

Q1. Create an application that allows the user to enter a number in the textbox. Check whether the number in the textbox is Armstrong or not. Print the message accordingly in the label control.

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<RelativeLayout xmlns:android=http://schemas.android.com/apk/res/android
```

```
    xmlns:tools=http://schemas.android.com/tools
```

```
    Android:layout_width="match_parent"
```

```
    Android:layout_height="match_parent"
```

```
    Tools:context=".MainActivity">
```

```
<EditText
```

```
    Android:id="@+id/editTextNumber"
```

```
    Android:layout_width="match_parent"
```

```
    Android:layout_height="wrap_content"
```

```
    Android:hint="Enter a number"
```

```
    Android:inputType="number" />
```

```
<Button
```

```
    Android:id="@+id/buttonCheck"
```

```
    Android:layout_width="wrap_content"
```

```
    Android:layout_height="wrap_content"
```

```
    Android:layout_below="@id/editTextNumber"
```

```
    Android:text="Check" />
```

```
<TextView
```

```
    Android:id="@+id/textViewResult"
```

```
    Android:layout_width="wrap_content"
```

```
    Android:layout_height="wrap_content"
```

```
Android:layout_below="@id/buttonCheck"
```

```
Android:layout_marginTop="16dp"
```

```
Android:text=""
```

```
Android:textSize="18sp" />
```

```
</RelativeLayout>
```

Main.java

```
Import android.os.Bundle;
```

```
Import android.view.View;
```

```
Import android.widget.Button;
```

```
Import android.widget.EditText;
```

```
Import android.widget.TextView;
```

```
Import androidx.appcompat.app.AppCompatActivity;
```

```
Public class MainActivity extends AppCompatActivity {
```

```
    @Override
```

```
    Protected void onCreate(Bundle savedInstanceState) {
```

```
        Super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
```

```
        EditText editTextNumber = findViewById(R.id.editTextNumber);
```

```
        Button buttonCheck = findViewById(R.id.buttonCheck);
```

```
        TextView textViewResult = findViewById(R.id.textViewResult);
```

```
        buttonCheck.setOnClickListener(new View.OnClickListener() {
```

```
            @Override
```

```

Public void onClick(View v) {
    String numberStr = editTextNumber.getText().toString();
    If (!numberStr.isEmpty()) {
        Int number = Integer.parseInt(numberStr);
        If (isArmstrong(number)) {
            textViewResult.setText(number + " is an Armstrong number.");
        } else {
            textViewResult.setText(number + " is not an Armstrong number.");
        }
    } else {
        textViewResult.setText("Please enter a number.");
    }
}
});
}

```

```

Private boolean isArmstrong(int number) {
    Int originalNumber, remainder, result = 0, n = 0;

    originalNumber = number;

    // store the number of digits of originalNumber in n
    For (originalNumber = number; originalNumber != 0; originalNumber /= 10, ++n);

    For (originalNumber = number; originalNumber != 0; originalNumber /= 10) {
        Remainder = originalNumber % 10;
        Result += Math.pow(remainder, n);
    }
}

```

```
}
```

```
// if number is equal to the sum of its own digits raised to the power of n, then the  
number is an Armstrong number
```

```
    If (result == number) {
```

```
        Return true;
```

```
    }
```

```
    Return false;
```

```
}
```

```
}
```

Q2. Create an Android application which examine a phone number entered by a User with the given format.

- Area code should be one of the following: 040, 041, 050, 0400, 044
- There should 6 – 8 numbers in telephone number (+ area code).

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<RelativeLayout
```

```
    xmlns:android=http://schemas.android.com/apk/res/android
```

```
    xmlns:tools=http://schemas.android.com/tools
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
```

```
    Tools:context=".MainActivity">
```

<EditText

Android:id="@+id/editTextPhoneNumber"

Android:layout_width="match_parent"

Android:layout_height="wrap_content"

Android:layout_margin="16dp"

Android:hint="Enter phone number (e.g., 040123456)"

Android:inputType="phone" />

<Button

Android:id="@+id/buttonCheck"

Android:layout_width="wrap_content"

Android:layout_height="wrap_content"

Android:layout_below="@id/editTextPhoneNumber"

Android:layout_centerHorizontal="true"

Android:layout_marginTop="16dp"

Android:text="Check Number"

```
Android:onClick="checkPhoneNumberValidity" />
```

```
<TextView
```

```
Android:id="@+id/textViewResult"
```

```
Android:layout_width="wrap_content"
```

```
Android:layout_height="wrap_content"
```

```
Android:layout_below="@id/buttonCheck"
```

```
Android:layout_centerHorizontal="true"
```

```
Android:layout_marginTop="16dp"
```

```
Android:text="" Android:textSize="18sp" />
```

```
</RelativeLayout>
```

Main.java

```
Package com.example.myapplication;
```

```
Import android.os.Bundle;
```

```
Import android.view.View;
```

```
Import android.widget.EditText;
```

```
Import android.widget.TextView;
```

```
Import androidx.appcompat.app.AppCompatActivity;
```

```
Public class MainActivity extends AppCompatActivity {
```

```
Private EditText editTextPhoneNumber;
```

```
Private TextView textViewResult;
```

```
@Override
```

```
Protected void onCreate(Bundle savedInstanceState) {
```

```
Super.onCreate(savedInstanceState);
```

```
setContentView(R.layout.activity_main);
```

```
editTextPhoneNumber =
```

```
findViewById(R.id.editTextPhoneNumber);
```

```
textViewResult = findViewById(R.id.textViewResult);
```

```
}
```

```
Public void checkPhoneNumberValidity(View view) {
```

```
String phoneNumber =
```

```
editTextPhoneNumber.getText().toString().trim();
```

```
if (isValidPhoneNumber(phoneNumber)) {
```

```
textViewResult.setText("Valid phone number");
```

```
} else {
```

```
textViewResult.setText("Invalid phone number");
```

```
}
```

```
}
```

```
Private boolean isValidPhoneNumber(String phoneNumber) {
```

```
// Check if the phone number has valid length
```

```
If (phoneNumber.length() < 6 || phoneNumber.length() > 10)
```

```
{
```

```
Return false;
```

```
}
```

```
// Check if the area code is valid
```

```
String areaCode = phoneNumber.substring(0, 3);
```

```
If (!areaCode.equals("040") && !areaCode.equals("041") &&
```

```
!areaCode.equals("050") &&
```



```
!areaCode.equals("0400") && !areaCode.equals("044")) {
```

```
    Return false;
```

```
}
```

```
// Check if the rest of the number contains only digits
```

```
String restOfNumber = phoneNumber.substring(3);
```

```
If (!restOfNumber.matches("[0-9]+")) {
```

```
    Return false;
```

```
}
```

```
Return true;
```

```
}
```

```
}
```