Practical Questions for MAD

Q1) Create a login form both username, password fields are mandatory.After entering the values transfer user control to next showing message using toast as “You have logged in successfully”.

Activity_main.xml :-

```
<?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:id="@+id/main"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">

   <EditText
      android:id="@+id/userName"
      android:layout_width="300dp"
      android:layout_height="wrap_content"
      android:layout_marginTop="70dp"
      android:ems="10"
      android:hint="Enter Username"
      android:inputType="text"
      app:layout_constraintEnd_toEndOf="@+id/textView"
      app:layout_constraintStart_toStartOf="@+id/textView"
      app:layout_constraintTop_toBottomOf="@+id/textView" />
```

```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="148dp"
    android:text="Login Form"
    android:textAlignment="center"
    android:textSize="34sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/passWord"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="40dp"
    android:ems="10"
    android:hint="Enter Password"
    android:inputType="textPassword"
    app:layout_constraintEnd_toEndOf="@+id/userName"
    app:layout_constraintStart_toStartOf="@+id/userName"
    app:layout_constraintTop_toBottomOf="@+id/userName" />

<Button
    android:id="@+id/loginButton"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
```

```
        android:text="Login"
        app:layout_constraintEnd_toEndOf="@+id/passWord"
        app:layout_constraintStart_toStartOf="@+id/passWord"
        app:layout_constraintTop_toBottomOf="@+id/passWord" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
public class MainActivity extends AppCompatActivity {
    String username = "Abc";
    String password = "123";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
            return insets;
        });
        Button btnNext = findViewById(R.id.loginButton);
        EditText userName, passWord;
        userName = findViewById(R.id.userName);
        passWord = findViewById(R.id.passWord);
        btnNext.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            if(userName.getText().toString().isEmpty() &&
passWord.getText().toString().isEmpty()){
                Toast.makeText(MainActivity.this, "Please Enter all the values",
Toast.LENGTH_SHORT).show();
            }
            else if(userName.getText().toString().equals(username) &&
passWord.getText().toString().equals(password)){
                startActivity(new Intent(MainActivity.this, Activity2.class));
            }
            else{
                Toast.makeText(MainActivity.this, "Wrong Credentials, please enter the correct
credentials", Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}
```

Q2) Write a program to demonstrate below UI and pass data(first and last name) from Activity one to activity two. Display passed data in textview on Activity two.

activity_main.xml :-

```
<?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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/userName"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="70dp"
        android:ems="10"
        android:hint="Enter Your First Name"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="@+id/textView"
        app:layout_constraintStart_toStartOf="@+id/textView"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="148dp"
        android:text="Login Form"
        android:textAlignment="center"
```

```
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/passWord"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:ems="10"
        android:hint="Enter Your Last Name"
        android:inputType="textPassword"
        app:layout_constraintEnd_toEndOf="@+id/userName"
        app:layout_constraintStart_toStartOf="@+id/userName"
        app:layout_constraintTop_toBottomOf="@+id/userName" />

    <Button
        android:id="@+id/loginButton"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="Submit"
        app:layout_constraintEnd_toEndOf="@+id/passWord"
        app:layout_constraintStart_toStartOf="@+id/passWord"
        app:layout_constraintTop_toBottomOf="@+id/passWord" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
public class MainActivity extends AppCompatActivity {

String username = "Abc";
String password = "123";

@Override
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   EdgeToEdge.enable(this);
   setContentView(R.layout.activity_main);
   ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
      Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
      v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
      return insets;
   });


   Button btnNext = findViewById(R.id.loginButton);
   EditText firstName, lastName;
   firstName = findViewById(R.id.userName);
   lastName = findViewById(R.id.passWord);

   btnNext.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         if(firstName.getText().toString().isEmpty() || lastName.getText().toString().isEmpty()){
            Toast.makeText(MainActivity.this, "Please Enter all the values", Toast.LENGTH_SHORT).show();
         }
         else{
            Intent intent = new Intent(MainActivity.this, Activity2.class);
            intent.putExtra("firstname",firstName.getText().toString());
```

```
            intent.putExtra("lastname",lastName.getText().toString());
            startActivity(intent);
        }
```

Activity2.java :-

```
public class Activity2 extends AppCompatActivity {

  TextView displayName;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    EdgeToEdge.enable(this);
    setContentView(R.layout.activity_2);
    ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
      Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
      v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
      return insets;
    });

    displayName = findViewById(R.id.textView3);
    Intent intent = getIntent();
    String firstName = intent.getStringExtra("firstname");
    String lastName = intent.getStringExtra("lastname");

    displayName.setText("Hello Mr/Mrs " + firstName + " "+lastName);
    Toast.makeText(this, "Logged In Successfully", Toast.LENGTH_SHORT).show();
  }
}
```

Q3) Create an activity and demonstrate life cycle of activity with Toast messages or logs.

MainActivity.java :-

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });

        Toast.makeText(this, "onCreate() called", Toast.LENGTH_SHORT).show();



    }

    @Override
    protected void onStart() {
        super.onStart();
        Toast.makeText(this, "onStart() called", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onResume() {

        super.onResume();
        Toast.makeText(this, "onResume called", Toast.LENGTH_SHORT).show();
    }
```

```
    @Override
    protected void onPause() {

        super.onPause();
        Toast.makeText(this, "onPause called", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onStop() {

        super.onStop();
        Toast.makeText(this, "onStop called", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onRestart() {

        super.onRestart();
        Toast.makeText(this, "onRestart called", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onDestroy() {

        super.onDestroy();
        Toast.makeText(this, "onDestroy called", Toast.LENGTH_SHORT).show();
    }
}
```

Q4) Create an activity and load fragment on it. Write all life cycle methods of fragment with toast messages or logs.

MainActivity.java :-

```
package com.example.yourapp;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentTransaction;

public class FragmentHostActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_fragment_host);

        // Load the fragment dynamically in this activity
        if (savedInstanceState == null) {
            loadFragment(new LifecycleFragment());
        }
    }

    private void loadFragment(Fragment fragment) {
        FragmentTransaction transaction = getSupportFragmentManager().beginTransaction();
        transaction.replace(R.id.fragment_container, fragment);
        transaction.commit(); // Commit the transaction to load the fragment
    }
}
```

LifeCycleFragment.java :-

```
public class LifecycleFragment extends Fragment {

    private static final String TAG = "LifecycleFragment";

    @Override
    public void onAttach(@NonNull Context context) {
        super.onAttach(context);
        // Toast message
        Toast.makeText(context, "Fragment onAttach called", Toast.LENGTH_SHORT).show();
        // Log message
        Log.d(TAG, "onAttach called");
    }

    @Override
    public void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // Toast message
        Toast.makeText(getActivity(), "Fragment onCreate called", Toast.LENGTH_SHORT).show();
        // Log message
        Log.d(TAG, "onCreate called");
    }

    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container, @Nullable
Bundle savedInstanceState) {
        // Toast message
        Toast.makeText(getActivity(), "Fragment onCreateView called", Toast.LENGTH_SHORT).show();
        // Log message
        Log.d(TAG, "onCreateView called");

        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_lifecycle, container, false);
```

```
}

@Override
public void onStart() {
    super.onStart();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onStart called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onStart called");
}

@Override
public void onResume() {
    super.onResume();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onResume called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onResume called");
}

@Override
public void onPause() {
    super.onPause();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onPause called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onPause called");
}

@Override
public void onStop() {
    super.onStop();
```

```
    // Toast message
    Toast.makeText(getActivity(), "Fragment onStop called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onStop called");
}

@Override
public void onDestroyView() {
    super.onDestroyView();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onDestroyView called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onDestroyView called");
}

@Override
public void onDestroy() {
    super.onDestroy();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onDestroy called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onDestroy called");
}

@Override
public void onDetach() {
    super.onDetach();
    // Toast message
    Toast.makeText(getActivity(), "Fragment onDetach called", Toast.LENGTH_SHORT).show();
    // Log message
    Log.d(TAG, "onDetach called");
}
```

```
}
```

Fragment_lifecycle.xml :-

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:padding="16dp">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Lifecycle Fragment"
        android:textSize="20sp"/>
</LinearLayout>
```

Q5) Write an android app which have two fragments on a single activity.

Activity_main.xml :-

```
<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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
<FrameLayout
        android:id="@+id/fragment_container"
        android:layout_width="300dp"
        android:layout_height="200dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button2" />

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="120dp"
        android:text="Load first fragment"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.46"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="151dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="151dp"
        android:text="Load second fragment"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button1" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
public class MainActivity extends AppCompatActivity {

    String username = "Abc";
    String password = "123";
    Button firstButton, secondButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });


//        MyDbHelper dbHelper = new MyDbHelper(this);
```

```
//      dbHelper.addEmployee("Harshal","Cash",23000);
//      dbHelper.addEmployee("Kanchan","IT",34000);

        firstButton = findViewById(R.id.button1);
        secondButton = findViewById(R.id.button2);

        firstButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                loadFragment(new FirstFragment());
            }
        });

        secondButton.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                loadFragment(new SecondFragment());
            }
        });

    }

    private void loadFragment(Fragment fragment) {
        FragmentTransaction transaction = getSupportFragmentManager().beginTransaction();
        transaction.replace(R.id.fragment_container, fragment);
        transaction.commit();
    }


}
```

Q6) Write a programa to demonstrate following UI.

```
<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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editTextText"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:ems="10"
        android:hint="Enter Last Name"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="@+id/editTextText2"
        app:layout_constraintStart_toStartOf="@+id/editTextText2"
        app:layout_constraintTop_toBottomOf="@+id/editTextText2" />

    <EditText
        android:id="@+id/editTextText2"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="200dp"
        android:ems="10"
        android:hint="Enter First Name"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
<EditText
    android:id="@+id/editTextTextPassword"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="30dp"
    android:ems="10"
    android:hint="Enter Password"
    android:inputType="textPassword"
    app:layout_constraintEnd_toEndOf="@+id/editTextTextEmailAddress"
    app:layout_constraintStart_toStartOf="@+id/editTextTextEmailAddress"
    app:layout_constraintTop_toBottomOf="@+id/editTextTextEmailAddress" />

<EditText
    android:id="@+id/editTextTextEmailAddress"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="28dp"
    android:ems="10"
    android:hint="Enter Email"
    android:inputType="textEmailAddress"
    app:layout_constraintEnd_toEndOf="@+id/editTextText"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="@+id/editTextText"
    app:layout_constraintTop_toBottomOf="@+id/editTextText" />

<Button
    android:id="@+id/button"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="24dp"
    android:text="Registration"
    app:layout_constraintEnd_toEndOf="@+id/button2"
```

```
        app:layout_constraintStart_toStartOf="@+id/button2"
        app:layout_constraintTop_toBottomOf="@+id/button2" />

    <Button
        android:id="@+id/button2"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="56dp"
        android:text="Login"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.505"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPassword" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Q7) Write a program to demonstrate different dialog in android.

Activity_main.xml :-

```
<?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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button3"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="108dp"
        android:text="Show Alert Dialog"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button4"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="SHow Progress Dialog"
        app:layout_constraintEnd_toEndOf="@+id/button5"
        app:layout_constraintStart_toStartOf="@+id/button5"
        app:layout_constraintTop_toBottomOf="@+id/button5" />

    <Button
```

```
    android:id="@+id/button5"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:text="Show TIme PIcker Dialog"
    app:layout_constraintEnd_toEndOf="@+id/button6"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="@+id/button6"
    app:layout_constraintTop_toBottomOf="@+id/button6" />

  <Button
    android:id="@+id/button6"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:text="Show Date Picker Dialog"
    app:layout_constraintEnd_toEndOf="@+id/button3"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="@+id/button3"
    app:layout_constraintTop_toBottomOf="@+id/button3" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
{
  Button alertButton, datePicker, timePicker, progressPicker;

  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
```

```
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });

        alertButton = findViewById(R.id.button3);
        timePicker = findViewById(R.id.button4);
        datePicker = findViewById(R.id.button5);
        progressPicker = findViewById(R.id.button6);
        alertButton.setOnClickListener(v -> showAlertDialog());
        timePicker.setOnClickListener(v -> datePickerDialog());
        datePicker.setOnClickListener(v -> timePickerDialog());
        progressPicker.setOnClickListener(v -> progressDialog());

}
    private void progressDialog() {
    }

    private void timePickerDialog() {
    }

    private void datePickerDialog() {
        Calendar calendar = Calendar.getInstance();
        int year = calendar.get(Calendar.YEAR);
        int month = calendar.get(Calendar.MONTH);
        int day = calendar.get(Calendar.DAY_OF_MONTH);

        DatePickerDialog datePickerDialog = new DatePickerDialog(
                this,
```

```
            ((view, year1, month1, dayOfMonth) -> {
                String selectedDate = dayOfMonth +" / "+ (month+ 1) +" / "+year1;
                Toast.makeText(this, "Date Selected : " + selectedDate, Toast.LENGTH_SHORT).show();
            }),
            year, month, day
        );
        datePickerDialog.show();
    }

    private void showAlertDialog() {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setTitle("Alert Dialogue Examole")
            .setMessage("Example of alert dialog box with positive and negative bttons.")
            .setPositiveButton("OK", ((dialog, which) -> {
                Toast.makeText(this, "Ok Cliked", Toast.LENGTH_SHORT).show();
            }))
            .setNegativeButton("Cancel", ((dialog, which) -> {
                Toast.makeText(this, "Cancel Clicked", Toast.LENGTH_SHORT).show();
            }))
            .create()
            .show();
    }
}
```

Q8) Write a program (Web View) to display this url (https://imcc.mespune.in/home/) into webview.

MainActivity.java :-

```
public class MainActivity extends AppCompatActivity {

    String username = "Abc";
    String password = "123";
    WebView webView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });

        webView = findViewById(R.id.webView);
        webView.loadUrl("https://www.mespune.in/home/");
        webView.setWebViewClient(new WebViewClient(){
            @Override
            public boolean shouldOverrideUrlLoading(WebView view, WebResourceRequest request) {
                return super.shouldOverrideUrlLoading(view, request);
            }
        });
    }
}
```

Q9) Create a login page with username, password and login button in flutter.

```
import 'package:flutter/material.dart';
```

```
void main() => runApp(MyApp());
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      home: LoginPage(),
    );
  }
}
class LoginPage extends StatefulWidget {
  @override
  _LoginPageState createState() => _LoginPageState();
}
class _LoginPageState extends State<LoginPage> {
  final _usernameController = TextEditingController();
  final _passwordController = TextEditingController();
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Login'),
      ),
      body: Padding(
        padding: const EdgeInsets.all(16.0),
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[
            TextField(
              controller: _usernameController,
              decoration: InputDecoration(
                labelText: 'Username',
```

```
    border: OutlineInputBorder(),
  ),
),
SizedBox(height: 16.0),
TextField(
  controller: _passwordController,
  decoration: InputDecoration(
    labelText: 'Password',
    border: OutlineInputBorder(),
  ),
  obscureText: true,
),
SizedBox(height: 16.0),
ElevatedButton(
  onPressed: () {
    String username = _usernameController.text;
    String password = _passwordController.text;
    // Add your login logic here
    if (username == "admin" && password == "admin123") {
      // For simplicity, showing success in a dialog
      showDialog(
        context: context,
        builder: (context) => AlertDialog(
          title: Text("Login Success"),
          content: Text("Welcome $username!"),
          actions: <Widget>[
            TextButton(
              onPressed: () => Navigator.of(context).pop(),
              child: Text("OK"),
            ),
          ],
        ),
```

```
            );
          } else {
            showDialog(
              context: context,
              builder: (context) => AlertDialog(
                title: Text("Login Failed"),
                content: Text("Invalid username or password"),
                actions: <Widget>[
                  TextButton(
                    onPressed: () => Navigator.of(context).pop(),
                    child: Text("OK"),
                  ),
                ],
              ),
            );
          }
        },
        child: Text('Login'),
      ),
    ],
  ),
 ),
);
}
}
```

Q10) Write a program to demonstrate different menus is android.

MainActivity.java :-

```
package com.example.menudemo;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button contextButton, popupButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        contextButton = findViewById(R.id.contextButton);
        popupButton = findViewById(R.id.popupButton);

        // Register the button for context menu
        registerForContextMenu(contextButton);
```

```
    // Set Popup menu on click
    popupButton.setOnClickListener(view -> showPopupMenu(view));
}

// Options Menu
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.options_menu, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.option_1:
            Toast.makeText(this, "Option 1 Selected", Toast.LENGTH_SHORT).show();
            return true;
        case R.id.option_2:
            Toast.makeText(this, "Option 2 Selected", Toast.LENGTH_SHORT).show();
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}

// Context Menu
@Override
```

```
    public void onCreateContextMenu(ContextMenu menu, View v,
ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.context_menu, menu);
    }

    @Override
    public boolean onContextItemSelected(MenuItem item) {
        switch (item.getItemId()) {
            case R.id.context_1:
                Toast.makeText(this, "Context 1 Selected", Toast.LENGTH_SHORT).show();
                return true;
            case R.id.context_2:
                Toast.makeText(this, "Context 2 Selected", Toast.LENGTH_SHORT).show();
                return true;
            default:
                return super.onContextItemSelected(item);
        }
    }

    // Popup Menu
    private void showPopupMenu(View view) {
        PopupMenu popup = new PopupMenu(this, view);
        MenuInflater inflater = popup.getMenuInflater();
        inflater.inflate(R.menu.popup_menu, popup.getMenu());
        popup.setOnMenuItemClickListener(item -> {
            switch (item.getItemId()) {
                case R.id.popup_1:
```

```
                Toast.makeText(this, "Popup 1 Selected", Toast.LENGTH_SHORT).show();
                return true;
            case R.id.popup_2:
                Toast.makeText(this, "Popup 2 Selected", Toast.LENGTH_SHORT).show();
                return true;
            default:
                return false;
        }
      });
      popup.show();
   }
}
```

Activity_main.xml :-

```
<?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">

   <Button
      android:id="@+id/contextButton"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Long Press for Context Menu"
      app:layout_constraintBottom_toTopOf="@+id/popupButton"
```

```
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

  <Button
    android:id="@+id/popupButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Click for Popup Menu"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/contextButton" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Q11) Write a program to show list of students by using any adapter like array adapter, base adapter .etc.

StudentAdapter.java :-

```
package com.example.studentlist;

import android.content.Context;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.TextView;

import java.util.ArrayList;

public class StudentAdapter extends BaseAdapter {
    private Context context;
    private ArrayList<Student> studentList;
    private LayoutInflater inflater;

    public StudentAdapter(Context context, ArrayList<Student> studentList) {
        this.context = context;
        this.studentList = studentList;
        this.inflater = LayoutInflater.from(context);
    }

    @Override
    public int getCount() {
        return studentList.size();
    }
```

```
@Override
public Object getItem(int position) {
    return studentList.get(position);
}

@Override
public long getItemId(int position) {
    return position;
}

@Override
public View getView(int position, View convertView, ViewGroup parent) {
    if (convertView == null) {
        convertView = inflater.inflate(R.layout.student_list_item, parent, false);
    }

    // Get the current student
    Student student = studentList.get(position);

    // Set student name and age in TextViews
    TextView nameTextView = convertView.findViewById(R.id.nameTextView);
    TextView ageTextView = convertView.findViewById(R.id.ageTextView);

    nameTextView.setText(student.getName());
    ageTextView.setText(String.valueOf(student.getAge()));

    return convertView;
}
```

}

MainActivity.java :-

```
package com.example.studentlist;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ListView;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    ListView studentListView;
    ArrayList<Student> studentList;
    StudentAdapter studentAdapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        studentListView = findViewById(R.id.studentListView);

        // Create some sample students
        studentList = new ArrayList<>();
        studentList.add(new Student("John", 20));
        studentList.add(new Student("Emma", 22));
        studentList.add(new Student("Alex", 19));
        studentList.add(new Student("Olivia", 21));
        studentList.add(new Student("Sophia", 23));
```

```
        // Create and set the adapter
        studentAdapter = new StudentAdapter(this, studentList);
        studentListView.setAdapter(studentAdapter);
    }
}
```

Activity_main.xml :-

```
<?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">

    <ListView
        android:id="@+id/studentListView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:divider="@android:color/darker_gray"
        android:dividerHeight="1dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Student_list_item.xml :-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:padding="16dp">

    <TextView
        android:id="@+id/nameTextView"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:text="Name"
        android:textSize="18sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/ageTextView"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/ageTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Age"
        android:textSize="18sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/nameTextView"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Q12) WAP to demonstrate web services. Consider the following information : GET request : "https://reqres.in/api/users?page=2" Use any library to make a get request and parse response into data model class and show it on the UI as you want

Item_user.xml :-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="wrap_content"
   android:padding="16dp">

   <ImageView
      android:id="@+id/avatarImageView"
      android:layout_width="50dp"
      android:layout_height="50dp"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/nameTextView"
      android:contentDescription="User Avatar"/>

   <TextView
      android:id="@+id/nameTextView"
      android:layout_width="0dp"
      android:layout_height="wrap_content"
      android:text="Name"
      android:textStyle="bold"
      android:textSize="18sp"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintStart_toEndOf="@+id/avatarImageView"
```

```
    app:layout_constraintEnd_toEndOf="parent"/>

  <TextView
    android:id="@+id/emailTextView"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:text="Email"
    app:layout_constraintTop_toBottomOf="@id/nameTextView"
    app:layout_constraintStart_toStartOf="@+id/nameTextView"
    app:layout_constraintEnd_toEndOf="parent"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_main.xml :-

```
<?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"
  android:layout_width="match_parent"
  android:layout_height="match_parent">

  <androidx.recyclerview.widget.RecyclerView
    android:id="@+id/recyclerView"
    android:layout_width="0dp"
    android:layout_height="0dp"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

UserAdapter.java :-

```
package com.example.webserviceexample;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.recyclerview.widget.RecyclerView;

import com.bumptech.glide.Glide;

import java.util.List;

public class UserAdapter extends RecyclerView.Adapter<UserAdapter.UserViewHolder> {

    private List<User> userList;

    public UserAdapter(List<User> userList) {
        this.userList = userList;
    }
```

```
    @NonNull
    @Override
    public UserViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType)
{
        View view = LayoutInflater.from(parent.getContext()).inflate(R.layout.item_user,
parent, false);
        return new UserViewHolder(view);
    }

    @Override
    public void onBindViewHolder(@NonNull UserViewHolder holder, int position) {
        User user = userList.get(position);
        holder.nameTextView.setText(user.getFirstName() + " " + user.getLastName());
        holder.emailTextView.setText(user.getEmail());

        // Load image using Glide
        Glide.with(holder.itemView.getContext())
                .load(user.getAvatar())
                .into(holder.avatarImageView);
    }

    @Override
    public int getItemCount() {
        return userList.size();
    }

    static class UserViewHolder extends RecyclerView.ViewHolder {
        TextView nameTextView, emailTextView;
        ImageView avatarImageView;
```

```
        public UserViewHolder(@NonNull View itemView) {
            super(itemView);
            nameTextView = itemView.findViewById(R.id.nameTextView);
            emailTextView = itemView.findViewById(R.id.emailTextView);
            avatarImageView = itemView.findViewById(R.id.avatarImageView);
        }
    }
}
```

MainActivity.java :-

```
package com.example.webserviceexample;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import java.util.List;

import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;

public class MainActivity extends AppCompatActivity {
```

```
    RecyclerView recyclerView;
    UserAdapter userAdapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        recyclerView = findViewById(R.id.recyclerView);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));

        ApiService apiService = RetrofitClient.getInstance().create(ApiService.class);

        // Make the GET request
        apiService.getUsers(2).enqueue(new Callback<UserResponse>() {
            @Override
            public void onResponse(Call<UserResponse> call, Response<UserResponse>
response) {
                if (response.isSuccessful() && response.body() != null) {
                    List<User> userList = response.body().getData();
                    userAdapter = new UserAdapter(userList);
                    recyclerView.setAdapter(userAdapter);
                } else {
                    Toast.makeText(MainActivity.this, "Failed to get data",
Toast.LENGTH_SHORT).show();
                }
            }

            @Override
```

```
        public void onFailure(Call<UserResponse> call, Throwable t) {
            Toast.makeText(MainActivity.this, "Error: " + t.getMessage(),
Toast.LENGTH_SHORT).show();
            Log.e("MainActivity", "Error: ", t);
        }
    });
  }
}
```

RetrofitClient.java :

```
import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;
public class RetrofitClient {
  private static final String BASE_URL = "https://reqres.in/api/";
  private static Retrofit retrofit;
  public static Retrofit getInstance() {
    if (retrofit == null) {
      retrofit = new Retrofit.Builder()
          .baseUrl(BASE_URL)
          .addConverterFactory(GsonConverterFactory.create())
          .build();
    }
    return retrofit;
  }}
```

Q13) Write an android application using SQLite to create employee(eid, ename, edept, esalary) table and insert a record in table and display appropriate message on toast to user.

DatabseHelper.java :-

```
package com.example.employeedb;

import android.content.ContentValues;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.widget.Toast;

public class DatabaseHelper extends SQLiteOpenHelper {

    // Database name and version
    private static final String DATABASE_NAME = "employee.db";
    private static final int DATABASE_VERSION = 1;

    // Table and columns
    private static final String TABLE_NAME = "Employee";
    private static final String COLUMN_ID = "eid";
    private static final String COLUMN_NAME = "ename";
    private static final String COLUMN_DEPARTMENT = "edept";
    private static final String COLUMN_SALARY = "esalary";

    private Context context;

    // Constructor
    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
        this.context = context;
```

```
}

@Override
public void onCreate(SQLiteDatabase db) {
   // SQL command to create Employee table
   String CREATE_EMPLOYEE_TABLE = "CREATE TABLE " + TABLE_NAME + "("
         + COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, "
         + COLUMN_NAME + " TEXT, "
         + COLUMN_DEPARTMENT + " TEXT, "
         + COLUMN_SALARY + " REAL)";
   db.execSQL(CREATE_EMPLOYEE_TABLE);
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
   // Drop older table if exists
   db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
   // Create tables again
   onCreate(db);
}

// Method to insert an employee record
public void insertEmployee(String name, String department, double salary) {
   SQLiteDatabase db = this.getWritableDatabase();
   ContentValues contentValues = new ContentValues();
   contentValues.put(COLUMN_NAME, name);
   contentValues.put(COLUMN_DEPARTMENT, department);
   contentValues.put(COLUMN_SALARY, salary);
```

```
        long result = db.insert(TABLE_NAME, null, contentValues);


        if (result == -1) {
            Toast.makeText(context, "Failed to insert", Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(context, "Record inserted successfully",
Toast.LENGTH_SHORT).show();
        }
    }
}
```

Activity_main.xml :-

```
<?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/et_name"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="Employee Name"
        android:padding="10dp"
        android:textSize="18sp"
        app:layout_constraintEnd_toEndOf="parent"
```

```
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.3" />

<EditText
    android:id="@+id/et_dept"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Employee Department"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_name"
    app:layout_constraintVertical_bias="0.1" />

<EditText
    android:id="@+id/et_salary"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Employee Salary"
    android:inputType="numberDecimal"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_dept"
    app:layout_constraintVertical_bias="0.1" />
```

```
    <Button
        android:id="@+id/btn_insert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Insert Record"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/et_salary"
        app:layout_constraintVertical_bias="0.1" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
package com.example.employeedb;

import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    EditText etName, etDept, etSalary;
    Button btnInsert;
    DatabaseHelper databaseHelper;
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize views and database helper
        etName = findViewById(R.id.et_name);
        etDept = findViewById(R.id.et_dept);
        etSalary = findViewById(R.id.et_salary);
        btnInsert = findViewById(R.id.btn_insert);

        databaseHelper = new DatabaseHelper(this);

        // Handle insert button click
        btnInsert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = etName.getText().toString().trim();
                String dept = etDept.getText().toString().trim();
                String salaryString = etSalary.getText().toString().trim();

                if (!TextUtils.isEmpty(name) && !TextUtils.isEmpty(dept) &&
!TextUtils.isEmpty(salaryString)) {
                    double salary = Double.parseDouble(salaryString);
                    // Insert employee record into database
                    databaseHelper.insertEmployee(name, dept, salary);
                } else {
                    // Show error message if fields are empty
                    Toast.makeText(MainActivity.this, "Please fill all fields",
Toast.LENGTH_SHORT).show();
```

```
            }
        }
    });
  }
}
```

Q14) What is cursor ? Demonstrate a sqlite database application to inert a record in table.

MainActivity.java :-

```
package com.example.sqliteapp;

import android.database.Cursor;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    EditText etName, etDept, etSalary;
    Button btnInsert, btnDisplay;
    DatabaseHelper databaseHelper;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize views
        etName = findViewById(R.id.et_name);
        etDept = findViewById(R.id.et_dept);
        etSalary = findViewById(R.id.et_salary);
        btnInsert = findViewById(R.id.btn_insert);
        btnDisplay = findViewById(R.id.btn_display);
```

```
        databaseHelper = new DatabaseHelper(this);

        // Handle insert button click
        btnInsert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = etName.getText().toString().trim();
                String dept = etDept.getText().toString().trim();
                String salaryStr = etSalary.getText().toString().trim();

                if (!TextUtils.isEmpty(name) && !TextUtils.isEmpty(dept) &&
!TextUtils.isEmpty(salaryStr)) {
                    double salary = Double.parseDouble(salaryStr);

                    // Insert employee record
                    long result = databaseHelper.insertEmployee(name, dept, salary);

                    if (result == -1) {
                        Toast.makeText(MainActivity.this, "Insertion Failed",
Toast.LENGTH_SHORT).show();
                    } else {
                        Toast.makeText(MainActivity.this, "Record Inserted Successfully",
Toast.LENGTH_SHORT).show();
                    }
                } else {
                    Toast.makeText(MainActivity.this, "Please fill all fields",
Toast.LENGTH_SHORT).show();
                }
            }
```

```
        });

        // Handle display button click to show all records
        btnDisplay.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Cursor cursor = databaseHelper.getAllEmployees();
                if (cursor.getCount() == 0) {
                    Toast.makeText(MainActivity.this, "No records found",
Toast.LENGTH_SHORT).show();
                    return;
                }

                StringBuilder buffer = new StringBuilder();
                while (cursor.moveToNext()) {
                    buffer.append("ID: ").append(cursor.getInt(0)).append("\n");
                    buffer.append("Name: ").append(cursor.getString(1)).append("\n");
                    buffer.append("Department: ").append(cursor.getString(2)).append("\n");
                    buffer.append("Salary: ").append(cursor.getDouble(3)).append("\n\n");
                }

                // Display employee data
                Toast.makeText(MainActivity.this, buffer.toString(), Toast.LENGTH_LONG).show();
                cursor.close();
            }
        });
    }
}
```

Activity_main.xml :-

```
<?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/et_name"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="Employee Name"
        android:padding="10dp"
        android:textSize="18sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.3" />

    <EditText
        android:id="@+id/et_dept"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="Employee Department"
        android:padding="10dp"
```

```
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_name"
    app:layout_constraintVertical_bias="0.1" />

<EditText
    android:id="@+id/et_salary"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Employee Salary"
    android:inputType="numberDecimal"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_dept"
    app:layout_constraintVertical_bias="0.1" />

<Button
    android:id="@+id/btn_insert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert Record"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_salary"
    app:layout_constraintVertical_bias="0.1" />
```

```
    <Button
        android:id="@+id/btn_display"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Display Records"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/btn_insert"
        app:layout_constraintVertical_bias="0.1" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

DatabaseHelper.java :-

```
package com.example.sqliteapp;

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 {

    // Database name and version
    private static final String DATABASE_NAME = "employee.db";
    private static final int DATABASE_VERSION = 1;
```

```
// Table and columns
private static final String TABLE_NAME = "Employee";
private static final String COLUMN_ID = "eid";
private static final String COLUMN_NAME = "ename";
private static final String COLUMN_DEPARTMENT = "edept";
private static final String COLUMN_SALARY = "esalary";

// Constructor
public DatabaseHelper(Context context) {
   super(context, DATABASE_NAME, null, DATABASE_VERSION);
}

@Override
public void onCreate(SQLiteDatabase db) {
   // SQL command to create Employee table
   String CREATE_EMPLOYEE_TABLE = "CREATE TABLE " + TABLE_NAME + "("
         + COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, "
         + COLUMN_NAME + " TEXT, "
         + COLUMN_DEPARTMENT + " TEXT, "
         + COLUMN_SALARY + " REAL)";
   db.execSQL(CREATE_EMPLOYEE_TABLE);
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
   // Drop older table if exists
   db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
   // Create tables again
   onCreate(db);
```

```
    }

    // Method to insert a record in Employee table
    public long insertEmployee(String name, String department, double salary) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(COLUMN_NAME, name);
        contentValues.put(COLUMN_DEPARTMENT, department);
        contentValues.put(COLUMN_SALARY, salary);

        // Insert row into the table and return row ID
        return db.insert(TABLE_NAME, null, contentValues);
    }

    // Method to retrieve all employee data using Cursor
    public Cursor getAllEmployees() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }
}
```

Q15) WAP to demonstrate the following UI Save the data into SQLite databse on Submit button. DO all the valiations of the following form before saving to the database.

DatabaseHelper.java :-

```
package com.example.formapp;

import android.content.ContentValues;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.widget.Toast;

public class DatabaseHelper extends SQLiteOpenHelper {

    // Database name and version
    private static final String DATABASE_NAME = "form.db";
    private static final int DATABASE_VERSION = 1;

    // Table and columns
    private static final String TABLE_NAME = "User";
    private static final String COLUMN_ID = "id";
    private static final String COLUMN_FIRST_NAME = "first_name";
    private static final String COLUMN_LAST_NAME = "last_name";
    private static final String COLUMN_MOBILE = "mobile";
    private static final String COLUMN_EMAIL = "email";

    private Context context;

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
        this.context = context;
```

```
}

@Override
public void onCreate(SQLiteDatabase db) {
   // SQL command to create User table
   String CREATE_USER_TABLE = "CREATE TABLE " + TABLE_NAME + "("
         + COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, "
         + COLUMN_FIRST_NAME + " TEXT, "
         + COLUMN_LAST_NAME + " TEXT, "
         + COLUMN_MOBILE + " TEXT, "
         + COLUMN_EMAIL + " TEXT)";
   db.execSQL(CREATE_USER_TABLE);
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
   // Drop older table if exists
   db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
   // Create tables again
   onCreate(db);
}

// Method to insert user record into the database
public void insertUser(String firstName, String lastName, String mobile, String email) {
   SQLiteDatabase db = this.getWritableDatabase();
   ContentValues contentValues = new ContentValues();
   contentValues.put(COLUMN_FIRST_NAME, firstName);
   contentValues.put(COLUMN_LAST_NAME, lastName);
   contentValues.put(COLUMN_MOBILE, mobile);
```

```
        contentValues.put(COLUMN_EMAIL, email);


        long result = db.insert(TABLE_NAME, null, contentValues);


        if (result == -1) {
            Toast.makeText(context, "Insertion Failed", Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(context, "Record Inserted Successfully",
Toast.LENGTH_SHORT).show();
        }
    }
}
```

Activity_main.xml :-

```
<?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/et_first_name"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="First Name"
```

```
    android:padding="10dp"
    android:textSize="18sp"
    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/et_last_name"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Last Name"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_first_name"
    app:layout_constraintVertical_bias="0.1" />

<EditText
    android:id="@+id/et_mobile"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Mobile Number"
    android:inputType="phone"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toBottomOf="@id/et_last_name"
    app:layout_constraintVertical_bias="0.1" />

  <EditText
    android:id="@+id/et_email"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:hint="Email"
    android:inputType="textEmailAddress"
    android:padding="10dp"
    android:textSize="18sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_mobile"
    app:layout_constraintVertical_bias="0.1" />

  <Button
    android:id="@+id/btn_submit"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/et_email"
    app:layout_constraintVertical_bias="0.1" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java :-

```
package com.example.formapp;
```

```
import android.os.Bundle;
import android.text.TextUtils;
import android.util.Patterns;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    EditText etFirstName, etLastName, etMobile, etEmail;
    Button btnSubmit;
    DatabaseHelper databaseHelper;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize views and database helper
        etFirstName = findViewById(R.id.et_first_name);
        etLastName = findViewById(R.id.et_last_name);
        etMobile = findViewById(R.id.et_mobile);
        etEmail = findViewById(R.id.et_email);
        btnSubmit = findViewById(R.id.btn_submit);
        databaseHelper = new DatabaseHelper(this);
```

```
    // Handle submit button click
    btnSubmit.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String firstName = etFirstName.getText().toString().trim();
            String lastName = etLastName.getText().toString().trim();
            String mobile = etMobile.getText().toString().trim();
            String email = etEmail.getText().toString().trim();

            if (validateForm(firstName, lastName, mobile, email)) {
                // Save data to the SQLite database
                databaseHelper.insertUser(firstName, lastName, mobile, email);
            }
        }
    });
}

// Method to validate the form inputs
private boolean validateForm(String firstName, String lastName, String mobile, String email) {
    if (TextUtils.isEmpty(firstName)) {
        etFirstName.setError("First name is required");
        return false;
    }

    if (TextUtils.isEmpty(lastName)) {
        etLastName.setError("Last name is required");
        return false;
```

```
        }

        if (TextUtils.isEmpty(mobile) || mobile.length() != 10) {
            etMobile.setError("Enter a valid 10-digit mobile number");
            return false;
        }

        if (TextUtils.isEmpty(email) || !Patterns.EMAIL_ADDRESS.matcher(email).matches()) {
            etEmail.setError("Enter a valid email address");
            return false;
        }

        return true;
    }
}
```