AMD-08: SharedPreferences

Applications for mobile devices & Course 2019-2020

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Shared Preferences

Shared Preferences

Shared Preferences is a Data Storage option provided by Android to store **primitive data**. It works very close to dictionaries (*key*,*value*).

Shared Preferences act as a **Singleton**. So, for any particular set of preferences, there is a single instance of this class. that all clients share. Modifications are done using *Editor* object to ensure a consistent state and control when they are committed to storage.

Information extracted from: **Android Developers - Shared Preferences**.

Methods (1)

- **edit()**: Obtain the editor to make modifications. Editor->commit() and Editor->apply().
- **getAll()**: Retrieve all values.
- **get{x}(key,defaultValue)()**: Retrieve the value of the primitive *x* with key *key*. If not found retrieve the *defaultValue*.
- **put{x}(key,value)()**: Save the value of the primitive *x* with key *key* and value *value*.

Methods (2)

- **commit()**: Writes to the preferences persistent storage synchronously, blocking the calling thread and always inform about the success of the operations returning **true** or **false**.
- **apply()**: Schedules the data to in-memory Shared Preferences and starts an asynchronous commit to disk. This method does not notify about failures.

Notes

- Persist data across user sessions.
- Data is kept even if the **application** is: **killed** or **restarted**.
- Moreover, the data is kept even if the **device** is **restarted**.
- Store user settings to be shared across different activities.
- Shared Preferences use **expensive operations** that can **slow down the app**.
- Shared Preferences data is **kept private** in the **context of the app**.

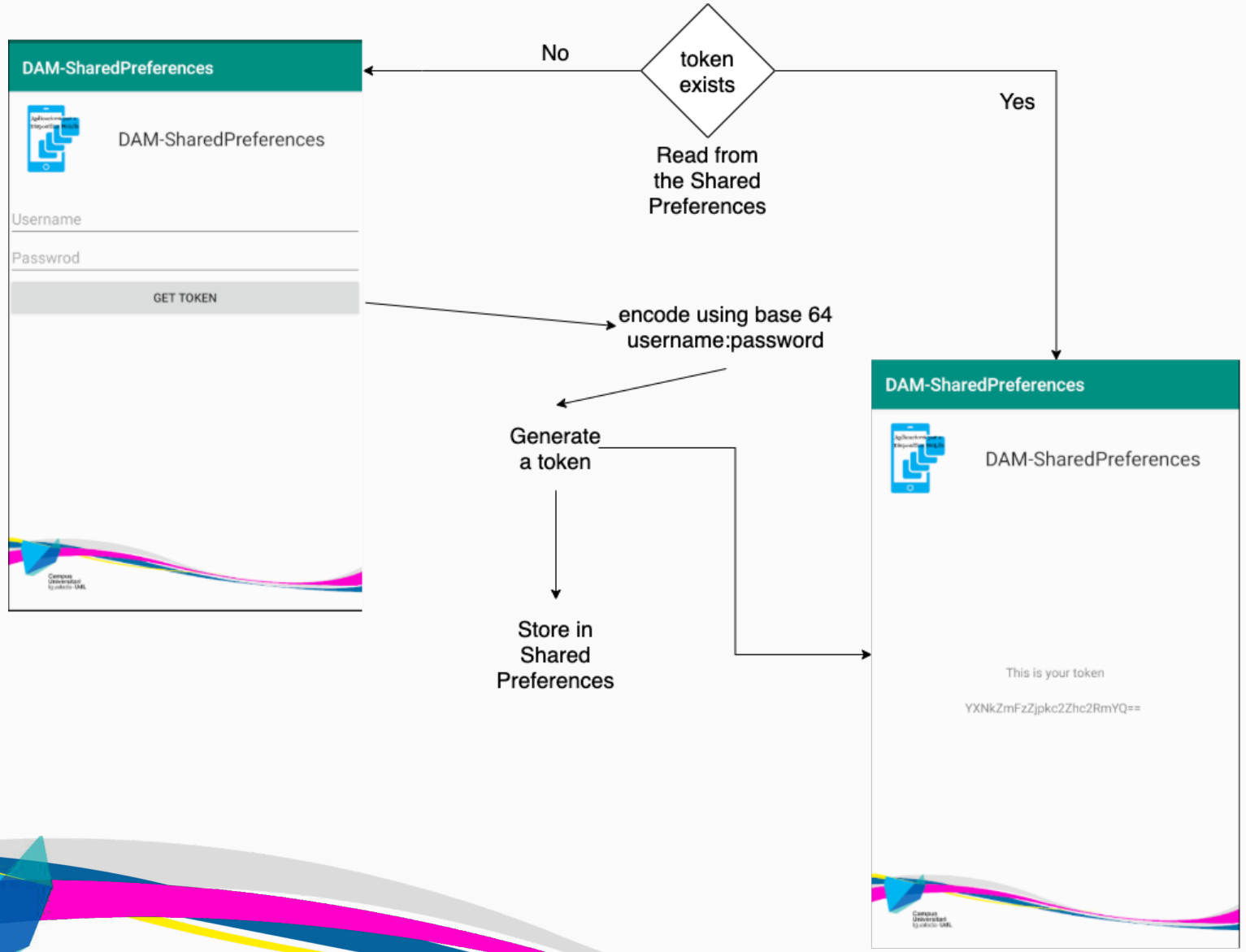
Hands-On

Hands-On: Context

We are going to simulate a user login application that obtains a token from an API. We will keep all the functionality as simple as possible.

All the code is available in the Github — **Code**

Hands-On: App functions



Hands-On: Preferences Provider

preferences/PreferencesProvider

- Create one shared preferences file.
- Select the Context Mode:
  - **Private**: Keep the files private and secure user's data.
  - **Public**: Public file accessible by other apps in the device.
  - **Append**: Append the new preferences with the already existing preferences.

Hands-On: App to init the Preferences Provider

We init the Preferences provider at the beginning.

```
public class App extends Application {

    @Override
    public void onCreate() {
        super.onCreate();
        PreferencesProvider.init(this);
    }
}
```

Hands-On: Check the manifest

android:name=“.App”

```
<application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme"
        android:name=".App">
      ...
    </application>
```

Hands-On: Main Activity - Obtain shared preferences

```
private SharedPreferences mPreferences;
@Override
    protected void onCreate(Bundle savedInstanceState) {
      ...
      this.mPreferences = PreferencesProvider.providePreferences();
      ...
    }
```

Hands-On: Main Activity - Logic

```
String token = this.mPreferences.getString("token","");
mPreferences.edit().putString("token",_token).apply();
```

- Check if shared preferences contain a token.
- Generate the token when the user clicks the button with a username and password.

Hands-On: Main Activity - Logic (1)

```
String token = this.mPreferences.getString("token","");
if (!token.equals("")){
    tokenLabel.setVisibility(View.VISIBLE);
    tokenTV.setText(token);
    usernameET.setVisibility(View.INVISIBLE);
    passwordET.setVisibility(View.INVISIBLE);
    createToken.setVisibility(View.INVISIBLE);
    }
```

Hands-On: Main Activity - Logic (2)

```
createToken.setOnClickListener(new View.OnClickListener() {
 @Override
 public void onClick(View v) {
   String username = usernameET.getText().toString();
   String password = passwordET.getText().toString();
   String token_decoded = username + ":" + password;
   byte[] bytes = token_decoded.getBytes(StandardCharsets.UTF_
   String _token = Base64.encodeToString(bytes,Base64.DEFAULT)
   mPreferences.edit().putString("token",_token).apply();
   Toast.makeText( getApplicationContext(),
     "Token obtained properly", Toast.LENGTH_SHORT).show();
   }
  });
```

Hands-On: Test and Play

- Close the app and open the app once you create the token.
- Put the app in the background and open again.
- Restart the device and open the app.
- Uninstall the app from the device and install it again.

That is all

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gdc — Distributed computation group