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

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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"
```

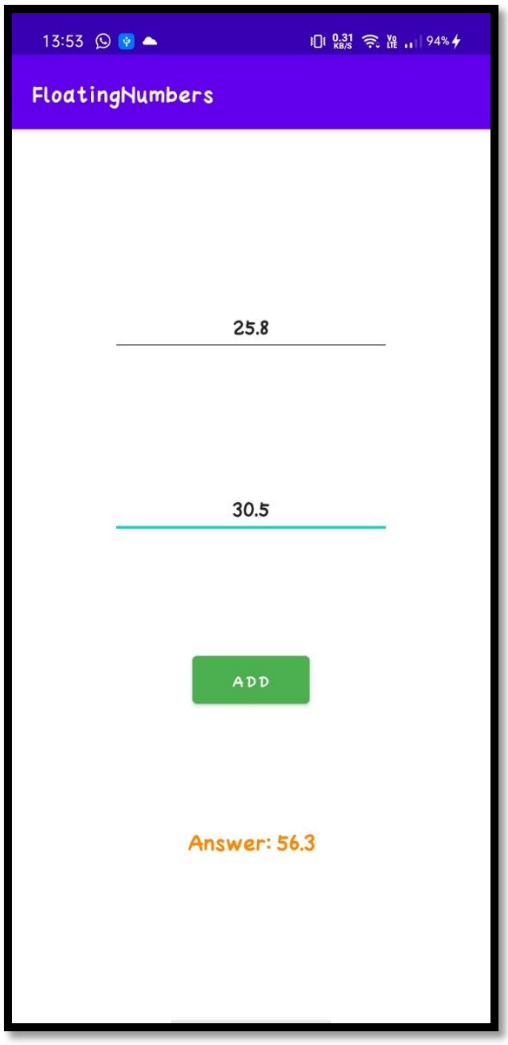
```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/answer"
        android:textColor="@android:color/holo_orange_dark"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        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);
    }
```

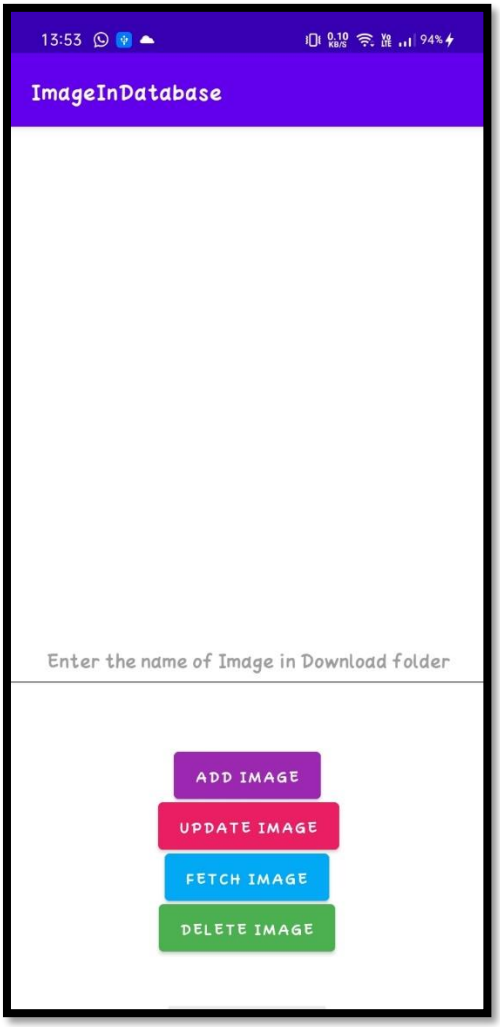
```
    public Integer updateImage(String name, byte[] imageBytes) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues content = new ContentValues();

        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});
    }
}
```

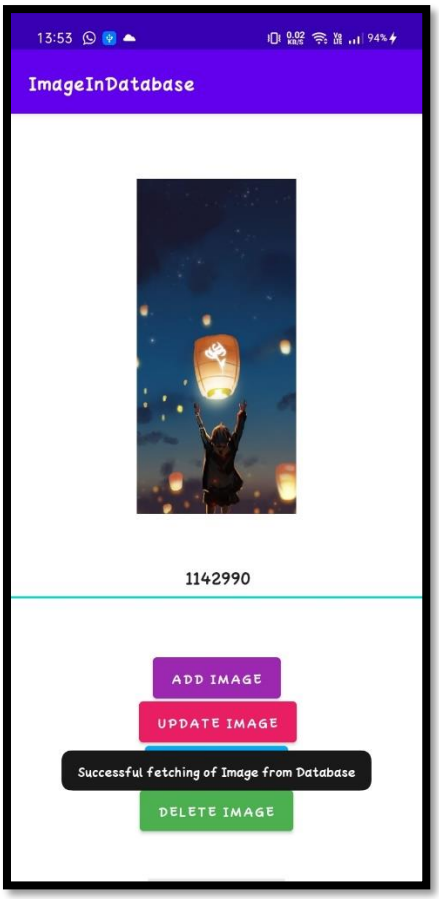
MANIFEST FILE

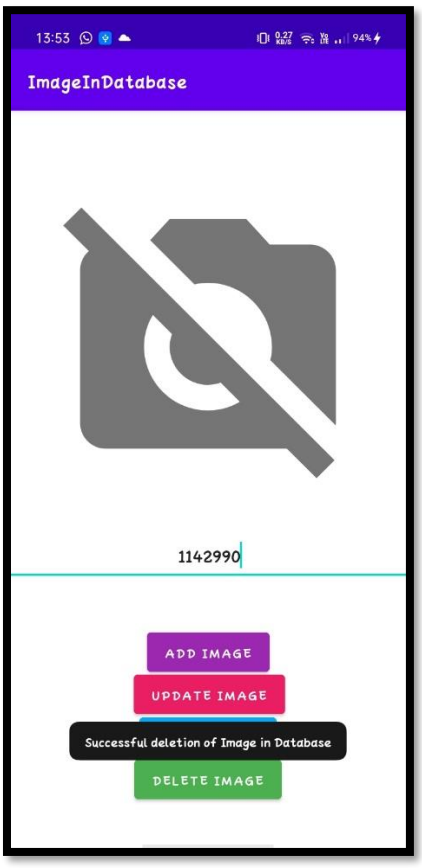
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.imageindatabase">

    <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




13:53
94%
ImageInDatabase
1142990
ADD IMAGE
UPDATE IMAGE
Successful fetching of Image from Database
DELETE IMAGE


13:53
94%
ImageInDatabase
1142990
ADD IMAGE
UPDATE IMAGE
Successful deletion of Image in Database
DELETE IMAGE