BCS 371 Lab – Preferences Datastore

Overview

Create an app that uses Preferences Datastore.

Create a project

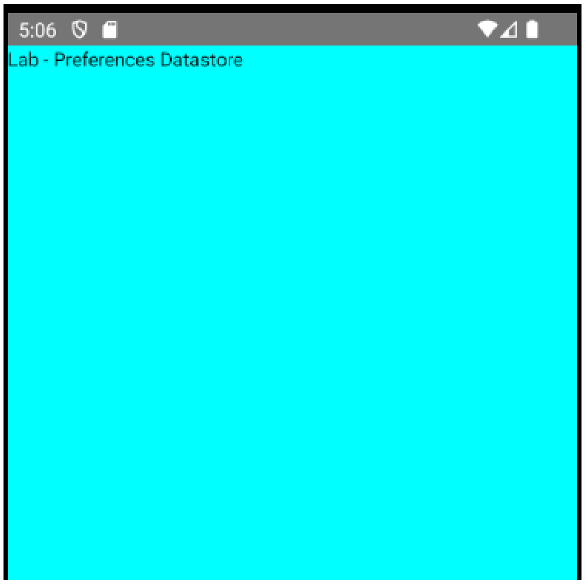
Create a new Android application in Android Studio. Choose the **Empty Activity** type to create an empty activity that uses Jetpack Compose.

Setup the Main Screen

Create a Kotlin file named MainScreen.kt. Add a composable function named MainScreen. Here is the function header:

```
@Composable
fun MainScreen(modifier: Modifier)
```

It should look like the following:



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More specifications for this composable function:

- Use a Column as the root of the layout. Set the following on the Column:
    - Set the background color to Color(0xFF00FFFF).
    - Use fillMaxSize() to make it fill the screen.
- Add a Text inside the Column.

Run the App

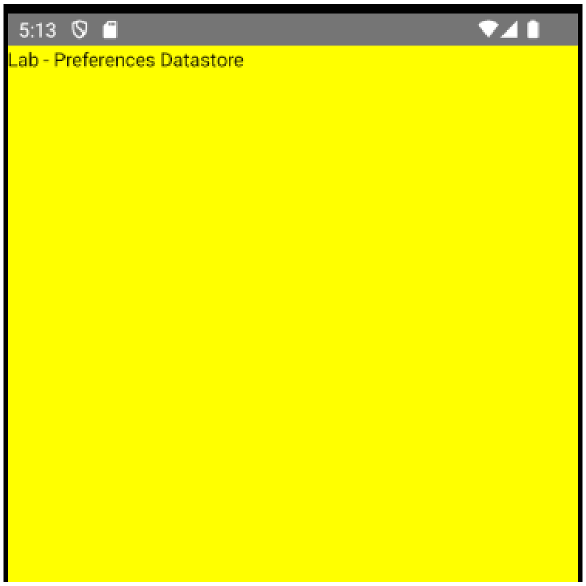
Make sure the color cyan fills the screen.

Store the background color in a ViewModel

Update the app to store and use the color from a view model. Do the following:

- Add a view model class. It should inherit from AndroidViewModel (not ViewModel).
    - Add two member variables to handle the StateFlow.
        - The first member variable should be a MutableStateFlow. Make it private. The MutableStateFlow should store Long type objects. Initialize it to yellow: 0xFFFFFF00 (this is yellow)
        - The second member variable should be a StateFlow. Initialize it by setting it to the result of calling asStateFlow on the MutableStateFlow member variable.
    - Add a function to set the value of the MutableStateFlow member variable. Here is the function header:
      fun setBackgroundColor(color: Long)
      It should put the color parameter into the private MutableStateFlow.
- Update the screen composable function to use the color stored in the view model's state flow. Do the following:
    - Get the view model instance.
    - Get the color from the view model's state flow.
    - Use that color as the background color for the Box.

Here is a screenshot:

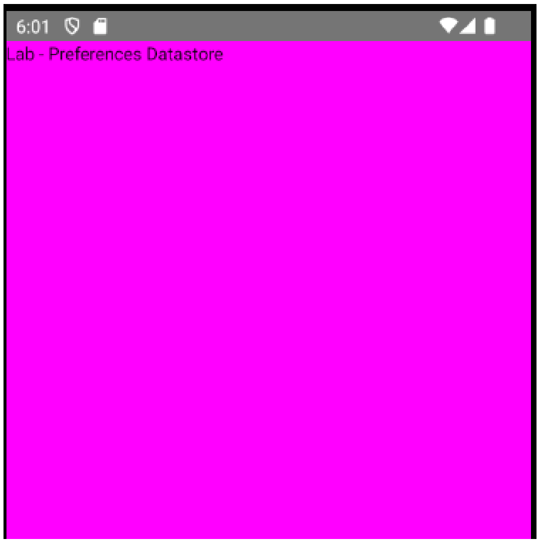


Store background color in Preferences DataStore

Update the app to store the color in Preferences DataStore (refer to slides). Here are some hints:

- Add Gradle dependencies:
  - implementation("androidx.datastore:datastore-core:1.0.0")
  - implementation("androidx.datastore:datastore-preferences:1.0.0")
- Create a helper class to interact with Preferences Datastore (refer to slides).
  - The slides store a Boolean value for the preference, but the lab requires storing a Long value instead.
  - Set the default value to 0xFFFF00FF (this is purple).
- Setup the view model's StateFlow to interact with the Preferences Datastore (refer to slides).
- Update the screen composable function to get the color from the view model (you have already done this).

It will use the default value of the preference after setting it up. Here is a screenshot:



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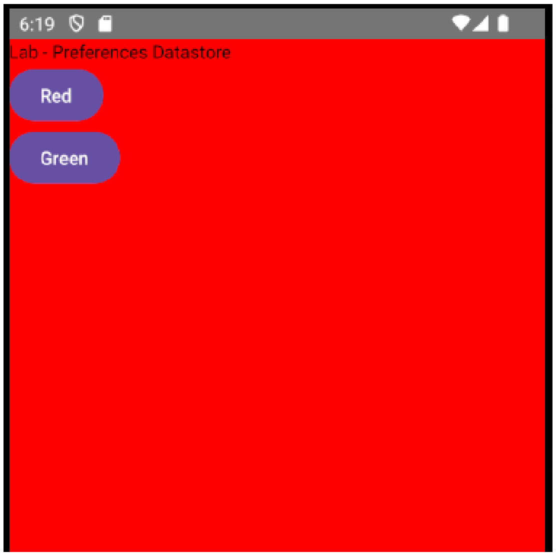
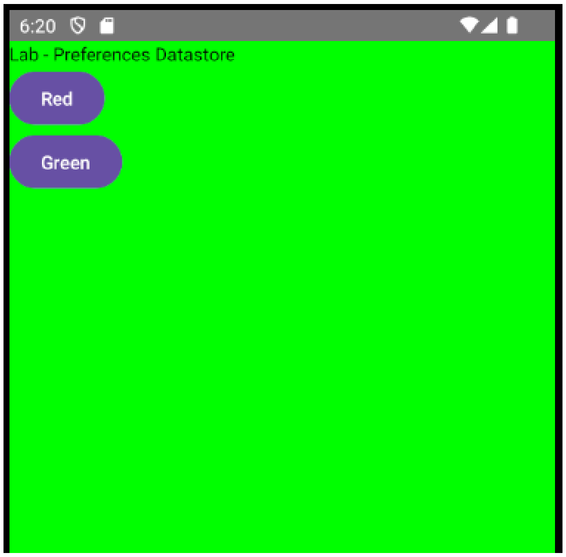
Update the app to let the user choose the background color

Update the app to let the user choose a color using buttons. Here is a screenshot of what it should look like after pressing each button:





Here are some hints:

- The view model’s setBackgroundColor function should set the preference value to the given color parameter.
- The Red button should set the background color to 0xFFFF0000 (this is red).
- The Green button should set the background color to 0xFF00FF00 (this is green).

Run the app more than once. When the app starts again it will use whatever color was chosen last. It will no longer use the default color value of purple once either red or green is chosen. You would need to uninstall the app to see the default purple color again.