

Klasse MainActivity

```
package com.sap.maexle;

import androidx.appcompat.app.AppCompatActivity;

import android.hardware.Sensor;
import android.hardware.SensorEvent;
import android.hardware.SensorEventListener;
import android.hardware.SensorManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.LinearLayout;

import java.util.Random;

/*
 * Version 1 und 2
 */
//public class MainActivity extends AppCompatActivity {
/*
 * Version 3
 */
public class MainActivity extends AppCompatActivity implements SensorEventListener {

    private LinearLayout dicesLinearLayout;
    private ImageView diceAImageView;
    private ImageView diceBImageView;
    private Button showDicesButton;
    private Button hideDicesButton;

    private int diceAResourceId;
    private int diceBResourceId;

    private Model model; //nur Version 2 und 3
    private SensorManager sensorManager; //nur Version 3

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

        model = Model.getInstance(); //nur Version 2 und 3
        sensorManager = (SensorManager) getSystemService(SENSOR_SERVICE); //nur Version 3

        dicesLinearLayout = findViewById(R.id.dicesLinearLayout);
        diceAImageView = findViewById(R.id.image_view_dice_a);
        diceBImageView = findViewById(R.id.image_view_dice_b);
        showDicesButton = findViewById(R.id.button_show_dices);
        hideDicesButton = findViewById(R.id.button_hide_dices);

        rollTheDices(dicesLinearLayout);
    }

    /*
     * nur Version 3
     */
    protected void onResume() {
        super.onResume();
        sensorManager.registerListener(this,
            sensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER),
            SensorManager.SENSOR_DELAY_NORMAL);
    }

    /*
     * nur Version 3
     */
}
```

```
protected void onPause() {
    super.onPause();
    sensorManager.unregisterListener(this);
}

/*
 * nur Version 3
 */
public void onSensorChanged(SensorEvent sensorEvent) {
    float x = sensorEvent.values[0];
    float y = sensorEvent.values[1];
    float z = sensorEvent.values[2];

    float acceleration = (x * x + y * y + z * z) /
        (SensorManager.GRAVITY_EARTH * SensorManager.GRAVITY_EARTH);
    if (acceleration > 3) {
        rollTheDices(dicesLinearLayout);
    }
}

/*
 * nur Version 3
 */
public void onAccuracyChanged(Sensor sensor, int i) {
}

public void rollTheDices(View view) {
    hideDices(view);

    /*
     * Version 1
     */
    // Random random = new Random();
    // int diceAValue = random.nextInt(6) + 1;
    // int diceBValue = random.nextInt(6) + 1;
    /*
     * Version 2 und 3
     */
    model.rollTheDices();
    int diceAValue = model.getDiceAValue();
    int diceBValue = model.getDiceBValue();

    diceAResourceId = getResourceId(diceAValue);
    diceBResourceId = getResourceId(diceBValue);
}

public void showDices(View view) {
    diceAImageView.setImageResource(diceAResourceId);
    diceBImageView.setImageResource(diceBResourceId);

    showDicesButton.setEnabled(false);
    hideDicesButton.setEnabled(true);
}

public void hideDices(View view) {
    int zeroResourceId = getResourceId(0);
    diceAImageView.setImageResource(zeroResourceId);
    diceBImageView.setImageResource(zeroResourceId);

    showDicesButton.setEnabled(true);
    hideDicesButton.setEnabled(false);
}

private int getResourceId(int value) {
    if (value == 1) {
        return R.drawable.one;
    } else if (value == 2) {
```

```
        return R.drawable.two;
    } else if (value == 3) {
        return R.drawable.three;
    } else if (value == 4) {
        return R.drawable.four;
    } else if (value == 5) {
        return R.drawable.five;
    } else if (value == 6) {
        return R.drawable.six;
    } else {
        return R.drawable.zero;
    }
}
}
```

Klasse Dice

```
package com.sap.maexle;

import java.util.Random;

/*
 * nur Version 2 und 3
 */
public class Dice {

    private int value;

    public Dice() {
        rollTheDice();
    }

    public void rollTheDice() {
        Random random = new Random();
        value = random.nextInt(6) + 1;
    }

    public int getValue() {
        return value;
    }

}
```

Klasse Model

```
package com.sap.maexle;

/*
 * nur Version 2 und 3
 */
public class Model {

    private static Model instance;

    private Dice diceA;
    private Dice diceB;

    private Model() {
        diceA = new Dice();
        diceB = new Dice();
    }

    public static Model getInstance() {
        if (instance == null) {
            instance = new Model();
        }
        return instance;
    }

}
```

```
}

public void rollTheDices() {
    diceA.rollTheDice();
    diceB.rollTheDice();
}

public int getDiceAValue() {
    return diceA.getValue();
}

public int getDiceBValue() {
    return diceB.getValue();
}
}
```

Layout activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:layout_marginStart="50dp"
    android:layout_marginLeft="50dp"
    android:layout_marginTop="50dp"
    android:layout_marginEnd="50dp"
    android:layout_marginRight="50dp"
    android:layout_marginBottom="50dp"
    android:clipToPadding="false"
    android:dividerPadding="50dp"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal"
        android:text="Mäxle"
        android:textSize="60sp"
        android:textStyle="bold" />

    <LinearLayout
        android:id="@+id/dicesLinearLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:orientation="horizontal">

        <ImageView
            android:id="@+id/image_view_dice_a"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:padding="15dp"
            tools:srcCompat="@drawable/zero" />

        <ImageView
            android:id="@+id/image_view_dice_b"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:padding="15dp"
            tools:srcCompat="@drawable/zero" />

    </LinearLayout>

</LinearLayout>
```

```
</LinearLayout>

<Button
    android:id="@+id/button_roll_the_dices"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:onClick="rollTheDices"
    android:text="Würfeln" />

<Button
    android:id="@+id/button_show_dices"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:onClick="showDices"
    android:text="Würfel anzeigen" />

<Button
    android:id="@+id/button_hide_dices"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:onClick="hideDices"
    android:text="Würfel verbergen" />

</LinearLayout>
```