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Technical Demo Flight Plan

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Operation RM

Client:

General Dynamics Mission Systems

Mentor:

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Team Members:

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Overview:

        The technical demo flight plan is an agenda of the testing of the solutions to the team's technical challenges and if they are successful in solving the challenges. The primary purpose of the technical demo is to demonstrate validation for the usage of the team's selected technologies for future implementation.

Risky Technical Challenges

After coordinating with the client and development of the project's requirements, the team has developed the major, overarching technical challenges that are required to implement the project. These technical challenges are as follows:

- **C1: Programming Language.** A project's programming language can define what can or cannot be done. Certain languages have varying library and deployment support so is it crucial that the selected language can operate as an Android application. To validate the team's selected programming language, an application running on an Android device must be demonstrated.

- **C2: Development Space.** The development environment for an android app can be crucial for the ease and efficiency of development. Debugging and testing is a potential challenge of this area since the team is provided only two physical phones to use. Also, having a developer friendly interface is important due to the project requiring a significant amount of user interface development. For this challenge, the selected solution will have to demonstrate that it has strong support for local debugging and testing, along with an effective development interface.

- **C3: Data Structure.** A strong data structure is important for a program that handles data. For this project, it is important to have a way to manage the email queue in a simple, yet effective way. This will make it easier to complete the project since handling data will not be as intensive. To prove that the selected data structure is a successful solution to this challenge, the data structure must have data that would simulate an email being put inside the structure and have the data extracted from it.

- **C4: User Interface.** For a program to be user friendly, an effective user interface must be in place. For this project in particular, the user interface must properly function to make the user's experience easier along with mimicking the already implemented web application's user interface. For the prototype interface to be a successful demonstration of this challenge, it must show what functionality is intended for the final product.

- **C5: Different Language Communication.** After establishing the desired programming language, it is important to validate that it is able to communicate with the radio control interface API which is written in C. The selected language will have to be able to access the API's function calls to successfully control the radio modem. Completing this challenge is crucial to the success of the project. For this challenge to be successfully completed, a demonstration of the selected language working with C is required.

Challenges Covered By Demos:

This section describes the processes that will be followed to demonstrate the validation of each of the solutions to the challenges that were introduced.

Demonstration 1: Prototype Application Interface

Challenges Addressed: C1, C2, C3

Flight Plan:

1. The selected development space will be shown with the user interface drag and drop functionality along with easy to follow formatting code by opening an already developed prototype application, specifically written in Java.
2. The prototype application will then be run on a local Android device emulator which has been configured with an Android image that satisfies the version requirement for the project.

3. The program will be navigated to the "Inbox" page which shows a list of simulated emails which are contained in the selected data structure and displayed on the screen.

<u>Evaluation:</u>

☐ Demonstration validates each of the selected solutions as successful for solving the provided challenge(s)?

☐ Other evaluative comments:

Demonstration 2: User Interface

<u>Challenges Addressed:</u> C4

<u>Flight Plan:</u>

1. The demonstration will begin with starting the prototype application. Once started, the application will display the "File Transfer" screen to the user. This screen will have to contain the "Compose", "Inbox", "Outbox", "Sent", and "Transfer History" buttons.
2. Next, the demonstration will show off the composition screen where a mock email can be created. There will be a subject, content, and attachment sections to the email where the attachment will be mimicked by a checkbox. Once the mock email is complete, the paper airplane button on the top right of the screen can be used to send the email to the outbox. The "File Transfer" button will then be clicked to take the user back to the "File Transfer" screen.
3. Now, the demonstration will show the outbox screen where the previously composed email will be shown. Each individual entry will have a field for the subject, queue status, attachment indicator, and timestamp. Individual emails can be selected and then they can be either sent or deleted with the paper airplane and trash can buttons respectively.
4. Next, the inbox screen will be demonstrated. The inbox screen will contain a list of emails that can be managed similar to the outbox screen. Instead of the

send button, there will be a download button that will display an acknowledgment message to the user.
5. Lastly, the "Sent" screen will be displayed and this will resemble the inbox/outbox screens.

Evaluation:

☐ Demonstration validates each of the selected solutions as successful for solving the provided challenge(s)?

☐ Other evaluative comments:

Demonstration 3: Cross Language Communication

Challenges Addressed: C5

Flight Plan:

1. To begin the demonstration, the prototype application will be navigated to the "Sent" screen.
2. To demonstrate the success of completing the covered challenge, the trash can button will be clicked, located on the top right of the screen. As a result, there will be a message displayed to the user.

Evaluation:

☐ Demonstration validates each of the selected solutions as successful for solving the provided challenge(s)?

☐ Other evaluative comments: