Ex. No. : 06 **Date: 04/05/2025**

Register No.: 221701056 **Name: SNEKA SORNA.P.S**

SD Card

Aim

Implement an application to write the name and CGPA to SD card in text file format.

Procedure:

Step 1: Setting Up Your Environment

1. Install Android Studio: If it's not already installed, download and install Android Studio from the official Android Developer website.

2. Create a New Project: Open Android Studio, start a new project with an "Empty Activity". Name your project (e.g., "StudentDataSaver"), select Kotlin as the language, and choose an API level that supports runtime permissions (API 23+).

Step 2: Updating Manifest for Permissions

1. Modify AndroidManifest.xml: You need to request permissions to write to external storage. Open your AndroidManifest.xml file and add the following permissions

Step 3: Requesting Runtime Permissions

2. Implement Permission Request in MainActivity.kt: Starting from Android 6.0 (API level 23), you must request permissions at runtime. Update your MainActivity.kt to request the necessary permissions

Step 4: Designing the User Interface

1. Modify activity_main.xml: Create a UI that includes EditText fields for the Register Number, Name, and CGPA, and a "Save" button to trigger the save operation.

Step 5: Implementing File Write Logic

1. Update MainActivity.kt: Add the logic to write the data to a text file on the external storage when the "Save" button is clicked

Step 6: Running Your Application

1. Choose a Device: Select an Android device or an emulator with an SD card.

2. Run the App: Click the "Run" button in Android Studio to build and run your application.
3. Test the Functionality: Enter the Register Number, Name, and CGPA in the provided

fields and click the "Save" button. Check the external storage for the StudentData/StudentDetails.txt file to see if the data was saved successfully

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.exp_5" >
    <uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
    <uses-permission
android:name="android.permission.READ_EXTERNAL_STORAGE"/>
    <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:supportsRtl="true"
        android:theme="@style/Theme.Exp5"
        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>
```


Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:padding="24dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <EditText
        android:id="@+id/editTextName"
        android:hint="Enter Name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <EditText
        android:id="@+id/editTextCGPA"
        android:hint="Enter CGPA"
        android:inputType="numberDecimal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="12dp"/>

    <Button
        android:id="@+id/buttonSave"
        android:text="Save to SD Card"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="24dp" />

</LinearLayout>
```

MainActivity.kt

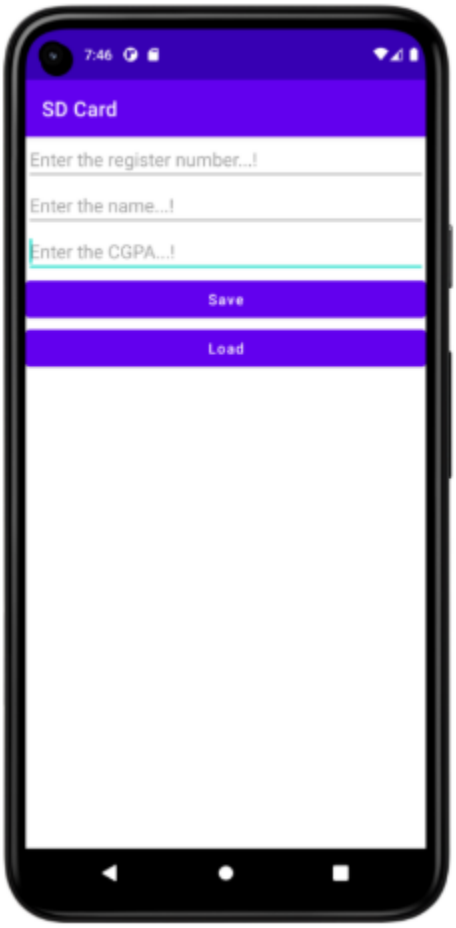
```
package com.example.exp_5

import android.Manifest
import android.content.pm.PackageManager
import android.os.Bundle
import android.os.Environment
import android.widget.Button
import android.widget.EditText
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity
import androidx.core.app.ActivityCompat
import androidx.core.content.ContextCompat
import java.io.File
import java.io.FileOutputStream

class MainActivity : AppCompatActivity() {

    private lateinit var editTextName: EditText
    private lateinit var editTextCGPA: EditText
    private lateinit var buttonSave: Button

    private val STORAGE_PERMISSION_CODE = 1001

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        editTextName = findViewById(R.id.editTextName)
        editTextCGPA = findViewById(R.id.editTextCGPA)
```


```
    buttonSave = findViewById(R.id.buttonSave)

    buttonSave.setOnClickListener {
        if (checkPermission()) {
            saveDataToSDCard()
        } else {
            requestPermission()
        }
    }
}

private fun checkPermission(): Boolean {
    val permission = ContextCompat.checkSelfPermission(
        this,
        Manifest.permission.WRITE_EXTERNAL_STORAGE
    )
    return permission == PackageManager.PERMISSION_GRANTED
}

private fun requestPermission() {
    ActivityCompat.requestPermissions(
        this,
        arrayOf(Manifest.permission.WRITE_EXTERNAL_STORAGE),
        STORAGE_PERMISSION_CODE
    )
}

override fun onRequestPermissionsResult(
    requestCode: Int, permissions: Array<out String>, grantResults: IntArray
) {
    super.onRequestPermissionsResult(requestCode, permissions, grantResults)
```

```
        if (requestCode == STORAGE_PERMISSION_CODE) {
            if (grantResults.isNotEmpty() && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                saveDataToSDCard()
            } else {
                Toast.makeText(this, "Permission denied!",
Toast.LENGTH_SHORT).show()
            }
        }
    }

    private fun saveDataToSDCard() {
        val name = editTextName.text.toString()
        val cgpa = editTextCGPA.text.toString()

        if (name.isEmpty() || cgpa.isEmpty()) {
            Toast.makeText(this, "Please enter all fields",
Toast.LENGTH_SHORT).show()
            return
        }

        val state = Environment.getExternalStorageState()
        if (Environment.MEDIA_MOUNTED != state) {
            Toast.makeText(this, "SD Card not found!", Toast.LENGTH_SHORT).show()
            return
        }

        val file = File(Environment.getExternalStorageDirectory(), "student_info.txt")

        try {
            val fos = FileOutputStream(file, true) // true for append mode
            fos.write("Name: $name, CGPA: $cgpa\n".toByteArray())
```


```
            fos.close()
            Toast.makeText(this, "Saved Successfully!", Toast.LENGTH_SHORT).show()
        } catch (e: Exception) {
            e.printStackTrace()
            Toast.makeText(this, "Error Saving!", Toast.LENGTH_SHORT).show()
        }
    }
}
```

Output



Result:

The app stores the student's name and CGPA to a text file on the SD card and it is verified successfully.