Fifteen Puzzle Android Starter

XML

Cut and Paste this code.

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent">
  <ImageView
    android:id="@+id/picture"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:scaleType="center"
    android:src="@drawable/background_image" />
  <LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center"
    android:orientation="horizontal">
    <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_gravity="center"
      android:orientation="vertical">
      <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Fifteen Puzzle"
        android:textSize="30dp" />
      <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:orientation="horizontal">
        <Button
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_gravity="center"
          android:layout_margin="10dp"
          android:id="@+id/reset"
          android:onClick="reset"
          android:text="Reset"/>
        <Button
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_gravity="center"
          android:layout_margin="10dp"
```

```xml
            android:id="@+id/splash"
            android:onClick="splash"
            android:text="Splash"/>
        <Button
            android:layout_width="wrap_content"
            android:layout_gravity="center"
            android:layout_height="wrap_content"
            android:layout_margin="10dp"
            android:id="@+id/instructions"
            android:onClick="instructions"
            android:text="Instructions"/>
    </LinearLayout>

    <GridLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/grid"
        android:layout_gravity="center"
        android:columnCount="4"
        android:rowCount="4">

    </GridLayout>
    </LinearLayout>
  </LinearLayout>
</RelativeLayout>
```

Java

Do **not** cut and paste this code.

Leave the highlighted sections

```java
package com.example.fifteenpuzzle;

import androidx.appcompat.app.AppCompatActivity;

import android.media.Image;
import android.os.Bundle;
import android.view.View;
import android.widget.GridLayout;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
```

```java
//Game screen
int turn = 1;
int last = -1;
//grid
int row = 4;
int col = 4;
ImageView a[] = new ImageView[row * col];
int b[][] = {{1, 2, 3, 4}, {5, 6, 7, 8}, {9, 10, 11, 12}, {0, 13, 14, 15}};

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    GridLayout g = (GridLayout) findViewById(R.id.grid);
    int m = 0;
    for (int i = 0; i < row; i++) {
        for (int j = 0; j < col; j++) {
            a[m] = new ImageView(this);
            setpicStart(a[m], m);
            a[m].setId(m);
            //TO DO: add in this code for the onClick and actionListener
            a[m].setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    gridButtonClick(v.getId());
                }
            });
            g.addView(a[m]);
            m++;
        }
    }
//end bracket
}

public void setpicStart(ImageView i, int pos) {
    int x = pos / col;
    int y = pos % col;
    //TO DO: fix so that your tracking array's numbers match your pictures
    if (b[x][y] == 0)
        a[pos].setImageResource(R.drawable.c0);
    else if (b[x][y] == 1)
        a[pos].setImageResource(R.drawable.c1);
    else if (b[x][y] ==2)
        a[pos].setImageResource(R.drawable.c2);
    else if (b[x][y] == 3)
        a[pos].setImageResource(R.drawable.c3);
    else if (b[x][y] == 4)
        a[pos].setImageResource(R.drawable.c4);
    else if (b[x][y] == 5)
        a[pos].setImageResource(R.drawable.c5);
    else if (b[x][y] == 6)
        a[pos].setImageResource(R.drawable.c6);
```

```java
        else if (b[x][y] ==7)
            a[pos].setImageResource(R.drawable.c7);
        else if (b[x][y] == 8)
            a[pos].setImageResource(R.drawable.c8);
        else if (b[x][y] == 9)
            a[pos].setImageResource(R.drawable.c9);
        else if (b[x][y] == 10)
            a[pos].setImageResource(R.drawable.c10);
        else if (b[x][y] == 11)
            a[pos].setImageResource(R.drawable.c11);
        else if (b[x][y] ==12)
            a[pos].setImageResource(R.drawable.c12);
        else if (b[x][y] == 13)
            a[pos].setImageResource(R.drawable.c13);
        else if (b[x][y] == 14)
            a[pos].setImageResource(R.drawable.c14);
        else if (b[x][y] == 15)
            a[pos].setImageResource(R.drawable.c15);
    }

    public void gridButtonClick(int pos) {
        int x = pos / col;
        int y = pos % col;
        //TO DO: code as needed to process a button click
    }

    public void redraw() {
        int m = 0;
        for (int i = 0; i < row; i++) {
            for (int j = 0; j < col; j++) {
                //TO DO: fix so that your tracking array's numbers match your pictures
                if (b[i][j] == 0)
                    a[m].setImageResource(R.drawable.c0);
                else if (b[i][j] == 1)
                    a[m].setImageResource(R.drawable.c1);
                else if (b[i][j] ==2)
                    a[m].setImageResource(R.drawable.c2);
                else if (b[i][j] == 3)
                    a[m].setImageResource(R.drawable.c3);
                else if (b[i][j] == 4)
                    a[m].setImageResource(R.drawable.c4);
                else if (b[i][j] == 5)
                    a[m].setImageResource(R.drawable.c5);
                else if (b[i][j] == 6)
                    a[m].setImageResource(R.drawable.c6);
                else if (b[i][j] ==7)
                    a[m].setImageResource(R.drawable.c7);
                else if (b[i][j] == 8)
                    a[m].setImageResource(R.drawable.c8);
                else if (b[i][j] == 9)
                    a[m].setImageResource(R.drawable.c9);
                else if (b[i][j] == 10)
                    a[m].setImageResource(R.drawable.c10);
```

```java
            else if (b[i][j] == 11)
                a[m].setImageResource(R.drawable.c11);
            else if (b[i][j] ==12)
                a[m].setImageResource(R.drawable.c12);
            else if (b[i][j] == 13)
                a[m].setImageResource(R.drawable.c13);
            else if (b[i][j] == 14)
                a[m].setImageResource(R.drawable.c14);
            else if (b[i][j] == 15)
                a[m].setImageResource(R.drawable.c15);
            m++;
        }
    }
  }
}
```