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;

}

}