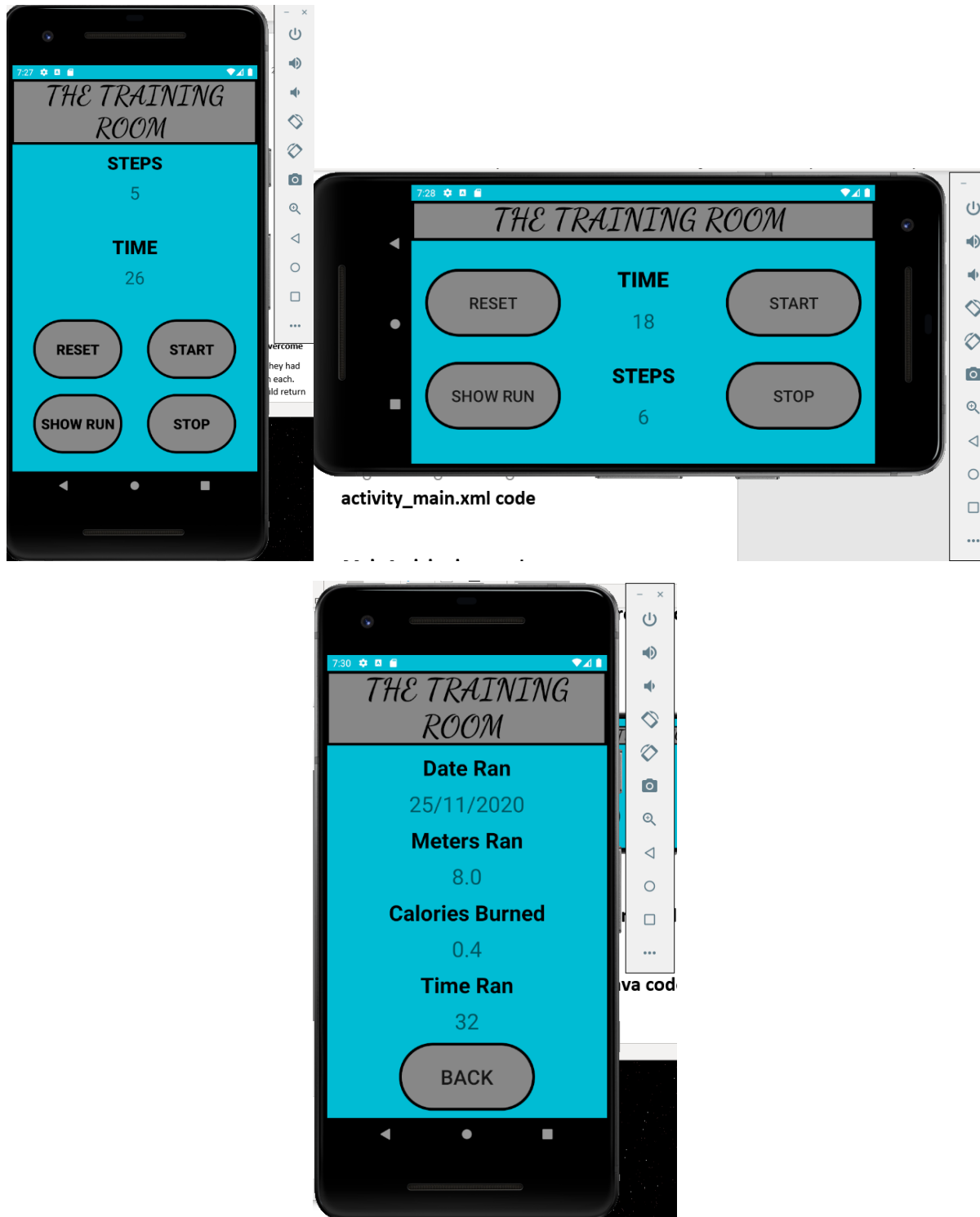


App working screenshot



activity_main.xml code (Portrait)

```
<?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"
android:background="#00BCD4"
tools:context=".MainActivity">

<Button
    android:id="@+id/btnReset"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="35dp"
    android:layout_marginBottom="25dp"
    android:background="@drawable/pill"
    android:onClick="doReset"
    android:text="Reset"
    android:textColor="#000000"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/btnShow"
    app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/btnStart"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_marginEnd="35dp"
    android:layout_marginBottom="25dp"
    android:background="@drawable/pill"
    android:onClick="doStart"
    android:text="Start"
    android:textColor="#000000"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/btnStop"
    app:layout_constraintEnd_toEndOf="parent" />

<Button
    android:id="@+id/btnShow"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_marginStart="35dp"
    android:layout_marginBottom="30dp"
    android:background="@drawable/pill"
    android:onClick="doShow"
    android:text="Show Run"
    android:textColor="#000000"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/btnStop"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_marginEnd="35dp"
    android:layout_marginBottom="30dp"
    android:background="@drawable/pill"
    android:onClick="doStop"
    android:text="Stop"
```

```
        android:textColor="#000000"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />

<TextView
    android:id="@+id/tvMetersRun"
    android:layout_width="wrap_content"
    android:layout_height="40dp"
    android:layout_marginTop="10dp"
    android:text="0"
    android:textAlignment="center"
    android:textSize="30sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView" />

<TextView
    android:id="@+id/tvTime"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:text="0"
    android:textAlignment="center"
    android:textSize="30sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView2" />

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="120dp"
    android:fontFamily="sans-serif-black"
    android:text="STEPS"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="30sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:fontFamily="sans-serif-black"
    android:text="TIME"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
```

```

        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tvMetersRun" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="413dp"
    android:layout_height="110dp"
    android:autoText="false"
    android:background="@drawable/sqaure"
    android:contextClickable="false"
    android:fontFamily="cursive"
    android:freezesText="false"
    android:includeFontPadding="false"
    android:text="The Training Room "
    android:textAlignment="center"
    android:textAllCaps="true"
    android:textColor="#000000"
    android:textSize="45sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

activity_main.xml (Landscape)

```

<?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"
    android:background="#00BCD4"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btnReset"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="100dp"
        android:background="@drawable/pill"
        android:onClick="doReset"
        android:text="Reset"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/btnShow"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginBottom="50dp"
        android:background="@drawable/pill"
        android:onClick="doShow"
        android:text="Show Run"

```

```
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/btnStop"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="50dp"
    android:background="@drawable/pill"
    android:onClick="doStop"
    android:text="Stop"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />

<Button
    android:id="@+id/btnStart"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="100dp"
    android:layout_marginEnd="20dp"
    android:background="@drawable/pill"
    android:onClick="doStart"
    android:text="Start"
    android:textSize="24sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="20dp"
    android:fontFamily="sans-serif-black"
    android:text="STEPS"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="30sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/tvMetersRun"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="20dp"
    android:fontFamily="sans-serif-black"
    android:text="TIME"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/tvTime"
    app:layout_constraintEnd_toEndOf="parent"
```

```

        app:layout_constraintHorizontal_bias="0.499"
        app:layout_constraintStart_toStartOf="parent" />

<TextView
    android:id="@+id/tvMetersRun"
    android:layout_width="wrap_content"
    android:layout_height="40dp"
    android:layout_marginBottom="50dp"
    android:text="0"
    android:textAlignment="center"
    android:textSize="30sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/btnStop"
    app:layout_constraintStart_toEndOf="@+id/btnShow" />

<TextView
    android:id="@+id/tvTime"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="40dp"
    android:text="0"
    android:textAlignment="center"
    android:textSize="30sp"
    app:layout_constraintBottom_toTopOf="@+id/textView"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="0dp"
    android:layout_height="59dp"
    android:autoText="false"
    android:background="@drawable/sqaure"
    android:contextClickable="false"
    android:fontFamily="cursive"
    android:freezesText="false"
    android:includeFontPadding="false"
    android:text="The Training Room "
    android:textAlignment="center"
    android:textAllCaps="true"
    android:textColor="#000000"
    android:textSize="45sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Activity_run_page.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"
    android:background="#00BCD4"

```

```
tools:context=".RunPage">

<TextView
    android:id="@+id/tvDate"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="0"
    android:textSize="32sp"
    app:layout_constraintBottom_toTopOf="@+id/textView8"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView4" />

<TextView
    android:id="@+id/textView8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Meters Ran"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/tvMetersRun"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tvDate" />

<TextView
    android:id="@+id/textView6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Time Ran"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/tvTimetaken"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tvCaloriesBurn" />

<TextView
    android:id="@+id/tvCaloriesBurn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="0"
    android:textSize="32sp"
    app:layout_constraintBottom_toTopOf="@+id/textView6"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView5" />

<TextView
    android:id="@+id/tvMetersRun"
    android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:text="0"
        android:textSize="32sp"
        app:layout_constraintBottom_toTopOf="@+id/textView5"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView8" />

<TextView
    android:id="@+id/tvTimetaken"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="0"
    android:textSize="32sp"
    app:layout_constraintBottom_toTopOf="@+id/btnBack"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView6" />

<Button
    android:id="@+id/btnBack"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="@drawable/pill"
    android:onClick="doBack"
    android:text="Back"
    android:textSize="30sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tvTimetaken" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Date Ran"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/tvDate"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView3" />

<TextView
    android:id="@+id/textView5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Calories Burned"
    android:textAlignment="center"
    android:textColor="#000000"
    android:textSize="32sp"
    android:textStyle="bold"
```



```
app:layout_constraintBottom_toTopOf="@+id/tvCaloriesBurn"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/tvMetersRun" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="413dp"
    android:layout_height="110dp"
    android:autoText="false"
    android:background="@drawable/sqaure"
    android:contextClickable="false"
    android:fontFamily="cursive"
    android:freezesText="false"
    android:includeFontPadding="false"
    android:text="The Training Room "
    android:textAlignment="center"
    android:textAllCaps="true"
    android:textColor="#000000"
    android:textSize="45sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java code

```
package jamie.itsligo.runningapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
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.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements SensorEventListener
{
    //timer setup
    CountUpTimer timer;
    TextView counterTimer;
    int counterToApproveShowBtn = 0;

    //step counter setup
    // experimental values for hi and lo magnitude limits
    private final double HI_STEP = 11.0; // upper mag limit
    private final double LO_STEP = 9.0; // lower mag limit
    boolean highLimit = false; // detect high limit
    int counter = 0; // step counter
```

```
TextView tvSteps;
private SensorManager mSensorManager;
private Sensor mSensor;

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

    //timer code
    counterTimer = findViewById(R.id.tvTime);

    timer = new CountUpTimer(300000) { // should be high for the run (ms)
        public void onTick(int second) {
            counterTimer.setText(String.valueOf(second));
        }
    };

    //step counter code
    tvSteps = findViewById(R.id.tvMetersRun);

    // we are going to use the sensor service
    mSensorManager = (SensorManager) getSystemService(SENSOR_SERVICE);
    mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
}

// timer methods
public void doStart(View view) {
    counter = 0;
    tvSteps.setText(String.valueOf(counter));
    timer.start();
    mSensorManager.registerListener(this,
mSensor, SensorManager.SENSOR_DELAY_NORMAL);
    Toast.makeText(this, "Started counting", Toast.LENGTH_LONG).show();
}

public void doStop(View view) {
    counterToApproveShowBtn++;
    timer.cancel();
    mSensorManager.unregisterListener(this); // turn off listener to save
power
    Toast.makeText(this, "Stopped Run", Toast.LENGTH_LONG).show();
}

public void doReset(View view) {
    counterTimer.setText("0");
    timer.cancel();
    counter = 0;
    tvSteps.setText(String.valueOf(counter));
    Toast.makeText(this, "Reset", Toast.LENGTH_LONG).show();
}

public void doShow(View view) {
    if (counterToApproveShowBtn >= 1)
    {
        counterToApproveShowBtn = 0;
    }
}
```

```
        Intent resultPageIntent = new Intent(view.getContext(),
RunPage.class);

        int stepsToPass = Integer.valueOf(tvSteps.getText().toString());
        int timeToPass = Integer.valueOf(counterTimer.getText().toString());

        resultPageIntent.putExtra("stepsPassed", stepsToPass);
        resultPageIntent.putExtra("timePassed", timeToPass);

        startActivity(resultPageIntent);
    }
    else if (counterToApproveShowBtn == 0)
    {
        Toast.makeText(this, "You must stop the run first!",
Toast.LENGTH_LONG).show();
    }
}

//step counter methods
@Override
public void onSensorChanged(SensorEvent event) {

    float x = event.values[0];
    float y = event.values[1];
    float z = event.values[2];

    // get a magnitude number using Pythagorus's Theorem
    double mag = round(Math.sqrt((x*x) + (y*y) + (z*z)), 2);

    // for me! if msg > 11 and then drops below 9, we have a step
    // you need to do your own mag calculating
    if ((mag > HI_STEP) && (highLimit == false)) {
        highLimit = true;
    }
    if ((mag < LO_STEP) && (highLimit == true)) {
        // we have a step
        counter++;
        tvSteps.setText(String.valueOf(counter));
        highLimit = false;
    }
}

}

@Override
public void onAccuracyChanged(Sensor sensor, int accuracy) {
    // not used
}

public static double round(double value, int places) {
    if (places < 0) throw new IllegalArgumentException();

    long factor = (long) Math.pow(10, places);
    value = value * factor;
    long tmp = Math.round(value);
    return (double) tmp / factor;
}
```

```
}
```

CountUpTimer.java

```
package jamie.itsligo.runningapp;

import android.os.CountDownTimer;

public abstract class CountUpTimer extends CountDownTimer {
    private static final long INTERVAL_MS = 1000;
    private final long duration;

    protected CountUpTimer(long durationMs) {
        super(durationMs, INTERVAL_MS);
        this.duration = durationMs;
    }

    public abstract void onTick(int second);

    @Override
    public void onTick(long msUntilFinished) {
        int second = (int) ((duration - msUntilFinished) / 1000);
        onTick(second);
    }

    @Override
    public void onFinish() {
        onTick(duration / 1000);
    }
}
```

RunPage.java

```
package jamie.itsligo.runningapp;

import androidx.appcompat.app.AppCompatActivity;

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

import java.text.DecimalFormat;
import java.text.SimpleDateFormat;
import java.util.Date;

public class RunPage extends AppCompatActivity {

    String counterValuePassed;
    TextView tvMetersRun, tvCaloriesBurn, tvTimetaken, tvDate;

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

        tvMetersRun = findViewById(R.id.tvMetersRun);
        tvCaloriesBurn = findViewById(R.id.tvCaloriesBurn);
    }
}
```

```
tvTimetaken = findViewById(R.id.tvTimetaken);
tvDate = findViewById(R.id.tvDate);

int stepsNowPassedOver = getIntent().getIntExtra("stepsPassed", 0 );
int timeNowPassedOver = getIntent().getIntExtra("timePassed", 0);

//calculation
double NumOfMetersRun = stepsNowPassedOver*0.8;
double NumOfCaloriesBurned = stepsNowPassedOver*0.04;

String stepsNowPassedOverString = String.valueOf(NumOfMetersRun);
String timeNowPassedOverString = String.valueOf(timeNowPassedOver);
String CaloriesCalculated = String.valueOf(NumOfCaloriesBurned);

tvMetersRun.setText(String.valueOf(stepsNowPassedOverString));
tvTimetaken.setText(String.valueOf(timeNowPassedOverString));
tvCaloriesBurn.setText(String.valueOf(CaloriesCalculated));

SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy");
String date = sdf.format(new Date());
tvDate.setText(String.valueOf(date));

}

public void doBack(View view) {
    Intent mainActivityIntent = new Intent(view.getContext(),
MainActivity.class);
    startActivity(mainActivityIntent);
}
}
```

Conclusion

- State if you completed the lab or how far you managed to get

I completed the lab in full.

- State the part of the lab you spent the most time on or what issue was the hardest to overcome

The area of the lab I spent the most time on was parsing information over to display on the second page. I attempted it a few times on a few different evenings and it was giving errors or crashing on me. After going away from it and coming back a different time I found that my issue was very easily fixed. I just needed a fresh, clear head and a break from the computer to realize the simple mistake I had made. After that, I found the lab relatively simple and not too challenging. I spent a decent chunk of time designing the app with the different views.

- Specify a goal for yourself for next time

Next time around I would like to deal with more complexity. From this lab I noticed a jump backwards in complexity from the previous lab. This previous lab was a welcome difficulty spike, and

I would be interested in trying something more difficult as to allow my skills within the Java language and Android Studio to improve.