MODULE 3-3 SUBMIT PROJECT ONE:

INVENTORY APP (OPTION 1)

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Module 3-3 Submit Project One: Inventory App (Option 1)

As a team member of Mobile2App company, we have been hired to develop a mobile application to track items in a warehouse, **Inventory App (Option 1)**. The mobile application project goes through different steps, from planning to design to development, ready for launch in the following weeks. This paper is an App Development Proposal for the selected app option initially based on Android Devices (Southern New Hampshire University, 2021).

The team takes time to orient themselves to understand the goals and users to target the app. The team meets weekly to discuss the latest client request sent in and assign the work implementing mobile application development principles and best practices in developing a mobile application (Southern New Hampshire University, 2021).

Goals

The main goal of the Inventory mobile application is to track items in a warehouse through the primary use of smartphone or tablet devices. The track of the items at the warehouse assists in managing and automating the warehouse logistics and accelerating the business's growth and expansion. The app allows the user to fulfill anywhere experience with real-time inventory visibility on any device.

The mobile application includes these major components and functionality:

- A database with at least two tables to store:

    o Inventory items and items quantities

    o User email and passwords login credentials

- A login activity for sign-in or sign-up into the app.

- A two columns grid activity that displays all items in the inventory.

- A mechanism where the user can add and remove items from the inventory.

- A mechanism where the user can increase or decrease the quantity of a specific item in the inventory.

- A mechanism to notify the user when an item in the inventory has been reduced to zero.

- A mechanism to search for an item in the inventory (tentative).

Users

Major potential users for the mobile application include start-ups and small businesses needing a simple and intuitive way to track their items in an inventory from their pocket and always accessible.

Other potential users could be entrepreneurs initiating a home garage business that needs to keep track of their items as an inventory and professionals of any industry who want a simple solution to control and organize their office and home items.

UI Design

The app provides standard visual design and interaction patterns appropriate for a consistent and intuitive user interface and user experience (Google, 2021). The primary resource for creating the user interface components is Material Design Components (https://material.io/components?platform=android).

The app UI is based on two main screens: login activity and a two-column table activity listing inventory items. The activities display simplicity with a clear, consistent, intuitive, and predictable layout and adaptive device transform layout (Google, 2021). Shapes are of corner angles and some random geometry. The login activity is the main activity that the user initially interacts with to sign in to the app. When the user is authenticated, the app changes the screen to

display the inventory screen, a two columns grid screen. If the user is not successfully authenticated, an error pop-up window is displayed.
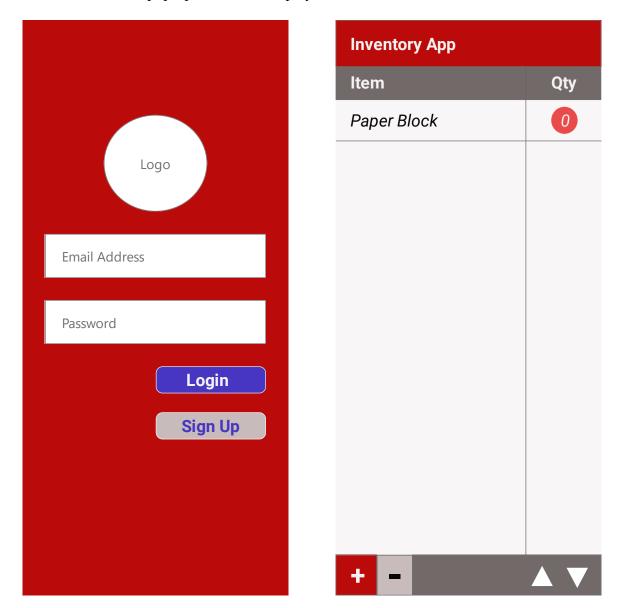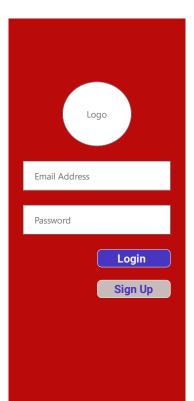

Figure 1 Login Activity and Inventory Activity Display Illustration

The baseline color theme includes a primary and secondary color and two variants of each. The primary and secondary colors are red contrast and variant with white backgrounds and white and black icons and shapes. The app typography is based on Google Font Roboto with variants in size and style. Item's description and quantity number be Condensed Italic in gray color.

The bottom app bar is minimalist, with clear symbols to add an item to the inventory, "+", and remove an item from the inventory, "-". The item selection is based on a focus selection with a gray background. The arrow-up and arrow-down symbols allow the user to increase or decrease the selected item quantity. Items with zero quantity are alert to the user by showing a red round shape as background and the item amount in white.

Code Design

The mobile app will the developed in JAVA language with a minimum Android SDK of API 16 (Jelly Bean). The API 16 allows the app to run on approximately 99.8% of the devices.

The login activity is the initial screen containing five components in a ConstraintLayout. The logo is an ImageView with round geometry. The username field is an EditText with inputType of textEmailAddress and a hint string text of "Email Address". The password field is an EditText with inputType of textPassword and a hint string text of "Password". Both plain text fields are receiving input from the app user.

Two Button components are part of the login screen with the string text "Login" and "Sign up" on the other. The buttons have an onClick method called loginAuth that has an if else statement condition to identif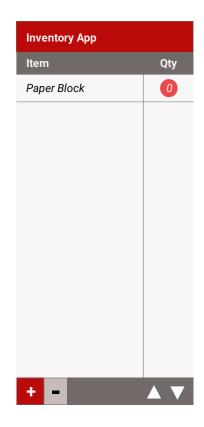y the clicked button. The function loginAuth will authenticate the user in the database users table and evaluate if the user is authorized to use the app or not. Suppose user input is invalid or not in the database, an error message dialog will pop up. A new activity layout will display the main inventory screen if the

user is authenticated. The XML structure of the res/layout/activity_,main.xml layout file for the

login screen looks like this:

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imageLogo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        tools:layout_editor_absoluteX="145dp"
        tools:layout_editor_absoluteY="331dp"
        tools:srcCompat="@tools:sample/avatars" />

    <EditText
        android:id="@+id/userEmail"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginTop="64dp"
        android:ems="10"
        android:hint="@string/email_address"
        android:inputType="textEmailAddress" />

    <EditText
        android:id="@+id/userPass"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginTop="64dp"
        android:ems="10"
        android:hint="@string/password"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/buttonLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginEnd="16dp"
        android:onClick="onClick"
        android:text="@string/button_login" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

The inventory activity is a second intent display with various components in a ConstraintLayout and where the majority of the user interaction occurs. The screen includes a top app bar with a string text of the app name and a bottom app bar with the features for adding/removing items and increasing/decreasing selected item quantitate.

The add item feature is a button component with a "+" string, and the button has an onClick method that calls a function named addItem. The remove feature is a button component with a "-"string, and this button has an onClick method that calls a function named removeItem.

The feature to increase an item quantity is an imangeButton component with an "arrow-up" image. The imageButton has an onClick method that calls a function named itemPlus. The feature to decrease an item quantity is an imageButton component with an "arrow-down" image. The imageButton has an onClick method that calls a function named itemLess.

The body of the app has various components contained in a LinearLayout component. The LinearLayout is composed of a ScrollView component that includes a TableLayout to create the TextView rows, and TextView is receiving input from the app user. The team is evaluating the development of the body of the inventory screen, which is structured in more detail in the following weeks. However, our initial body XML structure of the res/layout/activity_items_inventory.xml layout file for the inventory screen looks like this:

```
LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
```

```
        android:layout_height="match_parent"
        android:paddingBottom="@dimen/activity_vertical_margin"
        android:paddingLeft="@dimen/activity_horizontal_margin"
        android:paddingRight="@dimen/activity_horizontal_margin"
        android:paddingTop="@dimen/activity_vertical_margin"
        android:orientation="vertical"
        android:id="@+id/inventory_layout">

        <ScrollView
            android:layout_width="match_parent"
            android:layout_height="match_parent" >

            <TableLayout
                android:id="@+id/tableItems"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:padding="0dp"
                android:stretchColumns="*">
            </TableLayout>

        </ScrollView>

</LinearLayout>
```

References

Google. (2021, July 17). *Build high-quality apps | Android Developers*. Retrieved

     from Design for Android | Android Developers:

     https://developer.android.com/quality

Google. (2021, July 17). *Design - Material design*. Retrieved from Material Design:

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