**Program-4: Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds**

**Step1:** Save five images (jpg format) in the drawable folder. In this example one.jpg, two.jpg, three.jpg, four.jpg and five.jpg images are saved in drawable folder

**Step 2:** activity\_main.xml

*<?*xml version="1.0" encoding="utf-8"*?>*<RelativeLayout 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/relative\_layout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="302dp"  
 android:layout\_height="96dp"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="90dp"  
 android:layout\_marginEnd="64dp"  
 android:layout\_marginBottom="545dp"  
 android:text="Wall Paper Change Application"  
 android:textSize="28dp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 tools:ignore="MissingConstraints"  
 tools:layout\_editor\_absoluteY="126dp" />  
  
 <Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginEnd="45dp"  
 android:layout\_marginBottom="255dp"  
 android:text="Click Here To Change Wall Paper"  
 android:textSize="26dp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.494"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/textView" />  
  
  
</RelativeLayout>

**Step3: MainActivity.java**

package com.example.mad\_lab4;  
  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.content.ContextCompat;  
  
import java.util.Random;  
  
public class MainActivity extends AppCompatActivity {  
 Button button;  
 View screenView;  
 int[] back\_images;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 *// array creation of images which are stored  
 // in drawable folder under res folder* back\_images = new int[]{R.drawable.*one*, R.drawable.*two*,  
 R.drawable.*three*, R.drawable.*four*};  
 button = findViewById(R.id.*button*);  
 screenView = findViewById(R.id.*relative\_layout*);  
  
 button.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
  
 *// fetching length of array* int array\_length = back\_images.length;  
  
 *// object creation of random class* Random random = new Random();  
  
 *// generation of random number* int random\_number = random.nextInt(array\_length);  
  
 *// set background images on screenView  
 // using setBackground() method.* screenView.setBackground(ContextCompat.*getDrawable*(getApplicationContext(), back\_images[random\_number]));  
 }  
 });  
 }  
}

**Program-5 : Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter value in a TextViewcontrol**.

**Step 1**: create xml with 2 buttons start and stop. And one text view above it.

**Step2: ActivityMain.java**

package com.example.mad\_lab5;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.os.Handler;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

Button btnstart, btnstop;

TextView txtcounter;

int i=1;

Handler customHandler=new Handler();

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

btnstart=findViewById(R.id.btn\_start);

btnstop=findViewById(R.id.btn\_stop);

txtcounter=findViewById(R.id.textView);

btnstart.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

customHandler.postDelayed(updateTimerThread,0);

}

});

btnstop.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

customHandler.removeCallbacks(updateTimerThread);

}

});

}

private final Runnable updateTimerThread=new Runnable() {

@Override

public void run() {

txtcounter.setText(""+i);

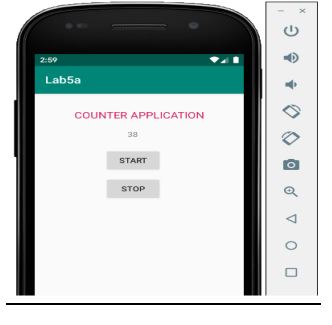
customHandler.postDelayed(this,1000);

i++;

}

};

}



**Program-6: Create two files of XML and JSON type with values for City\_Name,**

**Latitude, Longitude, Temperature, and Humidity. Develop an application to create**

**an activity with two buttons to parse the XML and JSON files which when clicked**

**should display the data in their respective layouts side by side.**

**Step1:**

* Add Assets folder by following the given hierarchy:

App->new->folder->Assests folder

* Inside the assets folder create new files of xml and json using the following hierarchy:

new->file->city.xml

new->file->city.json

city.xml

<?xml version="1.0" ?>

<records>

<place>

<name>Mysore</name>

<lat>12.295</lat>

<long>76.639</long>

<temperature>22</temperature>

<humidity>90 %</humidity>

</place>

<place>

<name>Bangalore</name>

<lat>12.97165</lat>

<long>77.5946</long>

<temperature>25</temperature>

<humidity>74 %</humidity>

</place>

</records>

city.json

[

{

"name": "HASSAN",

"lat": "12.295",

"long": "76.639",

"temperature": "22",

"humidity": "92 %"

},

{

"name": "MANDYA",

"lat": "12.97165",

"long": "77.5946",

"temperature": "25",

"humidity": "74 %"

}

]

Step2:

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/TV1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.2"  
 app:layout\_constraintLeft\_toLeftOf="parent"  
 app:layout\_constraintRight\_toRightOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.667" />  
  
 <Button  
 android:id="@+id/bjson"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="236dp"  
 android:layout\_marginEnd="124dp"  
 android:text="JSON"  
 android:onClick="parsejson"  
 app:layout\_constraintEnd\_toStartOf="@+id/bxml"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <Button  
 android:id="@+id/bxml"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="236dp"  
 android:layout\_marginEnd="44dp"  
 android:text="XML"  
 android:onClick="parsexml"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <TextView  
 android:id="@+id/tv1"  
 android:layout\_width="183dp"  
 android:layout\_height="372dp"  
 android:layout\_marginStart="16dp"  
 android:layout\_marginTop="56dp"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/bjson" />  
  
 <TextView  
 android:id="@+id/tv2"  
 android:layout\_width="152dp"  
 android:layout\_height="335dp"  
 android:layout\_marginTop="84dp"  
 android:layout\_marginEnd="16dp"  
 android:text="TextView"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/bxml" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

**Step3:**

**MainActivity.java**

package com.example.mad\_jason\_xml\_parse;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
import android.text.style.TabStopSpan;  
import org.json.JSONArray;  
import org.json.JSONObject;  
import org.w3c.dom.Document;  
import org.w3c.dom.Element;  
import org.w3c.dom.Node;  
import org.w3c.dom.NodeList;  
import java.io.InputStream;  
import java.nio.charset.StandardCharsets;  
import javax.xml.parsers.DocumentBuilder;  
import javax.xml.parsers.DocumentBuilderFactory;  
  
import java.io.InputStream;  
  
public class MainActivity extends AppCompatActivity {  
 Button b1,b2;  
 TextView t1,t2;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 b1=findViewById(R.id.*bjson*);  
 b2=findViewById(R.id.*bxml*);  
 t1=findViewById(R.id.*tv1*);  
 t2=findViewById(R.id.*tv2*);  
  
 }  
 public void parsejson(View view){  
 String json;  
 StringBuilder sb=new StringBuilder();  
 try {  
 InputStream is = getAssets().open("city.json");  
 int size = is.available();  
 byte[] buffer = new byte[size];  
 is.read(buffer);  
 json = new String(buffer, StandardCharsets.*UTF\_8*);  
 JSONArray jsonArray = new JSONArray(json);  
 sb.append("JSON DATA");  
 sb.append("\n--------");  
 for (int i = 0; i < jsonArray.length(); i++) {  
 JSONObject jsonObject = jsonArray.getJSONObject(i);  
 sb.append("\nName: ").append(jsonObject.getString("name"));  
 sb.append("\nLatitude: ").append(jsonObject.getString("lat"));  
 sb.append("\nLongitude: ").append(jsonObject.getString("long"));  
 sb.append("\nTemperature: ").append(jsonObject.getString("temperature"));  
 sb.append("\nHumidity: ").append(jsonObject.getString("humidity"));  
 sb.append("\n----------");  
 }t1.setText(sb.toString());}  
 catch (Exception e)  
 {  
 e.printStackTrace();  
 Toast.*makeText*(MainActivity.this,"Error in reading",Toast.*LENGTH\_LONG*).show();  
  
 }  
  
  
 }  
 public void parsexml(View view){  
 try {  
 InputStream is = getAssets().open("city.xml");  
 DocumentBuilderFactory documentBuilderFactory = DocumentBuilderFactory.*newInstance*();  
 DocumentBuilder documentBuilder = documentBuilderFactory.newDocumentBuilder();  
 Document document = documentBuilder.parse(is);  
 StringBuilder stringBuilder = new StringBuilder();  
 stringBuilder.append("XML DATA");  
 stringBuilder.append("\n---------");  
 NodeList nodeList = document.getElementsByTagName("place");  
 for (int i = 0; i < nodeList.getLength(); i++)  
 {  
 Node node = nodeList.item(i);  
 if (node.getNodeType() == Node.*ELEMENT\_NODE*) {  
 Element element = (Element) node;  
 stringBuilder.append("\nName: ").append(getValue("name", element));  
 stringBuilder.append("\nLatitude: ").append(getValue("lat", element));  
 stringBuilder.append("\nLongitude: ").append(getValue("long", element));  
 stringBuilder.append("\nTemperature: ").append(getValue("temperature", element));  
 stringBuilder.append("\nHumidity: ").append(getValue("humidity", element));  
 stringBuilder.append("\n----------");  
 }  
 }  
 t2.setText(stringBuilder.toString());  
 }catch (Exception e){  
 e.printStackTrace();  
 Toast.*makeText*(MainActivity.this,"Error Parsing XML",Toast.*LENGTH\_LONG*).show();  
 }  
  
 }  
 private String getValue(String tag, Element element)  
 {  
 return element.getElementsByTagName(tag).item(0).getChildNodes().item(0).getNodeValue();  
 }  
  
}