**Program Name:** B.Sc.(H) Computer Science

**Semester:** 4th

**Title of the Paper:** Android Programming

**Unique Paper Code:** 32343407

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**Date of Submission:** 11th May 2021

Q1: write a program that will add two floating numbers.

XML CODE

<?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"

tools:context=".MainActivity">

<EditText

android:id="@+id/etFirstNumber"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:ems="10"

android:gravity="center"

android:hint="@string/enter\_first\_number"

android:inputType="numberSigned|number|numberDecimal"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<EditText

android:id="@+id/etSecondNumber"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:ems="10"

android:gravity="center"

android:hint="@string/enter\_second\_number"

android:inputType="numberSigned|number|numberDecimal"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etFirstNumber"

app:layout\_constraintVertical\_bias="0.2" />

<Button

android:id="@+id/btnAdd"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:backgroundTint="#4CAF50"

android:onClick="addOnClick"

android:text="@string/add"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etSecondNumber"

app:layout\_constraintVertical\_bias="0.26" />

<TextView

android:id="@+id/tvAnswer"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="@string/answer"

android:textColor="@android:color/holo\_orange\_dark"

android:textSize="20sp"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/btnAdd"

app:layout\_constraintVertical\_bias="0.4" />

</androidx.constraintlayout.widget.ConstraintLayout>

JAVA CODE

package com.example.floatingnumbers;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.EditText;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

private EditText etFirst, etSecond;

private TextView tvAnswer;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

etFirst = findViewById(R.id.etFirstNumber);

etSecond = findViewById(R.id.etSecondNumber);

tvAnswer = findViewById(R.id.tvAnswer);

}

public void addOnClick(View view) {

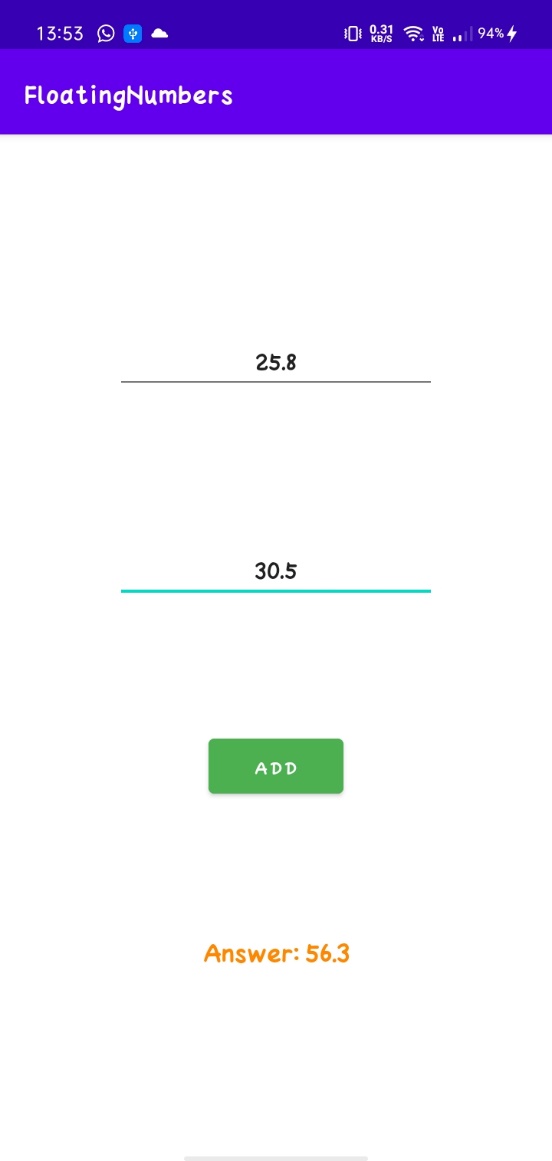
float answer = Float.parseFloat(etFirst.getText().toString()) + Float.parseFloat(etSecond.getText().toString());

tvAnswer.setText("Answer: " + answer);

}

}

OUTPUT



Q2: Write a program that store images in database (insert, delete, update and fetch) in your android app.

XML CODE

<?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"

tools:context=".MainActivity">

<ImageView

android:id="@+id/image"

android:layout\_width="279dp"

android:layout\_height="293dp"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.15"

tools:srcCompat="@tools:sample/backgrounds/scenic" />

<Button

android:id="@+id/btnAdd"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:backgroundTint="#9C27B0"

android:onClick="addOnClick"

android:text="@string/add\_image"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.5"

app:layout\_constraintHorizontal\_chainStyle="packed"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etFileName"

app:layout\_constraintVertical\_bias="0.20" />

<Button

android:id="@+id/btnUpdate"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:backgroundTint="#E91E63"

android:onClick="updateOnClick"

android:text="@string/update\_image"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.505"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etFileName"

app:layout\_constraintVertical\_bias="0.4" />

<Button

android:id="@+id/btnDelete"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:backgroundTint="#4CAF50"

android:onClick="deleteOnClick"

android:text="@string/delete\_image"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etFileName"

app:layout\_constraintVertical\_bias="0.8" />

<EditText

android:id="@+id/etFileName"

android:layout\_width="374dp"

android:layout\_height="51dp"

android:ems="10"

android:gravity="center"

android:hint="@string/enter\_the\_name\_of\_image\_in\_download\_folder"

android:inputType="textPersonName"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/image"

app:layout\_constraintVertical\_bias="0.110000014" />

<Button

android:id="@+id/btnFetch"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:backgroundTint="#03A9F4"

android:onClick="fetchOnClick"

android:text="@string/fetch\_image"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/etFileName"

app:layout\_constraintVertical\_bias="0.6" />

</androidx.constraintlayout.widget.ConstraintLayout>

JAVA CODE

**Main Activity**

package com.example.imageindatabase;

import android.Manifest;

import android.content.pm.PackageManager;

import android.database.Cursor;

import android.graphics.Bitmap;

import android.graphics.BitmapFactory;

import android.os.Bundle;

import android.os.Environment;

import android.view.View;

import android.widget.EditText;

import android.widget.ImageView;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import java.io.ByteArrayOutputStream;

import static android.os.Environment.DIRECTORY\_DOWNLOADS;

public class MainActivity extends AppCompatActivity {

private DatabaseHelper myHelper;

private ImageView image;

private EditText etFile;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

myHelper = new DatabaseHelper(this);

image = findViewById(R.id.image);

etFile = findViewById(R.id.etFileName);

ActivityCompat.requestPermissions(this, new String[]{Manifest.permission.WRITE\_EXTERNAL\_STORAGE, Manifest.permission.READ\_EXTERNAL\_STORAGE}, PackageManager.PERMISSION\_GRANTED);

}

public void addOnClick(View view) {

String fileName = etFile.getText().toString();

byte[] imageBytes = createImageBytes(fileName);

boolean isInserted = myHelper.insertImage(fileName, imageBytes);

if(isInserted)

makeToast("Successful insertion of Image in Database");

else

makeToast("Failure in insertion of Image in Database");

}

public void updateOnClick(View view) {

String fileName = etFile.getText().toString();

byte[] imageBytes = createImageBytes(fileName);

Integer isUpdated = myHelper.updateImage(fileName, imageBytes);

if(isUpdated > 0)

makeToast("Successful update of Image in Database");

else

makeToast("Failure in update of Image in Database");

}

public void fetchOnClick(View view) {

Cursor cursor = myHelper.fetchImage(etFile.getText().toString());

if(cursor.getCount() < 1) {

makeToast("Failure in fetching of Image from Database");

return;

}

try {

cursor.moveToFirst();

byte[] imageBytes = cursor.getBlob(0);

cursor.close();

Bitmap bitmap = BitmapFactory.decodeByteArray(imageBytes, 0, imageBytes.length);

image.setImageBitmap(bitmap);

makeToast("Successful fetching of Image from Database");

} catch (Exception e) {

e.printStackTrace();

}

}

public void deleteOnClick(View view) {

Integer deletedRows = myHelper.deleteImage(etFile.getText().toString());

image.setImageResource(R.drawable.ic\_baseline\_no\_photography\_24);

if(deletedRows > 0)

makeToast("Successful deletion of Image in Database");

else

makeToast("Failure in deletion of Image in Database");

}

private byte[] createImageBytes(String fileName) {

String stringFilePath = Environment.getExternalStoragePublicDirectory(DIRECTORY\_DOWNLOADS) + "/" + fileName + ".jpg";

Bitmap bitmap = BitmapFactory.decodeFile(stringFilePath);

ByteArrayOutputStream byteArrayOutputStream = new ByteArrayOutputStream();

bitmap.compress(Bitmap.CompressFormat.PNG, 0, byteArrayOutputStream);

return byteArrayOutputStream.toByteArray();

}

private void makeToast(String message) {

Toast.makeText(MainActivity.this, message, Toast.LENGTH\_SHORT).show();

}

}

**Database Helper**

package com.example.imageindatabase;

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

public class DatabaseHelper extends SQLiteOpenHelper {

public static final String DATABASE\_NAME = "practical.db", TABLE\_NAME = "image", COLUMN\_1 = "Name", COLUMN\_2 = "Image";

private String previousName = "";

public DatabaseHelper(Context context) {

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

}

@Override

public void onCreate(SQLiteDatabase db) {

db.execSQL("CREATE TABLE " + TABLE\_NAME + " (Name TEXT, Image BLOB);");

}

@Override

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

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

onCreate(db);

}

public boolean insertImage(String name, byte[] imageBytes) {

previousName = name;

SQLiteDatabase db = this.getWritableDatabase();

ContentValues content = new ContentValues();

content.put(COLUMN\_1, name);

content.put(COLUMN\_2, imageBytes);

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

return result != -1;

}

public Cursor fetchImage(String name) {

SQLiteDatabase db = this.getWritableDatabase();

return db.rawQuery("SELECT Image FROM " + TABLE\_NAME + " WHERE Name = " + name, null);

}

public Integer updateImage(String name, byte[] imageBytes) {

SQLiteDatabase db = this.getWritableDatabase();

ContentValues content = new ContentValues();

content.put(COLUMN\_1, name);

content.put(COLUMN\_2, imageBytes);

return db.update(TABLE\_NAME, content, "Name = ?", new String[] {previousName});

}

public Integer deleteImage(String name) {

SQLiteDatabase db = this.getWritableDatabase();

return db.delete(TABLE\_NAME, "Name = ?", new String[] {name});

}

}

MANIFEST FILE

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

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

package="com.example.imageindatabase">

<application

android:allowBackup="true"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.ImageInDatabase"

android:requestLegacyExternalStorage="true">

<activity android:name=".MainActivity">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER" />

</intent-filter>

</activity>

</application>

<uses-permission android:name="android.permission.WRITE\_EXTERNAL\_STORAGE" />

<uses-permission android:name="android.permission.READ\_EXTERNAL\_STORAGE" />

</manifest>

OUTPUT

