

Assignment 2

IT 332 – Mobile Application Development

Deadline: 30 October, 2024 (11:59 PM)

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Github Repo: [SHAPE APP PROJECT](#)

Kotlin Code:

```
package com.example.myapplication

import android.os.Bundle
import android.view.View
import android.widget.Button
import android.widget.EditText
import android.widget.ImageView
import android.widget.Toast
//import androidx.activity.EdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.graphics.Insets
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {

    private lateinit var numberInput: EditText
    private lateinit var squareImage: ImageView
    private lateinit var triangleImage: ImageView

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        //EdgeToEdge.enable(this)
        setContentView(R.layout.activity_main)

        numberInput = findViewById(R.id.numberInput)
        val btnCheck = findViewById<Button>(R.id.btnCheck)
        squareImage = findViewById(R.id.squareImage)
        triangleImage = findViewById(R.id.triangleImage)

        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v,
insets ->
            val systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom)
            insets
        }

        btnCheck.setOnClickListener { checkNumber() }
    }

    private fun checkNumber() {
        val numberStr = numberInput.text.toString()

        if (numberStr.isEmpty()) {
            Toast.makeText(this, "Please enter a value",
Toast.LENGTH_SHORT).show()
            return
        }

        val number = numberStr.toInt()

        val isSquare = isSquareNumber(number)
        val isTriangular = isTriangularNumber(number)

        squareImage.visibility = if (isSquare) View.VISIBLE else View.GONE
        triangleImage.visibility = if (isTriangular) View.VISIBLE else View.GONE
    }
}
```

```

private fun isSquareNumber(number: Int): Boolean {
    val sqrt = Math.sqrt(number.toDouble()).toInt()
    return sqrt * sqrt == number
}

private fun isTriangularNumber(number: Int): Boolean {
    if (number < 1) return false

    val num = 8 * number + 1
    val squareRoot = Math.sqrt(num.toDouble()).toInt()

    return squareRoot * squareRoot == num
}
}

```

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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@drawable/bg2"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/numberInput"
        android:layout_width="308dp"
        android:layout_height="50dp"
        android:layout_margin="80dp"
        android:background="@drawable/rounded_border"
        android:hint="Enter a number"
        android:inputType="number"
        android:padding="10dp"
        android:textColorHint="#808080"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.023" />

    <Button
        android:id="@+id/btnCheck"
        android:layout_width="128dp"
        android:layout_height="55dp"
        android:layout_margin="16dp"
        android:layout_marginTop="208dp"
        android:text="Check"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.215" />

    <LinearLayout
        android:layout_width="308dp"
        android:layout_height="190dp"
        android:layout_margin="80dp"

```

```

        android:orientation="horizontal"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.9"
    >

    <ImageView
        android:id="@+id/squareImage"
        android:layout_width="150dp"
        android:layout_height="165dp"
        android:layout_marginTop="20dp"
        android:src="@drawable/square_image"
        android:visibility="gone"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"

    />
    <ImageView
        android:id="@+id/triangleImage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="25dp"
        android:layout_marginBottom="10dp"
        android:src="@drawable/triangle_image"
        android:visibility="gone"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"

    />
</LinearLayout>

```

```

</androidx.constraintlayout.widget.ConstraintLayout>

```

rounded_border.xml

```

<?xml version="1.0" encoding="utf-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
    <solid android:color="@android:color/transparent" />
    <corners android:radius="5dp" />
    <stroke
        android:width="2dp"
        android:color="#0776CC" /> </shape>

```

Screenshots:

