

Experiment – 10

Aim: Design an application to run music in the background while using other application.

Solution:

Step 1: Create a MyService java file:

Choose the “app” folder and create a new file by selecting “New”, then “Service” and entering a name. You can choose any filename you like, for example “MyService.java”.

Step 2: Create a resource directory

To create a menu, you need to create raw folder so create one inside the “raw” folder by selecting it and choosing “File”, “New”, then “Folder” and entering “raw” as the name and type as raw.

Step 3: Add an audio file:

Add the audio file under “raw” directory.

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">

<ImageView
    android:id="@+id/playerImage"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:srcCompat="@drawable/download_1_"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintBottom_toTopOf="@+id/playBtn"/>

<ImageView
    android:id="@+id/playBtn"
    android:layout_width="108dp"
    android:layout_height="95dp"
    app:srcCompat="@drawable/download_play"
    android:onClick="changePlay"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/stopBtn"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/playerImage"/>

<ImageView
    android:id="@+id/stopBtn"
    android:layout_width="103dp"
    android:layout_height="99dp"
```

```
app:srcCompat="@drawable/download_stop"
android:onClick="changePlay"
app:layout_constraintStart_toEndOf="@+id/playBtn"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/playerImage"
app:layout_constraintBottom_toBottomOf="parent"/>
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.musicplayerservices;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void changePlay(View view){
        if(view == findViewById(R.id.playBtn)){
            startService(new Intent(this,MyService.class));
        }
        else if(view==findViewById(R.id.stopBtn)){
            stopService(new Intent(this,MyService.class));
        }
    }
}
```

MyService.java:

```
package com.example.musicplayerservices;

import android.app.Service;
import android.content.Intent;
import android.media.MediaPlayer;
import android.os.IBinder;
import android.provider.Settings;

public class MyService extends Service {

    MediaPlayer mp;

    @Override
    public IBinder onBind(Intent intent) {
```

```
        return null;
    }
    public int onStartCommand(Intent intent, int flags, int startId) {
        mp = MediaPlayer.create(this,R.raw.ringtone);
        mp.setLooping(true);
        mp.start();
        return START_STICKY;
    }
    public void onDestroy(){
        super.onDestroy();
        mp.stop();
    }
}
```

Output:



Experiment – 11

Aim: Design an application to monitor the battery level using broadcast receivers.

Solution:

Create a BatteryReceiver java file:

Choose the “app” folder and create a new java file by selecting “New”, then “Java Class” and entering a name. You can choose any filename you like, for example “BatteryReceiver.java”.

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/batteryText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="50dp"
        android:textStyle="bold"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/checkBtn"
        app:layout_constraintBottom_toTopOf="@+id/progressBar"/>

    <Button
        android:id="@+id/checkBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Check Battery Percentage"
        android:onClick="checkBatteryPercentage"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toTopOf="@+id/batteryText"/>

    <ProgressBar
        android:id="@+id/progressBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:minHeight="100dp"
        android:minWidth="200dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/batteryText"
```

```
        app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.broadcastrecieverex;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
import android.view.View;
import android.widget.ProgressBar;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    TextView tv;
    ProgressBar progress;
    BatteryReceiver BR;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        tv = findViewById(R.id.batteryText);
        progress = findViewById(R.id.progressBar);

    }
    public void checkBatteryPercentage(View view){
        BR = new BatteryReceiver(tv,progress);
        registerReceiver(BR,new IntentFilter(Intent.ACTION_BATTERY_CHANGED));
    }

    @Override
    protected void onStop() {
        super.onStop();
        unregisterReceiver(BR);
    }
}
```

BatteryReceiver.java:

```
package com.example.broadcastrecieverex;

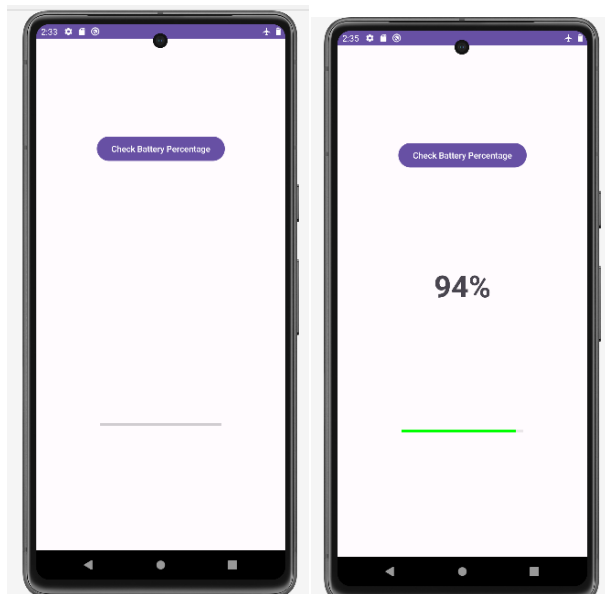
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.res.ColorStateList;
import android.graphics.Color;
```

```
import android.os.Build;
import android.widget.ProgressBar;
import android.widget.TextView;

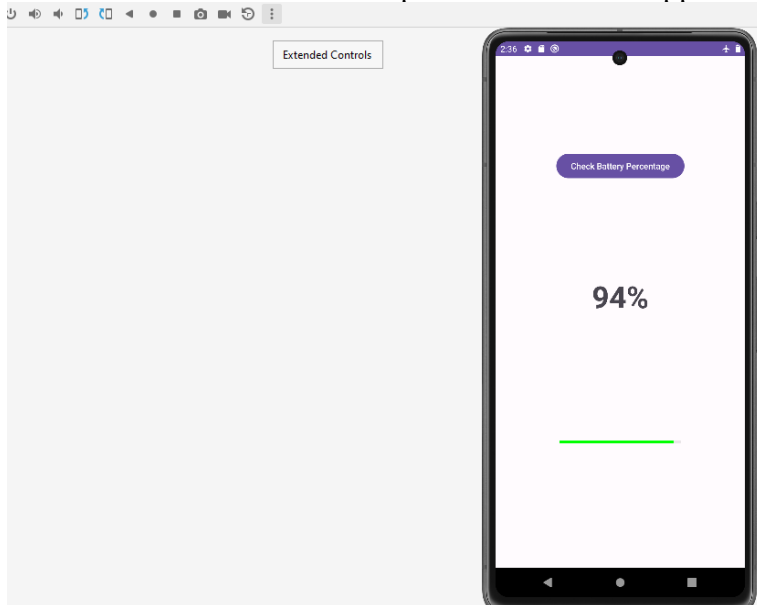
import androidx.annotation.RequiresApi;

public class BatteryReceiver extends BroadcastReceiver {
    TextView tview;
    ProgressBar prg;
    BatteryReceiver(TextView tv, ProgressBar progressBar){
        tview = tv;
        prg = progressBar;
    }
    @RequiresApi(api = Build.VERSION_CODES.LOLLIPOP)
    @Override
    public void onReceive(Context context, Intent intent) {
        int per = intent.getIntExtra("level",0);
        if(per>=50) {
            tview.setText(per + "%");
            prg.setProgress(per);
            prg.setProgressTintList(ColorStateList.valueOf(Color.GREEN));
        }
        else if(per<50 && per>=20){
            tview.setText(per + "%");
            prg.setProgress(per);
            prg.setProgressTintList(ColorStateList.valueOf(Color.YELLOW));
        } else if (per<20 && per>0) {
            tview.setText(per + "%");
            prg.setProgress(per);
            prg.setProgressTintList(ColorStateList.valueOf(Color.RED));
        }
    }
}
```

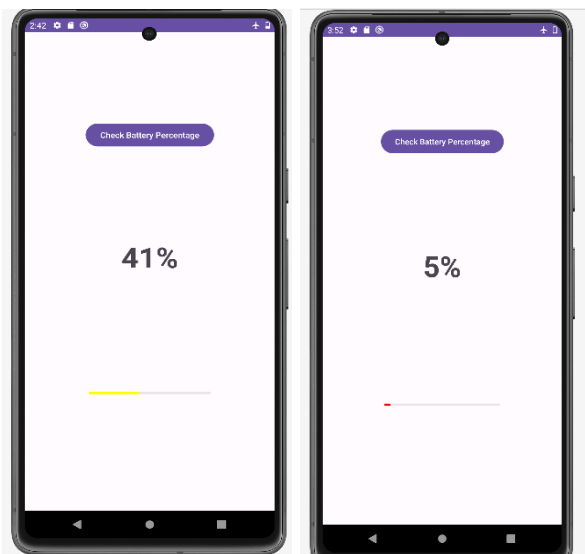
Output:



Go to extended controls then separate window will appear for the controls



Change the Battery level



Experiment – 12

Aim: Design an application to store the student details using SQLite Database

Solution:

Create a MyDBHandler java file:

Choose the “Java” folder and create a new java file by selecting “New”, then “Java Class” and entering a name. You can choose any filename you like, for example “MyDBHandler.java”.

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">

    <EditText
        android:id="@+id/nameBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Student Name"
        android:inputType="text"
        android:minHeight="48dp"
        app:layout_constraintStart_toEndOf="@+id/nameLbl"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/Header"
        app:layout_constraintBottom_toTopOf="@+id/idBox"/>

    <TextView
        android:id="@+id/Header"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Students Database"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toTopOf="@+id/nameBox"/>

    <TextView
        android:id="@+id/nameLbl"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Student Name"
        android:textStyle="bold"
        app:layout_constraintStart_toStartOf="parent"
```

```
app:layout_constraintEnd_toStartOf="@+id/nameBox"
app:layout_constraintTop_toBottomOf="@+id/Header"
app:layout_constraintBottom_toTopOf="@+id/idLbl"/>
```

```
<TextView
    android:id="@+id/idLbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Student Id"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/idBox"
    app:layout_constraintTop_toBottomOf="@+id/nameLbl"
    app:layout_constraintBottom_toTopOf="@+id/insertBtn"/>
```

```
<EditText
    android:id="@+id/idBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint="Enter Student Id"
    android:inputType="text"
    android:minHeight="48dp"
    app:layout_constraintStart_toEndOf="@+id/idLbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/nameBox"
    app:layout_constraintBottom_toTopOf="@+id/deleteBtn"/>
```

```
<Button
    android:id="@+id/insertBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="ADD"
    app:layout_constraintBottom_toTopOf="@+id/displayBtn"
    app:layout_constraintEnd_toStartOf="@+id/deleteBtn"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/idLbl" />
```

```
<Button
    android:id="@+id/deleteBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="25dp"
    android:text="DELETE"
    app:layout_constraintBottom_toTopOf="@+id/displayBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/insertBtn"
    app:layout_constraintTop_toBottomOf="@+id/idBox" />
```

```
<Button
```

```

        android:id="@+id/displayBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="DISPLAY ALL"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/deleteBtn"
        app:layout_constraintBottom_toTopOf="@+id/result"/>

<TextView
    android:id="@+id/result"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/displayBtn"
    app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.java:

```

package com.example.dbproject;

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 android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText eid,ename;
    Button ins,del,dis;
    TextView res;
    MyDBHandler db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        eid = findViewById(R.id.idBox);
        ename = findViewById(R.id.nameBox);
        ins = findViewById(R.id.insertBtn);
        del = findViewById(R.id.deleteBtn);
        dis = findViewById(R.id.displayBtn);
        res = findViewById(R.id.result);
        db = new MyDBHandler(getApplicationContext(),"students",null,1);

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

```

```

        public void onClick(View view) {
            String sid = eid.getText().toString();
            String sname = ename.getText().toString();
            db.insertRecord(sid,sname);
            Toast.makeText(getApplicationContext(),"Inserted",Toast.LENGTH_LONG).show();
        }
    });
    del.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String sid = eid.getText().toString();
            db.deleteRecord(sid);
            Toast.makeText(getApplicationContext(),"Deleted",Toast.LENGTH_LONG).show();
        }
    });
    dis.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String tabledata = db.displayRecord();
            res.setText(tabledata);
        }
    });
}
}

```

MyDBHandler.java:

```

package com.example.dbproject;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;

public class MyDBHandler extends SQLiteOpenHelper {
    public MyDBHandler(@Nullable Context context, @Nullable String name, @Nullable
    SQLiteDatabase.CursorFactory factory, int version) {
        super(context, name, factory, version);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table students (stuId varChar(10),stuname varChar(20))");
    }
    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {

    }
    public void insertRecord(String sid,String sname){

```

```

    SQLiteDatabase db = this.getWritableDatabase();
    //One Way to insert the records using execSQL method
    db.execSQL("insert into students values (?,?)",new String[]{sid,sname});
    //Alternative Way to insert the records using insert() method and ContentValues Object
    /*ContentValues values = new ContentValues();
    values.put("stuId",sid);
    values.put("stuname",sname);
    db.insert("students",null,values);*/
    db.close();
}
public void deleteRecord(String sid){
    SQLiteDatabase db = this.getWritableDatabase();
    //One Way to delete the records using execSQL method
    //db.execSQL("delete from students where stuId=?",new String[]{sid});
    //Alternative Way to insert the records using delete() method
    db.delete("students","stuId=?",new String[]{sid});
}
public String displayRecord(){
    String tdata = "";
    SQLiteDatabase db = this.getReadableDatabase();
    Cursor cursor = db.rawQuery("select * from students",null);
    while (cursor.moveToNext()) {
        String i = cursor.getString(0);
        String n = cursor.getString(1);
        tdata += i+":"+n+"\n";
    }
    db.close();
    return tdata;
}
}
}

```

Output:

