## Practical No. 6

# Title: Android program using Shared Preferences, Internal and External Storage

Aim: Create an application to demonstrate Shared Preferences, Internal and External Storage

#### Introduction

Android provides many ways of storing data of an application. One of this way is called Shared Preferences. Shared Preferences allow you to save and retrieve data in the form of key, value pair.

In order to use shared preferences, you have to call a method getSharedPreferences() that returns a SharedPreference instance pointing to the file that contains the values of preferences.

SharedPreferences sharedpreferences = getSharedPreferences(MyPREFERENCES, Context.MODE\_PRIVATE);

The first parameter is the key and the second parameter is the MODE. Apart from private there are other modes available that are listed below –

Sr.No	Mode & description
1	MODE_APPEND  This will append the new preferences with the already existing preferences
2	MODE_ENABLE_WRITE_AHEAD_LOGGING  Database open flag. When it is set, it would enable write ahead logging by default
3	MODE_MULTI_PROCESS

	This method will check for modification of preferences even if the sharedpreference instance has already been loaded
4	MODE_PRIVATE  By setting this mode, the file can only be accessed using calling application
5	MODE_WORLD_READABLE  This mode allows other application to read the preferences
6	MODE_WORLD_WRITEABLE  This mode allows other application to write the preferences

You can save something in the sharedpreferences by using SharedPreferences.Editor class. You will call the edit method of SharedPreference instance and will receive it in an editor object.

Its syntax is -

Editor editor = sharedpreferences.edit();
editor.putString("key", "value");
editor.commit();

Apart from the putString method, there are methods available in the editor class that allows manipulation of data inside shared preferences. They are listed as follows –

Sr. NO	Mode & description
1	apply()  It is an abstract method. It will commit your changes back from editor to the sharedPreference object you are calling
2	clear() It will remove all values from the editor

3	remove(String key) It will remove the value whose key has been passed as a parameter
4	putLong(String key, long value) It will save a long value in a preference editor
5	<pre>putInt(String key, int value) It will save an integer value in a preference editor</pre>
6	<pre>putFloat(String key, float value) It will save a float value in a preference editor</pre>

## Exercise - Create an application to save data in internal or external storage and also demonstrate implementation of shared preferences

## Implementation:

## **Program:**

## A] External File Demo:

## 1)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:id="@+id/main"
   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="48dp"
 android:text="@string/directory_nm"
 android:textSize="25sp"
 android:textStyle="bold"
 app:layout constraintBottom toTopOf="@+id/edtTxDirNm"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.165"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.606" />
<EditText
 android:id="@+id/edtTxDirNm"
 android:layout width="wrap content"
 android:layout height="48dp"
 android:autofillHints=""
 android:hint="@string/enter_directory_nm"
 android:inputType="text"
 app:layout_constraintBottom_toTopOf="@+id/textView2"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout constraintHorizontal bias="0.203"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/textView"/>
<TextView
 android:id="@+id/textView2"
 android:layout_width="wrap_content"
 android:layout height="48dp"
 android:autofillHints=""
 android:importantForAutofill="no"
```

```
android:text="@string/file_nm"
 android:textSize="25sp"
 android:textStyle="bold"
 app:layout_constraintBottom_toTopOf="@+id/edtTxFlNm"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.115"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/edtTxDirNm" />
<EditText
 android:id="@+id/edtTxFlNm"
 android:layout_width="wrap_content"
 android:layout_height="48dp"
 android:hint="@string/enter_file_nm"
 android:inputType="text"
 app:layout_constraintBottom_toTopOf="@+id/textView3"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.16"
 app:layout constraintStart toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/textView2" />
<TextView
 android:id="@+id/textView3"
 android:layout_width="wrap_content"
 android:layout height="48dp"
 android:autofillHints=""
 android:importantForAutofill="no"
 android:text="@string/content_of_file"
 android:textSize="25sp"
 android:textStyle="bold"
 app:layout_constraintBottom_toTopOf="@+id/edtTxContFile"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout constraintHorizontal bias="0.213"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/edtTxFlNm" />
```

```
<EditText
 android:id="@+id/edtTxContFile"
 android:layout width="wrap content"
 android:layout_height="48dp"
 android:hint="@string/enter_content_of_file"
 android:inputType="text"
 app:layout_constraintBottom_toTopOf="@+id/btnRead"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout constraintHorizontal bias="0.146"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/textView3" />
<Button
 android:id="@+id/btnRead"
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:text="@string/read_fl"
 android:textSize="20sp"
 app:layout constraintBottom toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.13"
 app:layout_constraintStart_toStartOf="parent"
 app:layout constraintTop toTopOf="parent"
 app:layout_constraintVertical_bias="0.626" />
<Button
 android:id="@+id/btnDelete"
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:text="@string/delete_fl"
 android:textSize="20sp"
 app:layout constraintBottom toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.734"
```

```
app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.626" />
<Button
 android:id="@+id/btnWrite"
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:text="@string/write_fl"
 android:textSize="20sp"
 app:layout_constraintBottom_toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.416"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.732" />
<TextView
 android:id="@+id/txtMSG"
 android:layout width="299dp"
 android:layout_height="60dp"
 android:textSize="18sp"
 app:layout_constraintBottom_toBottomOf="parent"
 app:layout constraintEnd toEndOf="parent"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.888" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

#### 2) Main Activity. java

```
package com.example.introexternalfiledemo;
import android.annotation.SuppressLint;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileOutputStream;
import java.io.FileReader;
public class MainActivity extends AppCompatActivity {
  EditText edTxtDirNm,edTxtFileNm,edTxtFileContent;
  Button btnRead,btnWrite,btnDel;
  TextView output;
  @SuppressLint("MissingInflatedId")
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    EdgeToEdge.enable(this);
    setContentView(R.layout.activity_main);
   ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
      Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
     v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
```

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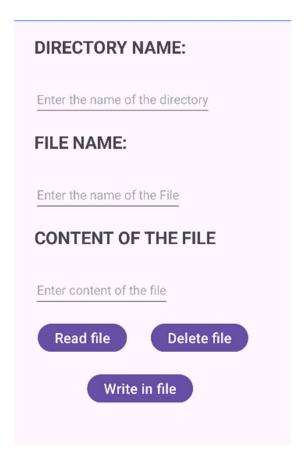
```
return insets:
});
edTxtDirNm=findViewById(R.id.edtTxDirNm);
edTxtFileNm=findViewById(R.id.edtTxFlNm);
edTxtFileContent=findViewById(R.id.edtTxContFile);
btnWrite=findViewById(R.id.btnWrite);
btnRead=findViewById(R.id.btnRead);
btnDel=findViewById(R.id.btnDelete);
output=findViewById(R.id.txtMSG);
btnRead.setOnClickListener(view->{
  try{
    StringBuilder result= new StringBuilder();
    String line;
    String folder=getApplication().getFilesDir().getAbsolutePath()+
        File.separator+edTxtDirNm.getText().toString();
    File subFolder=new File(folder);
    if(!subFolder.exists()){
      subFolder.mkdirs();
    BufferedReader bufferedReader=new BufferedReader
        (new FileReader(new File(folder,edTxtFileNm.getText().toString())));
    while((line=bufferedReader.readLine())!=null){
      result.append(line);
    output.setText(result.toString());
  }
  catch (Exception e){
```

```
Toast.makeText(getApplicationContext(),e.getMessage(),Toast.LENGTH_LONG).show();
        output.setText(null);
     }
   });
    btnWrite.setOnClickListener(view->{
        String folder=getApplication().getFilesDir().getAbsolutePath()+
            File.separator+edTxtDirNm.getText().toString();
        File subFolder=new File(folder);
        if(!subFolder.exists()){
          subFolder.mkdirs();
        }
        FileOutputStream outputStream=new FileOutputStream(new
File(subFolder,edTxtFileNm.getText().toString()));
        outputStream.write(edTxtFileContent.getText().toString().getBytes());
        outputStream.close();
        Toast.makeText(getApplicationContext(),"Writing
Successfully!",Toast.LENGTH_LONG).show();
        output.setText(null);
        edTxtDirNm.setText(null);
        edTxtFileNm.setText(null);
        edTxtFileContent.setText(null);
      }
      catch (Exception e){
Toast.makeText(getApplicationContext(),e.getMessage(),Toast.LENGTH_LONG).show();
        output.setText(null);
     }
   });
    btnDel.setOnClickListener(view->{
      try{
        String folder=getApplication().getFilesDir().getAbsolutePath()+File.separator
```

```
+edTxtDirNm.getText().toString();
        File subFolder=new File(folder);
        File file =new File(folder,edTxtFileNm.getText().toString());
        if(file.exists()){
        file.delete();
        Toast.makeText(getApplicationContext(),"Deletion
Successfully", Toast. LENGTH_LONG). show();
        output.setText(null);
        edTxtDirNm.setText(null);
        edTxtFileNm.setText(null);
        edTxtFileContent.setText(null);
     }catch (Exception e){
Toast.makeText(getApplicationContext(),e.getMessage(),Toast.LENGTH_LONG).show();
        output.setText(null);
     }
   });
 }
```

## **Output:**

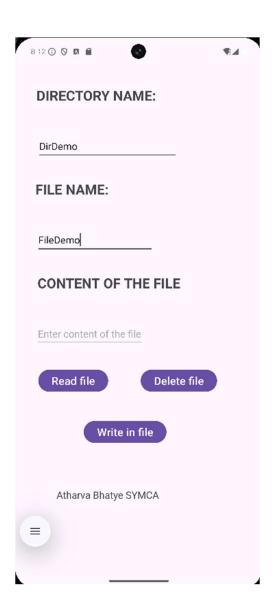
1)activity\_main.xml:-



## 2) Write in file operation :-



## 3)Read the file operation:



## 4)Delete the file operation:



#### **B] Shared Preference Demo:**

## **Program:**

#### 1)activity\_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<\! and roidx. constraint layout. widget. Constraint Layout
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:id="@+id/main"
 android:layout_width="match_parent"
 android:layout_height="match_parent"
 tools:context=".MainActivity">
 <TextView
   android:id="@+id/textView2"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="@string/user_name"
   android:textSize="25sp"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout constraintEnd toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.106"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toTopOf="parent"
   app:layout_constraintVertical_bias="0.291" />
  <TextView
   android:id="@+id/textView3"
   android:layout width="wrap content"
   android:layout_height="wrap_content"
   android:text="@string/password"
   android:textSize="25sp"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.102"
```

app:layout\_constraintStart\_toStartOf="parent"

```
app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.388" />
<EditText
 android:id="@+id/editTextUsernm"
 android:layout_width="187dp"
 android:layout height="49dp"
 android:layout marginStart="24dp"
 android:layout_marginEnd="130dp"
 android:hint="@string/enter_name"
 android:inputType="text"
 android:textColorHint="#78909C"
 android:textSize="20sp"
 app:layout_constraintBottom_toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.0"
 app:layout_constraintStart_toEndOf="@+id/textView2"
 app:layout constraintTop toTopOf="parent"
 app:layout_constraintVertical_bias="0.294" />
<EditText
 android:id="@+id/editTextPass"
 android:layout_width="187dp"
 android:layout_height="49dp"
 android:layout_marginStart="24dp"
 android:layout_marginEnd="130dp"
 android:height="49dp"
 android:hint="@string/enter_pass"
 android:inputType="textPassword"
 android:textColorHint="#78909C"
 android:textSize="20sp"
 app:layout constraintBottom toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.0"
 app:layout constraintStart toEndOf="@+id/textView2"
 app:layout_constraintTop_toTopOf="parent"
 app:layout_constraintVertical_bias="0.381" />
```

```
<CheckBox
 android:id="@+id/checkBoxRemMe"
 android:layout_width="wrap_content"
 android:layout height="wrap content"
 android:layout_marginBottom="340dp"
 android:text="@string/remaimber_me"
 android:textSize="20sp"
 app:layout_constraintBottom_toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintHorizontal_bias="0.45"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/textView3"
 app:layout_constraintVertical_bias="0.947" />
<Button
 android:id="@+id/btnSumbit"
 android:layout_width="wrap_content"
 android:layout height="wrap content"
 android:text="@string/submit"
 android:textSize="15sp"
 app:layout constraintBottom toBottomOf="parent"
 app:layout_constraintEnd_toEndOf="parent"
 app:layout_constraintStart_toStartOf="parent"
 app:layout_constraintTop_toBottomOf="@+id/checkBoxRemMe"
 app:layout_constraintVertical_bias="0.149" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

## 2)activity\_file\_handling.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:id="@+id/file_handling"
 android:layout_width="match_parent"
 android:layout_height="match_parent"
 tools:context=".Filehandling">
 <TextView
   android:id="@+id/textVwMsg"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:layout marginTop="160dp"
   android:layout_marginBottom="64dp"
   android:text="@string/click_on_btn"
   android:textSize="25sp"
   app:layout_constraintBottom_toTopOf="@+id/btnClrData"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.464"
   app:layout constraintStart toStartOf="parent"
   app:layout_constraintTop_toTopOf="parent" />
  <Button
   android:id="@+id/btnClrData"
   android:layout_width="wrap_content"
   android:layout height="wrap content"
   android:layout_marginTop="64dp"
   android:text="@string/cleardata"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.475"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/textVwMsg" />
```

```
<TextView
    android:id="@+id/textVwInfo"
    android:layout_width="227dp"
    android:layout_height="97dp"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/btnClrData"
    app:layout_constraintVertical_bias="0.175" />
</androidx.constraintlayout.widget.ConstraintLayout>

3)MainActivity.java

package com.example.sharedprefapplication;
import static android.content.Context.MODE_PRIVATE;
```

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    EditText txtUsrNm,txtPassword;
    Button btnSubmit;
    CheckBox checkBox;
```

import android.content.Intent;

```
public static final String savedPref = "mypref";
  public static final String userNamePref ="UsrNm";
  public static final String userPassPref = "UsrPass";
  SharedPreferences sharedPreferences:
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    EdgeToEdge.enable(this);
    setContentView(R.layout.activity_main);
    txtUsrNm=findViewById(R.id.editTextUsernm);
    txtPassword=findViewById(R.id.editTextPass);
    checkBox=findViewById(R.id.checkBoxRemMe);
    btnSubmit=findViewById(R.id.btnSumbit);
    btnSubmit.setOnClickListener(view->{
      if(checkBox.isChecked()){
        savedSharedPref(view);
      Intent intent=new Intent(MainActivity.this, Filehandling.class);
      MainActivity.this.startActivity(intent);
   });
   ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
      Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
      v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
      return insets:
   });
  }
  public void savedSharedPref(View view){
    String nm= txtUsrNm.getText().toString();
    String pass=txtPassword.getText().toString();
    sharedPreferences=getSharedPreferences(savedPref,MODE_PRIVATE);
    SharedPreferences.Editor editor= sharedPreferences.edit();
```

```
editor.putString(userNamePref,nm);
   editor.putString(userPassPref,pass);
   editor.apply();
 }
 @Override
 protected void onResume(){
   super.onResume();
   sharedPreferences=getSharedPreferences(savedPref,MODE_PRIVATE);
   String prefString=sharedPreferences.getString(userNamePref,"");
   String prefString1=sharedPreferences.getString(userPassPref,"");
   txtUsrNm.setText(prefString);
   txtPassword.setText(prefString1);
 }
 @Override
 protected void onDestroy(){
   sharedPreferences(savedPref,MODE_PRIVATE);
   SharedPreferences.Editor editor=sharedPreferences.edit();
   editor.clear();
   editor.apply();
   //finish();
   super.onDestroy();
 }
}
4) Filehandling. java:
package com.example.sharedprefapplication;
import android.annotation.SuppressLint;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
```

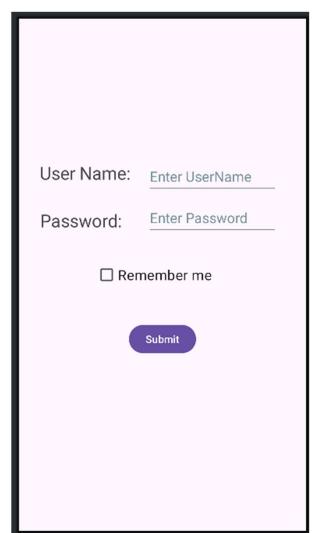
import static com.example.sharedprefapplication.MainActivity.\*;

```
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class Filehandling extends AppCompatActivity {
  Button btnClearData;
  SharedPreferences sharedPreferences:
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    EdgeToEdge.enable(this);
    setContentView(R.layout.activity_file_handling);
    ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.file_handling), (v,
insets) -> {
     Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
     v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
     return insets;
   });
    getSharedRef();
    btnClearData=findViewById(R.id.btnClrData);
   btnClearData.setOnClickListener(view->clearSharedRef());
  }
  private void clearSharedRef(){
    sharedPreferences=getSharedPreferences(savedPref,MODE_PRIVATE);
    SharedPreferences.Editor editor=sharedPreferences.edit().clear();
    editor.apply();
    editor.commit();
    Toast.makeText(this,"Shared Preference is deleted !",Toast.LENGTH_SHORT).show();
   getSharedRef();
  }
  @SuppressLint("SetTextI18n")
  public void getSharedRef(){
```

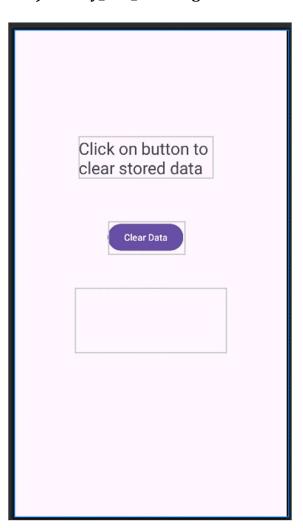
```
TextView textVwInfo=findViewById(R.id.textVwInfo);
    sharedPreferences=getSharedPreferences(savedPref,MODE_PRIVATE);
    String name=sharedPreferences.getString(userNamePref,"No User Name");
    textVwInfo.setText("Your User name is :"+name);
}
```

## **Output:**

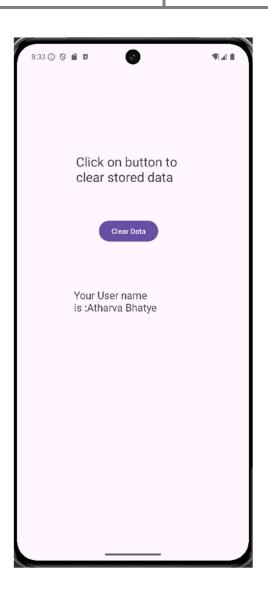
## 1)activity\_main.xml:



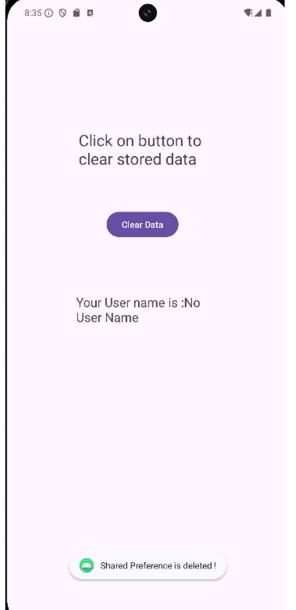
## 2) activity\_file\_handling.xml:







## After checked "Remember me":-



## After clicking on "Clear Data" button:-