# Exercise 7 – Writing To and Reading From the SD Card

## Aim:

Develop an android application to read the text from the SD Card and Write into the SD Card. To perform this, create two TextViews one for writing the text and save the text into the SD Card once submit button is clicked and another one for Displaying the text that is retrieved from the SD Card.

## Code:

//activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>

<androidx.constraintlayout.widget.ConstraintLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

xmlns:app="http://schemas.android.com/apk/res-auto"

tools:context=".MainActivity">

<TextView

android:id="@+id/title"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="SD Card App"

android:textAppearance="@style/TextAppearance.AppCompat.Display1" android:textColor="#007565"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintHorizontal\_bias="0.497"

app:layout\_constraintLeft\_toLeftOf="parent"

app:layout\_constraintRight\_toRightOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.064" />

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginTop="36dp"

android:layout\_marginEnd="108dp"

android:text="Write contents into a file"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#00BFA5"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/title" /> <TextView

android:id="@+id/textView2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginTop="80dp"

android:layout\_marginEnd="152dp"

android:text="File contents:"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#304FFE"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/title" /> <TextView

android:id="@+id/textView3"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginTop="180dp"

android:layout\_marginEnd="256dp"

android:text="File Name:"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#304FFE"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/title" /> <EditText

android:id="@+id/content"

android:layout\_width="326dp"

android:layout\_height="44dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="40dp"

android:ems="10"

android:gravity="start|top"

android:inputType="textMultiLine"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/textView2" /> <EditText

android:id="@+id/filename"

android:layout\_width="163dp"

android:layout\_height="38dp"

android:layout\_marginTop="76dp"

android:layout\_marginEnd="60dp"

android:ems="10"

android:gravity="start|top"

android:inputType="textMultiLine"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/textView2" /> <Button

android:id="@+id/writebtn"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginTop="32dp"

android:layout\_marginEnd="156dp"

android:backgroundTint="#00BFA5"

android:text="Write File"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/filename" />

<Button

android:id="@+id/btnLoad"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginTop="152dp"

android:layout\_marginEnd="136dp"

android:backgroundTint="#00BFA5"

android:text="Load From File"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/filename" />

</androidx.constraintlayout.widget.ConstraintLayout>

//activity\_read\_file.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=".ReadFile">

<EditText

android:id="@+id/filename2" android:layout\_width="163dp"

android:layout\_height="38dp" android:layout\_marginTop="28dp" android:layout\_marginEnd="52dp" android:ems="10" android:gravity="start|top" android:inputType="textMultiLine" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintTop\_toBottomOf="@+id/textView6" />

<TextView

android:id="@+id/textView4" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginTop="40dp" android:layout\_marginEnd="152dp" android:text="File contents:"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#304FFE" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintTop\_toBottomOf="@+id/loadbtn" />

<TextView

android:id="@+id/title2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginTop="44dp"

android:layout\_marginEnd="108dp" android:text="SD Card App" android:textAppearance="@style/TextAppearance.AppCompat.Display1" android:textColor="#007565" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintTop\_toTopOf="parent" />

<TextView

android:id="@+id/textView5" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginStart="100dp"

android:layout\_marginTop="28dp"

android:text="File Name:"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#304FFE" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toBottomOf="@+id/textView6" />

<Button

android:id="@+id/loadbtn" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginTop="36dp" android:layout\_marginEnd="148dp" android:backgroundTint="#00BFA5" android:text="LOAD FILE" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintTop\_toBottomOf="@+id/filename2" />

<TextView

android:id="@+id/textView6" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginTop="20dp" android:layout\_marginEnd="104dp" android:text="Read contents From File"

android:textAppearance="@style/TextAppearance.AppCompat.Medium" android:textColor="#00BFA5" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintTop\_toBottomOf="@+id/title2" />

<TextView

android:id="@+id/tvLoad" android:layout\_width="283dp"

android:layout\_height="116dp" android:layout\_marginTop="32dp" android:layout\_marginEnd="52dp"

android:textAppearance="@style/TextAppearance.AppCompat.Body1" app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/textView4" />

</androidx.constraintlayout.widget.ConstraintLayout>

//MainActivity.java

package com.example.ex7;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import android.content.DialogInterface;

import android.content.Intent;

import android.content.pm.PackageManager;

import android.os.Build;

import android.os.Bundle;

import android.os.Environment;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import java.io.BufferedReader;

import java.io.File;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.FileReader;

import java.io.IOException;

import java.io.OutputStreamWriter;

public class MainActivity extends AppCompatActivity {

// Declare the View object references

Button btnSave, btnLoad;

EditText content, filenamev;

TextView tvLoad;

// Define some String variables, initialized with empty string String filepath = "";

String filename = "";

String fileContent = "";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

btnSave = findViewById(R.id.writebtn);

btnLoad = findViewById(R.id.btnLoad);

content = findViewById(R.id.content);

filenamev = findViewById(R.id.filename);

filepath = "NewDirectory";

if(!isExternalStorageAvailableForRW()){

btnSave.setEnabled(false);

}

btnSave.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

fileContent = content.getText().toString().trim();

filename = filenamev.getText().toString().trim();

// Check for Storage Permission

if(isStoragePermissionGranted()){

if(!fileContent.equals("")){

File myExternalFile = new

File(getExternalFilesDir(filepath), filename);

FileOutputStream fos = null;

try {

fos = new FileOutputStream(myExternalFile);

fos.write(fileContent.getBytes());

fos.close();

} catch (FileNotFoundException e) {

e.printStackTrace();

} catch (IOException e) {

e.printStackTrace();

}

content.setText("");

filenamev.setText("");

// Show a Toast message to inform the user that the

operation has been successfully completed.

Toast.makeText(MainActivity.this, "File saved to SD card.",

Toast.LENGTH\_SHORT).show();

} else{

// If the Text field is empty show corresponding Toast message

Toast.makeText(MainActivity.this, "Text field can not be

empty.", Toast.LENGTH\_SHORT).show();

}

}

}

});

btnLoad.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent myIntent = new Intent(MainActivity.this, ReadFile.class); MainActivity.this.startActivity(myIntent);

}

});

}

public boolean isStoragePermissionGranted() {

if (Build.VERSION.SDK\_INT >= Build.VERSION\_CODES.M) {

if

(checkSelfPermission(android.Manifest.permission.WRITE\_EXTERNAL\_STORAGE) == PackageManager.PERMISSION\_GRANTED) {

//Permission is granted

return true;

} else {

//Permission is revoked

ActivityCompat.requestPermissions(this, new

String[]{android.Manifest.permission.WRITE\_EXTERNAL\_STORAGE}, 1); return false;

}

}

else {

//permission is automatically granted on sdk<23 upon installation //Permission is granted

return true;

}

}

private boolean isExternalStorageAvailableForRW() {

// Check if the external storage is available for read and write by calling // MEDIA\_M/O/UNETnEvDi,ronment.getExternalStorageState() method. If the returned state is

// then you can read and write files. So, return true in that case, otherwise, false.

String extStorageState = Environment.getExternalStorageState(); if(extStorageState.equals(Environment.MEDIA\_MOUNTED)){

return true;

}

return false;

}

}

//ReadFile.java

package com.example.ex7;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import java.io.BufferedReader;

import java.io.File;

import java.io.FileNotFoundException;

import java.io.FileReader;

import java.io.IOException;

public class ReadFile extends AppCompatActivity { Button btnLoad; TextView tvLoad; EditText filenamev; String filename = "";

String filepath = "NewDirectory";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState); setContentView(R.layout.activity\_read\_file);

btnLoad = findViewById(R.id.loadbtn); filenamev =

findViewById(R.id.filename2); tvLoad = findViewById(R.id.tvLoad);

btnLoad.setOnClickListener(new View.OnClickListener() { @Override public void onClick(View view) {

filename = filenamev.getText().toString().trim();

FileReader fr = null;

File myExternalFile = new File(getExternalFilesDir(filepath),

filename);

StringBuilder stringBuilder = new StringBuilder();

try {

fr = new FileReader(myExternalFile); BufferedReader br = new

BufferedReader(fr); String line = br.readLine();

while(line != null){ stringBuilder.append(line).append('\n'); line = br.readLine();

}

} catch (FileNotFoundException e) { e.printStackTrace();

} catch (IOException e) { e.printStackTrace();

} finally {

String fileContents = stringBuilder.toString();

tvLoad.setText(fileContents);

}

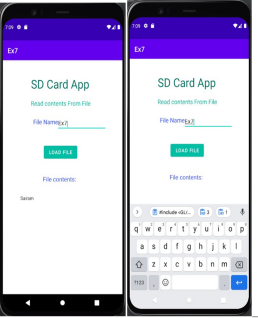
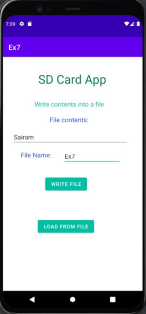
}

});

}

}

## Output:

****

## Learning outcomes:

● An android application to read and write from the SD card was implemented.

● Text is saved to and retrieved from the SD card.