**2) Create table Student (roll no, name, address, percentage).Create Application for performing the following operation on the table.(Using SQLite database).**

**i) Insert record of 5 new student details**

**il Show all the student details.**

#DatabaseHelper class.java

public class DatabaseHelper extends SQLiteOpenHelper {

private static final String DATABASE\_NAME = "school.db";

private static final int DATABASE\_VERSION = 1;

private static final String TABLE\_STUDENT = "Student";

private static final String COLUMN\_ROLL\_NO = "roll\_no";

private static final String COLUMN\_NAME = "name";

private static final String COLUMN\_ADDRESS = "address";

private static final String COLUMN\_PERCENTAGE = "percentage";

public DatabaseHelper(Context context) {

super(context, DATABASE\_NAME, null, DATABASE\_VERSION);

}

@Override

public void onCreate(SQLiteDatabase db) {

String CREATE\_STUDENT\_TABLE = "CREATE TABLE " + TABLE\_STUDENT + "("

+ COLUMN\_ROLL\_NO + " INTEGER PRIMARY KEY,"

+ COLUMN\_NAME + " TEXT,"

+ COLUMN\_ADDRESS + " TEXT,"

+ COLUMN\_PERCENTAGE + " REAL" + ")";

db.execSQL(CREATE\_STUDENT\_TABLE);

}

@Override

public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

db.execSQL("DROP TABLE IF EXISTS " + TABLE\_STUDENT);

onCreate(db);

}

// Method to insert a student

public void insertStudent(int rollNo, String name, String address, float percentage) {

SQLiteDatabase db = this.getWritableDatabase();

ContentValues values = new ContentValues();

values.put(COLUMN\_ROLL\_NO, rollNo);

values.put(COLUMN\_NAME, name);

values.put(COLUMN\_ADDRESS, address);

values.put(COLUMN\_PERCENTAGE, percentage);

db.insert(TABLE\_STUDENT, null, values);

db.close();

}

// Method to get all students

public List<String> getAllStudents() {

List<String> studentList = new ArrayList<>();

String selectQuery = "SELECT \* FROM " + TABLE\_STUDENT;

SQLiteDatabase db = this.getReadableDatabase();

Cursor cursor = db.rawQuery(selectQuery, null);

if (cursor.moveToFirst()) {

do {

String student = "Roll No: " + cursor.getInt(0) +

", Name: " + cursor.getString(1) +

", Address: " + cursor.getString(2) +

", Percentage: " + cursor.getFloat(3);

studentList.add(student);

} while (cursor.moveToNext());

}

cursor.close();

db.close();

return studentList;

}

}

**#MainActivity.java**

package com.example.studentmanagementapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import java.util.List;

public class MainActivity extends AppCompatActivity {

private DatabaseHelper dbHelper;

private EditText editRollNo, editName, editAddress, editPercentage;

private TextView textViewStudents;

private Button buttonInsert, buttonShow;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

dbHelper = new DatabaseHelper(this);

editRollNo = findViewById(R.id.editRollNo);

editName = findViewById(R.id.editName);

editAddress = findViewById(R.id.editAddress);

editPercentage = findViewById(R.id.editPercentage);

textViewStudents = findViewById(R.id.textViewStudents);

buttonInsert = findViewById(R.id.buttonInsert);

buttonShow = findViewById(R.id.buttonShow);

// Insert student details

buttonInsert.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

int rollNo = Integer.parseInt(editRollNo.getText().toString());

String name = editName.getText().toString();

String address = editAddress.get Text().toString();

float percentage = Float.parseFloat(editPercentage.getText().toString());

dbHelper.insertStudent(rollNo, name, address, percentage);

editRollNo.setText("");

editName.setText("");

editAddress.setText("");

editPercentage.setText("");

}

});

// Show all student details

buttonShow.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

List<String> students = dbHelper.getAllStudents();

StringBuilder displayText = new StringBuilder();

for (String student : students) {

displayText.append(student).append("\n");

}

textViewStudents.setText(displayText.toString());

}

});

}

}

**#XML**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/editRollNo"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Roll No" />

<EditText

android:id="@+id/editName"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Name" />

<EditText

android:id="@+id/editAddress"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Address" />

<EditText

android:id="@+id/editPercentage"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Percentage" />

<Button

android:id="@+id/buttonInsert"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Insert Student" />

<Button

android:id="@+id/buttonShow"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Show Students" />

<TextView

android:id="@+id/textViewStudents"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:paddingTop="16dp" />

</LinearLayout>

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

#MainActivity.java

package com.example.primecheckerapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

private EditText editTextNumber;

private Button buttonCheck;

private TextView textViewResult;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextNumber = findViewById(R.id.editTextNumber);

buttonCheck = findViewById(R.id.buttonCheck);

textViewResult = findViewById(R.id.textViewResult);

buttonCheck.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

checkPrime();

}

});

}

private void checkPrime() {

String input = editTextNumber.getText().toString();

if (input.isEmpty()) {

Toast.makeText(this, "Please enter a number", Toast.LENGTH\_SHORT).show();

return;

}

int number;

try {

number = Integer.parseInt(input);

} catch (NumberFormatException e) {

Toast.makeText(this, "Please enter a valid integer", Toast.LENGTH\_SHORT).show();

return;

}

if (isPrime(number)) {

textViewResult.setText(number + " is a prime number.");

} else {

textViewResult.setText(number + " is not a prime number.");

}

}

private boolean isPrime(int number) {

if (number <= 1) return false; // 0 and 1 are not prime

for (int i = 2; i <= Math.sqrt(number); i++) {

if (number % i == 0) {

return false;

}

}

return true;

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<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:text="Check Prime" />

<TextView

android:id="@+id/textViewResult"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:paddingTop="16dp"

android:textSize="18sp" />

</LinearLayout>

**4) Java Android Program to perform all arithmetic Operations using Calculators.**

#MainActivity.java

package com.example.calculatorapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

private EditText editTextNumber1;

private EditText editTextNumber2;

private TextView textViewResult;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextNumber1 = findViewById(R.id.editTextNumber1);

editTextNumber2 = findViewById(R.id.editTextNumber2);

textViewResult = findViewById(R.id.textViewResult);

Button buttonAdd = findViewById(R.id.buttonAdd);

Button buttonSubtract = findViewById(R.id.buttonSubtract);

Button buttonMultiply = findViewById(R.id.buttonMultiply);

Button buttonDivide = findViewById(R.id.buttonDivide);

buttonAdd.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

performOperation("add");

}

});

buttonSubtract.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

performOperation("subtract");

}

});

buttonMultiply.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

performOperation("multiply");

}

});

buttonDivide.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

performOperation("divide");

}

});

}

private void performOperation(String operation) {

String input1 = editTextNumber1.getText().toString();

String input2 = editTextNumber2.getText().toString();

if (input1.isEmpty() || input2.isEmpty()) {

Toast.makeText(this, "Please enter both numbers", Toast.LENGTH\_SHORT).show();

return;

}

double number1 = Double.parseDouble(input1);

double number2 = Double.parseDouble(input2);

double result;

switch (operation) {

case "add":

result = number1 + number2;

textViewResult.setText("Result: " + result);

break;

case "subtract":

result = number1 - number2;

textViewResult.setText("Result: " + result);

break;

case "multiply":

result = number1 \* number2;

textViewResult.setText("Result: " + result);

break;

case "divide":

if (number2 == 0) {

Toast.makeText(this, "Cannot divide by zero", Toast.LENGTH\_SHORT).show();

} else {

result = number1 / number2;

textViewResult.setText("Result: " + result);

}

break;

default:

Toast.makeText(this, "Invalid operation", Toast.LENGTH\_SHORT).show();

break;

}

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/editTextNumber1"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter first number"

android:inputType="numberDecimal" />

<EditText

android:id="@+id/editTextNumber2"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter second number"

android:inputType="numberDecimal" />

<Button

android:id="@+id/buttonAdd"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Add" />

<Button

android:id="@+id/buttonSubtract"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Subtract" />

<Button

android:id="@+id/buttonMultiply"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Multiply" />

<Button

android:id="@+id/buttonDivide"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Divide" />

<TextView

android:id="@+id/textViewResult"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:paddingTop="16dp"

android:textSize="18sp" />

</LinearLayout>

**5) Construct image switcher using setFactory().**

#Mainactivity.java

package com.example.imageswitcherapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.ImageSwitcher;

import android.widget.ImageView;

import android.widget.ViewSwitcher;

public class MainActivity extends AppCompatActivity {

private ImageSwitcher imageSwitcher;

private int[] images = {R.drawable.image1, R.drawable.image2, R.drawable.image3};

private int currentIndex = 0;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

imageSwitcher = findViewById(R.id.imageSwitcher);

Button buttonNext = findViewById(R.id.buttonNext);

// Set the factory for the ImageSwitcher

imageSwitcher.setFactory(new ViewSwitcher.ViewFactory() {

@Override

public View makeView() {

ImageView imageView = new ImageView(MainActivity.this);

imageView.setScaleType(ImageView.ScaleType.FIT\_CENTER);

imageView.setLayoutParams(new ImageSwitcher.LayoutParams(

ImageSwitcher.LayoutParams.WRAP\_CONTENT,

ImageSwitcher.LayoutParams.WRAP\_CONTENT));

return imageView;

}

});

// Set the first image

imageSwitcher.setImageResource(images[currentIndex]);

buttonNext.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

currentIndex = (currentIndex + 1) % images.length; // Loop back to the first image

imageSwitcher.setImageResource(images[currentIndex]);

}

});

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:gravity="center"

android:padding="16dp">

<ImageSwitcher

android:id="@+id/imageSwitcher"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_gravity="center"

android:inAnimation="@android:anim/fade\_in"

android:outAnimation="@android:anim/fade\_out" />

<Button

android:id="@+id/buttonNext"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Next Image" />

</LinearLayout>

**6) Create table Employee (Eid, name, address, phong). Create Application for performing the following operation on the table. (Using SQLite database).**

**i.Insert record of 5 new Employees.**

**ii. Show all the details of Employee.**

#DatabaseHelper.java

package com.example.employeedatabaseapp;

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

import java.util.ArrayList;

public class DatabaseHelper extends SQLiteOpenHelper {

private static final String DATABASE\_NAME = "employee.db";

private static final String TABLE\_NAME = "Employee";

private static final String COL\_1 = "Eid";

private static final String COL\_2 = "name";

private static final String COL\_3 = "address";

private static final String COL\_4 = "phone";

public DatabaseHelper(Context context) {

super(context, DATABASE\_NAME, null, 1);

}

@Override

public void onCreate(SQLiteDatabase db) {

String createTable = "CREATE TABLE " + TABLE\_NAME + " (Eid INTEGER PRIMARY KEY AUTOINCREMENT, name TEXT, address TEXT, phone TEXT)";

db.execSQL(createTable);

}

@Override

public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

db.execSQL("DROP TABLE IF EXISTS " + TABLE\_NAME);

onCreate(db);

}

// Method to insert employee data

public boolean insertEmployee(String name, String address, String phone) {

SQLiteDatabase db = this.getWritableDatabase();

ContentValues contentValues = new ContentValues();

contentValues.put(COL\_2, name);

contentValues.put(COL\_3, address);

contentValues.put(COL\_4, phone);

long result = db.insert(TABLE\_NAME, null, contentValues);

return result != -1; // returns true if insert is successful

}

// Method to get all employee details

public ArrayList<String> getAllEmployees() {

ArrayList<String> employees = new ArrayList<>();

SQLiteDatabase db = this.getReadableDatabase();

Cursor cursor = db.rawQuery("SELECT \* FROM " + TABLE\_NAME, null);

if (cursor.moveToFirst()) {

do {

String employee = "Eid: " + cursor.getInt(0) + ", Name: " + cursor.getString(1) + ", Address: " + cursor.getString(2) + ", Phone: " + cursor.getString(3);

employees.add(employee);

} while (cursor.moveToNext());

}

cursor.close();

return employees;

}

}

**#MainActivity.java**

package com.example.employeedatabaseapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

private DatabaseHelper dbHelper;

private EditText editTextName, editTextAddress, editTextPhone;

private TextView textViewEmployees;

private Button buttonInsert, buttonShow;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

dbHelper = new DatabaseHelper(this);

editTextName = findViewById(R.id.editTextName);

editTextAddress = findViewById(R.id.editTextAddress);

editTextPhone = findViewById(R.id.editTextPhone);

textViewEmployees = findViewById(R.id.textViewEmployees);

buttonInsert = findViewById(R.id.buttonInsert);

buttonShow = findViewById(R.id.buttonShow);

buttonInsert.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

insertEmployee();

}

});

buttonShow.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

showEmployees();

}

});

}

private void insertEmployee() {

String name = editTextName.getText().toString();

String address = editTextAddress.getText().toString();

String phone = editTextPhone.getText().toString();

if (!name.isEmpty() && !address.isEmpty() && !phone.isEmpty()) {

boolean isInserted = dbHelper.insertEmployee(name, address, phone);

if (isInserted) {

editTextName.setText("");

editTextAddress.setText("");

editTextPhone.setText("");

textViewEmployees.setText("Employee inserted successfully!");

} else {

textViewEmployees.setText("Error inserting employee.");

}

} else {

textViewEmployees.setText("Please fill all fields.");

}

}

private void showEmployees() {

ArrayList<String> employees = dbHelper.getAllEmployees();

StringBuilder employeeList = new StringBuilder();

for (String employee : employees) {

employeeList.append(employee).append("\n");

}

textViewEmployees.setText(employeeList.toString());

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/editTextName"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Name" />

<EditText

android:id="@+id/editTextAddress"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Address" />

<EditText

android:id="@+id/editTextPhone"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Phone" />

<Button

android:id="@+id/buttonInsert"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Insert Employee" />

<Button

android:id="@+id/buttonShow"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Show Employees" />

<TextView

android:id="@+id/textViewEmployees"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:paddingTop="16dp" />

</LinearLayout>

**7) Create a Application which shows Life Cycle of Activity**

#Mainactivity.java

package com.example.activitylifecycleapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.util.Log;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

private static final String TAG = "ActivityLifecycle";

private TextView textViewLifecycle;

private StringBuilder lifecycleLog;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

textViewLifecycle = findViewById(R.id.textViewLifecycle);

Button buttonFinish = findViewById(R.id.buttonFinish);

lifecycleLog = new StringBuilder();

logLifecycleEvent("onCreate");

buttonFinish.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

finish(); // Call finish to close the activity

}

});

}

@Override

protected void onStart() {

super.onStart();

logLifecycleEvent("onStart");

}

@Override

protected void onResume() {

super.onResume();

logLifecycleEvent("onResume");

}

@Override

protected void onPause() {

super.onPause();

logLifecycleEvent("onPause");

}

@Override

protected void onStop() {

super.onStop();

logLifecycleEvent("onStop");

}

@Override

protected void onDestroy() {

super.onDestroy();

logLifecycleEvent("onDestroy");

}

@Override

protected void onRestart() {

super.onRestart();

logLifecycleEvent("onRestart");

}

private void logLifecycleEvent(String event) {

Log.d(TAG, event);

lifecycleLog.append(event).append("\n");

textViewLifecycle.setText(lifecycleLog.toString());

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<TextView

android:id="@+id/textViewLifecycle"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="18sp"

android:padding="8dp" />

<Button

android:id="@+id/buttonFinish"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Finish Activity" />

</LinearLayout>

**8) Create table Customer (id, name, address, ph no). Create Application for performing the following operation on the table. (Using SQLite database).**

**i Insert new customer details (At least records).**

**ii. Show all the customer details**

#DatabaseHelper.java

package com.example.customerdatabaseapp;

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

import java.util.ArrayList;

public class DatabaseHelper extends SQLiteOpenHelper {

private static final String DATABASE\_NAME = "customer.db";

private static final String TABLE\_NAME = "Customer";

private static final String COL\_1 = "id";

private static final String COL\_2 = "name";

private static final String COL\_3 = "address";

private static final String COL\_4 = "phone";

public DatabaseHelper(Context context) {

super(context, DATABASE\_NAME, null, 1);

}

@Override

public void onCreate(SQLiteDatabase db) {

String createTable = "CREATE TABLE " + TABLE\_NAME + " (id INTEGER PRIMARY KEY AUTOINCREMENT, name TEXT, address TEXT, phone TEXT)";

db.execSQL(createTable);

}

@Override

public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

db.execSQL("DROP TABLE IF EXISTS " + TABLE\_NAME);

onCreate(db);

}

// Method to insert customer data

public boolean insertCustomer(String name, String address, String phone) {

SQLiteDatabase db = this.getWritableDatabase();

ContentValues contentValues = new ContentValues();

contentValues.put(COL\_2, name);

contentValues.put(COL\_3, address);

contentValues.put(COL\_4, phone);

long result = db.insert(TABLE\_NAME, null, contentValues);

return result != -1; // returns true if insert is successful

}

// Method to get all customer details

public ArrayList<String> getAllCustomers() {

ArrayList<String> customers = new ArrayList<>();

SQLiteDatabase db = this.getReadableDatabase();

Cursor cursor = db.rawQuery("SELECT \* FROM " + TABLE\_NAME, null);

if (cursor.moveToFirst()) {

do {

String customer = "ID: " + cursor.getInt(0) + ", Name: " + cursor.getString(1) + ", Address: " + cursor.getString(2) + ", Phone: " + cursor.getString(3);

customers.add(customer);

} while (cursor.moveToNext());

}

cursor.close();

return customers;

}

}

**#Mainactivity.java**

package com.example.customerdatabaseapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

private DatabaseHelper dbHelper;

private EditText editTextName, editTextAddress, editTextPhone;

private TextView textViewCustomers;

private Button buttonInsert, buttonShow;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

dbHelper = new DatabaseHelper(this);

editTextName = findViewById(R.id.editTextName);

editTextAddress = findViewById(R.id.editTextAddress);

editTextPhone = findViewById(R.id.editTextPhone);

textViewCustomers = findViewById(R.id.textViewCustomers);

buttonInsert = findViewById(R.id.buttonInsert);

buttonShow = findViewById(R.id.buttonShow);

buttonInsert.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

insertCustomer();

}

});

buttonShow.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

showCustomers();

}

});

}

private void insertCustomer() {

String name = editTextName.getText().toString();

String address = editText Address.getText().toString();

String phone = editTextPhone.getText().toString();

if (!name.isEmpty() && !address.isEmpty() && !phone.isEmpty()) {

boolean isInserted = dbHelper.insertCustomer(name, address, phone);

if (isInserted) {

editTextName.setText("");

editTextAddress.setText("");

editTextPhone.setText("");

showCustomers(); // Refresh the list after insertion

}

}

}

private void showCustomers() {

ArrayList<String> customers = dbHelper.getAllCustomers();

StringBuilder customerList = new StringBuilder();

for (String customer : customers) {

customerList.append(customer).append("\n");

}

textViewCustomers.setText(customerList.toString());

}

}

**#Xml**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/editTextName"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Name" />

<EditText

android:id="@+id/editTextAddress"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Address" />

<EditText

android:id="@+id/editTextPhone"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Phone Number" />

<Button

android:id="@+id/buttonInsert"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Insert Customer" />

<Button

android:id="@+id/buttonShow"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Show Customers" />

<TextView

android:id="@+id/textViewCustomers"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="18sp"

android:padding="8dp" />

</LinearLayout>

**9) Create an Android Application to accept two numbers to calculate it's Power and Average. Create two buttons: Power and Average. Display the appropriate result on the next activity on Button click.**

#Mainactivity.java

package com.example.powerandaverageapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

EditText editTextNumber1 = findViewById(R.id.editTextNumber1);

EditText editTextNumber2 = findViewById(R.id.editTextNumber2);

Button buttonPower = findViewById(R.id.buttonPower);

Button buttonAverage = findViewById(R.id.buttonAverage);

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

buttonPower.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

double num1 = Double.parseDouble(editTextNumber1.getText().toString());

double num2 = Double.parseDouble(editTextNumber2.getText().toString());

double result = Math.pow(num1, num2);

textViewResult.setText("Power: " + result);

}

});

buttonAverage.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

double num1 = Double.parseDouble(editTextNumber1.getText().toString());

double num2 = Double.parseDouble(editTextNumber2.getText().toString());

double result = (num1 + num2) / 2;

textViewResult.setText("Average: " + result);

}

});

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/editTextNumber1"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter First Number"

android:inputType="numberDecimal" />

<EditText

android:id="@+id/editTextNumber2"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter Second Number"

android:inputType="numberDecimal" />

<Button

android:id="@+id/buttonPower"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Calculate Power" />

<Button

android:id="@+id/buttonAverage"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Calculate Average" />

<TextView

android:id="@+id/textViewResult"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="24sp"

android:paddingTop="16dp" />

</LinearLayout>

**10) Create application using JSON to provide Employee Information**

#MainActivity.java

package com.example.employeeinfoapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

import org.json.JSONArray;

import org.json.JSONException;

import org.json.JSONObject;

public class MainActivity extends AppCompatActivity {

private TextView textViewEmployeeInfo;

private Button buttonFetchData;

// Sample JSON data

private String jsonData = "[{\"name\":\"John Doe\",\"age\":30,\"position\":\"Software Engineer\"}," +

"{\"name\":\"Jane Smith\",\"age\":25,\"position\":\"Product Manager\"}]";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

textViewEmployeeInfo = findViewById(R.id.textViewEmployeeInfo);

buttonFetchData = findViewById(R.id.buttonFetchData);

buttonFetchData.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

displayEmployeeInfo();

}

});

}

private void displayEmployeeInfo() {

StringBuilder employeeInfo = new StringBuilder();

try {

JSONArray jsonArray = new JSONArray(jsonData);

for (int i = 0; i < jsonArray.length(); i++) {

JSONObject employee = jsonArray.getJSONObject(i);

String name = employee.getString("name");

int age = employee.getInt("age");

String position = employee.getString("position");

employeeInfo.append("Name: ").append(name)

.append("\nAge: ").append(age)

.append("\nPosition: ").append(position)

.append("\n\n");

}

} catch (JSONException e) {

e.printStackTrace();

}

textViewEmployeeInfo.setText(employeeInfo.toString());

}

}

**#Xml**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<TextView

android:id="@+id/textViewEmployeeInfo"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="18sp" />

<Button

android:id="@+id/buttonFetchData"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Fetch Employee Info" />

</LinearLayout>

**11) Construct an Android application to accept a number and calculate Armstrong and Perfect number of a given number.**

#MainAcitivity.java

package com.example.armstrongperfectnumberapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

private EditText editTextNumber;

private Button buttonCheck;

private TextView textViewResult;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextNumber = findViewById(R.id.editTextNumber);

buttonCheck = findViewById(R.id.buttonCheck);

textViewResult = findViewById(R.id.textViewResult);

buttonCheck.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

int number = Integer.parseInt(editTextNumber.getText().toString());

String result = checkNumber(number);

textViewResult.setText(result);

}

});

}

private String checkNumber(int number) {

StringBuilder result = new StringBuilder();

// Check for Armstrong number

if (isArmstrong(number)) {

result.append(number).append(" is an Armstrong number.\n");

} else {

result.append(number).append(" is not an Armstrong number.\n");

}

// Check for Perfect number

if (isPerfect(number)) {

result.append(number).append(" is a Perfect number.");

} else {

result.append(number).append(" is not a Perfect number.");

}

return result.toString();

}

private boolean isArmstrong(int number) {

int sum = 0;

int temp = number;

int digits = String.valueOf(number).length();

while (temp > 0) {

int digit = temp % 10;

sum += Math.pow(digit, digits);

temp /= 10;

}

return sum == number;

}

private boolean isPerfect(int number) {

int sum = 0;

for (int i = 1; i < number; i++) {

if (number % i == 0) {

sum += i;

}

}

return sum == number;

}

}

**#XML**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<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:text="Check Number" />

<TextView

android:id="@+id/textViewResult"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="18sp"

android:paddingTop="16dp" />

</LinearLayout>