

Instructions: VIT-AP UNIVERSITY, ANDHRA PRADESH

Lab Sheet I2 : SharedPreferences

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Design an application that computes $f(x)$ so that it can authenticate the $(x, f(x))$ pairs as (username, password), Where the username is x and the password is the $f(x)=x^2+5$. Note: X is a positive number. Assume that there are textview1 and textview 2 in the XML. Also, button b1, b2 are present to login and register. Read the text in textview1, If the user entered number in EditText(username), then user should enter square of the number in the EditText(password). When the user clicks register, save the data to sharedpreference. When the user enters username and password, and click on login, validate the login by matching the username in the sharedpreference and its square value in the password, restrict the login attempts to the maximum of three attempts, in case of any wrong credentials. When the user enters username and click read data, retrieve the password from the shared preferences and load it in the textview2.

Code:

MainActivity.java:

```
package com.example.project;
import androidx.appcompat.app.AppCompatActivity;

import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    private EditText edituser, editpassword;
    private int user, password;
    private Button btnLogin;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        edituser = findViewById(R.id.et_username);
        editpassword = findViewById(R.id.et_password);
        btnLogin = findViewById(R.id.btnLogin);
    }

    private static int counter = 0;
```

```

        public void login(View view) {
            try {
                SharedPreferences preferences = getSharedPreferences("LOGIN",
MODE_PRIVATE);
                user = Integer.parseInt(edituser.getText().toString());
                password = Integer.parseInt(editpassword.getText().toString());
                if (user == preferences.getInt("USER", 0) && password ==
preferences.getInt("PASSWORD", 0)) {
                    Toast.makeText(this, "Login Successful...",
Toast.LENGTH_SHORT).show();
                } else {
                    Toast.makeText(this, "Please try again...or register",
Toast.LENGTH_SHORT).show();
                    counter++;
                    if (counter == 3) {
                        Toast.makeText(this, "You have made 3 unsuccessfull
attempt...", Toast.LENGTH_SHORT).show();
                        btnLogin.setEnabled(false);
                    }
                }
            } catch (Exception ex) {
                Toast.makeText(this, ex.getMessage(),
Toast.LENGTH_SHORT).show();
            }
        }

        public void register(View view) {
            try {
                counter = 0;
                user = Integer.parseInt(edituser.getText().toString());
                password = Integer.parseInt(editpassword.getText().toString());
                if (password != (user * user)+5) {
                    Toast.makeText(this, "Password must be square of usernumber
+ 5", Toast.LENGTH_SHORT).show();
                } else {
                    SharedPreferences preferences =
getSharedPreferences("LOGIN", MODE_PRIVATE);
                    SharedPreferences.Editor editor = preferences.edit();
                    editor.putInt("USER", user);
                    editor.putInt("PASSWORD", password);
                    editor.apply();
                    Toast.makeText(this, "User register successfully...",
Toast.LENGTH_SHORT).show();
                    edituser.setText("");
                    editpassword.setText("");
                }
            } catch (NumberFormatException ex) {
                Toast.makeText(this, ex.getMessage(),
Toast.LENGTH_SHORT).show();
            }
        }
    }
}

```

activity_main.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">

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="User Name: "
    android:textSize="20sp"
    app:layout_constraintBottom_toTopOf="@+id/textView2"
    app:layout_constraintEnd_toStartOf="@+id/et_username"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/et_username"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textShortMessage|number"
    app:layout_constraintBottom_toBottomOf="@+id/textView"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/textView"
    app:layout_constraintTop_toTopOf="@+id/textView" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Password: "
    android:textSize="20sp"
    app:layout_constraintBottom_toTopOf="@+id/btnLogin"
    app:layout_constraintEnd_toStartOf="@+id/et_password"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView" />

<EditText
    android:id="@+id/et_password"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="number"
    app:layout_constraintBottom_toBottomOf="@+id/textView2"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/textView2"
    app:layout_constraintTop_toTopOf="@+id/textView2" />

<Button
    android:id="@+id/btnLogin"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="login"
    android:text="Login"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/btnRegister"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"

```

```

        app:layout_constraintTop_toBottomOf="@+id/textView2" />

<Button
    android:id="@+id/btnRegister"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="register"
    android:text="Register"
    app:layout_constraintBottom_toBottomOf="@+id/btnLogin"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/btnLogin"
    app:layout_constraintTop_toTopOf="@+id/btnLogin" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

AndroidManifest.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="com.example.project">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.Project"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER"
            />
            </intent-filter>
        </activity>
    </application>

</manifest>

```

Output:

8:58 PM | 238KB/s 8

project

User Name:

Password:

LOGIN REGISTER

For input string: ""

8:59 PM | 0.0KB/s 8

project

User Name:

Password:

LOGIN REGISTER

8:59 PM | 2.1KB/s 8

project

User Name:

Password:

LOGIN REGISTER

User register successfully...

8:59 PM | 0.0KB/s 8

project

User Name:

Password:

LOGIN REGISTER

