

Simple Coffee App - Android Case Study

Let's build a simple **Coffee Order App** in Android, which allows users to place an order for coffee, specifying the quantity, and choose options like cream and sugar. We'll focus on basic Android concepts such as **UI design with XML**, **Activity lifecycle**, **Intents**, and **SharedPreferences**.

Case Study Overview

App Name: CoffeeOrder

Features:

1. Allow users to select coffee quantity.
2. Choose options like cream and sugar.
3. Display an order summary.
4. Save user preferences using `SharedPreferences`.
5. Navigate to a "Thank You" screen after placing an order.

App Structure

1. **MainActivity:** The main screen for placing an order.
2. **OrderSummaryActivity:** Displays the order summary.
3. **UI Components:** Buttons, Checkboxes, and `TextView` to display coffee order details.

Steps to Implement

1. Setup Dependencies

No special dependencies are needed for this app. The default Android dependencies suffice.

2. Layouts

- **activity_main.xml:**

xml

Copy code

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">

    <TextView
        android:id="@+id/quantity_label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
    android:text="Quantity"
    android:textSize="18sp"/>
```

```
<LinearLayout
```

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginVertical="8dp">
```

```
    <Button
```

```
        android:id="@+id/decrease_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-"/>
```

```
    <TextView
```

```
        android:id="@+id/quantity_text"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:gravity="center"
        android:text="1"
        android:textSize="18sp"/>
```

```
    <Button
```

```
        android:id="@+id/increase_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="+"/>
```

```
</LinearLayout>
```

```
<CheckBox
```

```
    android:id="@+id/cream_checkbox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Add Cream"/>
```

```
<CheckBox
```

```
    android:id="@+id/sugar_checkbox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Add Sugar"/>
```

```
<Button
```

```
    android:id="@+id/order_button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:text="Place Order"/></LinearLayout>
```

- **activity_order_summary.xml:**

xml

Copy code

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">

    <TextView
        android:id="@+id/order_summary_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:layout_marginBottom="16dp"/>

    <Button
        android:id="@+id/thank_you_button"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Thank You"/></LinearLayout>
```

3. MainActivity

java

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```
import android.content.Intent;import android.content.SharedPreferences;import
android.os.Bundle;import android.view.View;import android.widget.Button;import
android.widget.CheckBox;import android.widget.TextView;import
androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private int quantity = 1;
    private CheckBox creamCheckBox, sugarCheckBox;
    private TextView quantityText;
    private SharedPreferences sharedPreferences;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        quantityText = findViewById(R.id.quantity_text);
        creamCheckBox = findViewById(R.id.cream_checkbox);
        sugarCheckBox = findViewById(R.id.sugar_checkbox);
        Button increaseButton = findViewById(R.id.increase_button);
        Button decreaseButton = findViewById(R.id.decrease_button);
        Button orderButton = findViewById(R.id.order_button);
```

```

// Load preferences
sharedPreferences = getSharedPreferences("CoffeePrefs", MODE_PRIVATE);
creamCheckBox.setChecked(sharedPreferences.getBoolean("cream", false));
sugarCheckBox.setChecked(sharedPreferences.getBoolean("sugar", false));

// Button listeners
increaseButton.setOnClickListener(v -> {
    quantity++;
    updateQuantity();
});

decreaseButton.setOnClickListener(v -> {
    if (quantity > 1) {
        quantity--;
        updateQuantity();
    }
});

orderButton.setOnClickListener(v -> placeOrder());
}

private void updateQuantity() {
    quantityText.setText(String.valueOf(quantity));
}

private void placeOrder() {
    boolean cream = creamCheckBox.isChecked();
    boolean sugar = sugarCheckBox.isChecked();

    // Save preferences
    SharedPreferences.Editor editor = sharedPreferences.edit();
    editor.putBoolean("cream", cream);
    editor.putBoolean("sugar", sugar);
    editor.apply();

    // Create order summary
    String summary = "Order Summary:\nQuantity: " + quantity +
        "\nAdd Cream: " + (cream ? "Yes" : "No") +
        "\nAdd Sugar: " + (sugar ? "Yes" : "No") +
        "\nTotal: $" + (quantity * 5);

    // Navigate to OrderSummaryActivity
    Intent intent = new Intent(this, OrderSummaryActivity.class);
    intent.putExtra("order_summary", summary);
    startActivity(intent);
}
}

```

4. OrderSummaryActivity

java

Copy code

```
import android.content.Intent;import android.os.Bundle;import
android.widget.Button;import android.widget.TextView;import
androidx.appcompat.app.AppCompatActivity;
public class OrderSummaryActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_order_summary);

        TextView orderSummaryText = findViewById(R.id.order_summary_text);
        Button thankYouButton = findViewById(R.id.thank_you_button);

        // Get order summary from intent
        String summary = getIntent().getStringExtra("order_summary");
        orderSummaryText.setText(summary);

        // Thank You button listener
        thankYouButton.setOnClickListener(v -> {
            Intent intent = new Intent(this, MainActivity.class);
            startActivity(intent);
            finish();
        });
    }
}
```

Result

1. The app allows users to adjust coffee quantity and choose options like cream and sugar.
2. Preferences are saved using `SharedPreferences` for future use.
3. Order summary is displayed in a new activity, and users can navigate back.