theme Switcher (**IonToggle**)

1. **Expense Tracking Functionality** (SE1.3, **10 marks**)
   1. The user should be able to add a new expense using the <IonInput /> component.
   2. The added expense should be added as an <IonItem /> to an <IonList />.
   3. Additionally, when the user clicks the delete <IonButton />, the respective expense item should be removed from the list.
2. **Error Validation** (AA3.3, **2 marks**)

The application should be able to handle the error when a user tries to add an empty expense.

1. **Expense Counter** (SE1.4, **2 marks**)

An <IonBadge /> should display the number of expenses that are currently stored in the list. This should be located next to the main title (<IonTitle />) of the application.

1. **Swipe Left to Delete** (SE1.4, **3 marks**)

The expense can be removed from the list by swiping the item to the left.

1. **User Registration Details** (SE1.4, **2 marks**)
   1. The application should display the user registration details in the main expenses screen.
   2. The user can update the registration details from the preferences screen.
2. **Theme Switcher** (SE1.4, **3 marks**)

The application should allow the user to switch between a colorized theme and a non-colorized theme. This should be in real-time for the Preferences screen. In the expenses screen, the change should be visible when the user refreshes the browser.

1. **Persisting Data** (AA3.3, **5 marks**)

All the data in the application should persist when the browser/emulator is either re-opened or refreshed. The persisting data should include:

* 1. List of Expenses
  2. Expense counter
  3. Registered User
  4. Application Theme
  5. Details inside the Preferences screen

**SECTION 2 – Deployment Strategy (5 marks)**

(KU1.1, **5 marks**)

Your task in this section is to demonstrate your understanding of deploying a mobile application in the **real world**. As such, you are asked to:

1. Deploy this application to either an **Android or an iPhone emulator** using Capacitor.
2. Design a new icon for the Expenses Tracker app, using any tool of your choice.
3. Do some research to deploy this application on the emulator using your custom icon in the previous step, as long as it is not the default Capacitor icon.

To demonstrate that you have fulfilled this requirement, you need to include this in your video presentation (refer to Section 4) by opening the emulator of your choice, showing the application icon, and running the application from the emulator.

**SECTION 3 – Market Report (5 marks)**

(KU1.2, **5 marks**)

Your task in this section is to create a Word Document that includes:

* A brief description of another hybrid mobile application development framework, other than Ionic-React. The description should include key features and main differences from Ionic React.
* A brief report of a company (could be local or international) that uses hybrid applications to develop their mobile application/s. The report should include what framework they use and how they are using it. Include any websites and references in your report.

Note: The report should be in **your own words** and should be properly formatted and focus should be on quality.

**SECTION 4 – Video Presentation (10 marks)**

(KU1.5, **5 marks**) (KU2.1, **5 marks**)

As part of your final delivery of the Expenses Tracker, the NGO Safe Finance would like you to create a short video showing a demo of your application. The demo should include both the screen recording and your own voiceover (through a microphone) explaining the demo and parts of the code. If you do not have a microphone ask your lecturer for an alternative. More details below:

1) The application needs to be run on an Emulator of your choice (if you have completed the task in Section 2) or else you can use a regular browser if you have not fulfilled Section 2.

2) Your demo should include how your data is being persisted (Refer to Task 10 of Section 1). If you are using the browser to demonstrate your application, make sure you record the entire browser screen so you can demonstrate that data persists even when you click the browser’s refresh. If you are using an Emulator, you need to close the application and open it again from the Emulator, or else you may also close the entire Emulator and reopen it again to demonstrate that your data persists.

3) Apart from a demo of the deployed application, the video should also show code snippets of your application where you will explain the **key parts of the code**.

4) The video should not be longer than 5 minutes and should focus on the most important and interesting parts of your code. This is a great opportunity to showcase your coding skills and demonstrate your understanding of the project.

5) Remember **to be clear and concise** in your explanations and to **highlight any particularly innovative or challenging aspects of your code**. For this task you are encouraged to use **OBS Studio** and you should record both your screen and your voice.

6) The video should be **uploaded on YouTube** as unlisted and the link to the video should be shared in a text file.

**7) Even if you are unable to fulfill all the application specifications, you are still required to make a video presentation of your work.**

**8) For the face to face interview with the lecturer, the student would be also required to explain their work.**