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LAB REPORT

ON

Mobile Programming

By

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1.1 Source Code

activity_main.java:

```
 <?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_gravity="center"
        android:textAlignment="center"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Hello World"
        android:textSize="24dp"
        />
</LinearLayout>
```

MainActivity.java

```
package com.example.helloworld;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {

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

```
            setContentView(R.layout.activity_main);
        }
    }
```

1.2 Output Window

2 Develop android application to develop Login Form. Pass and display username on another activity

2.1 Source Code

activity_login.java

```
<?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=".LoginActivity">


        <EditText
            android:id="@+id/username"
            android:layout_width="346dp"
            android:layout_height="60dp"
            android:layout_marginBottom="44dp"
            android:background="@drawable/edittext_bg_color"
            android:ems="10"
            android:hint=" enter Username"
            android:inputType="textPersonName"
            android:textSize="30sp"
            app:layout_constraintBottom_toTopOf="@+id/password"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.497"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintVertical_bias="1.0" />
```

```
        <EditText
            android:id="@+id/password"
            android:layout_width="347dp"
            android:layout_height="64dp"
            android:layout_marginBottom="60dp"
            android:hint=" enter password"
            android:inputType="textPassword"
            android:background="@drawable/edittext_bg_color"
            android:textSize="30sp"
            app:layout_constraintBottom_toTopOf="@+id/button"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.468"
            app:layout_constraintStart_toStartOf="parent" />

        <Button
            android:id="@+id/button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginBottom="252dp"
            android:background="@drawable/button_bg_color"
            android:text="Login"
            android:textSize="30dp"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.498"
            app:layout_constraintStart_toStartOf="parent" />

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

activity_display.java

```
<?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=".DisplayActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="44dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.562"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

LoginActivity.java

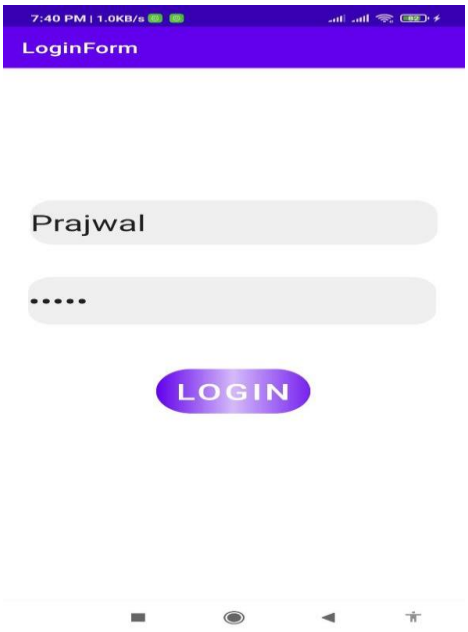
```
package com.example.loginform;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.*;
public class LoginActivity extends AppCompatActivity {
    Button btn;
    EditText edtUn,edtPw;
    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);

        btn=findViewById(R.id.button);
        edtUn=findViewById(R.id.username);
        edtPw=findViewById(R.id.password);
        btn.setOnClickListener(v -> {
            String username=edtUn.getText().toString();
            String password=edtPw.getText().toString();
            if(username.equals("Prajwal") &&
            password.equals("12345")) {
                Intent inte = new Intent(getApplicationContext(),
                DisplayActivity.class);
                inte.putExtra("username", username);
                startActivity(inte);
            }
```

```
            else{

                Toast.makeText(LoginActivity.this, "Invalid
                username or password", Toast.LENGTH_LONG).show();
            }
        });
    }
}
```

DisplayActivity.java

```
package com.example.loginform;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class DisplayActivity extends AppCompatActivity {
    TextView tv;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_display);
        tv=findViewById(R.id.textView);
        Intent inte = getIntent();
        String uname=inte.getStringExtra("username");
        tv.setText("welcome ,"+uname);

    }
}
```

2.2 Output Window



3 Develop Android application to create two fragments and switch from one fragment to another fragment.

3.1 Source Code

activity_main.xml

```
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <FrameLayout
        android:id="@+id/fragment_container"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_above="@+id/buttonSwitchFragment" />
    <Button
        android:id="@+id/buttonSwitchFragment"
        android:layout_width="234dp"
        android:layout_height="96dp"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="16dp"
        android:textSize="24dp"
        android:text="Switch Fragment" />

</RelativeLayout>
```

fragment_one.xml

```
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
    android:padding="16dp">
    <TextView
        android:id="@+id/textViewFragmentOne"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Fragment One"
        android:textSize="24sp"
        android:layout_centerInParent="true" />
</RelativeLayout>
```

fragment_two.xml

```
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp">
    <TextView
        android:id="@+id/textViewFragmentTwo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Fragment Two"
        android:textSize="24sp"
        android:layout_centerInParent="true" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.fragmentexample;
import android.os.Bundle;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.*;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        loadFragment(new FragmentOne());

findViewById(R.id.buttonSwitchFragment).setOnClickListener(v -> {
            FragmentTwo fragmentTwo = new FragmentTwo();
            Bundle args = new Bundle();
            args.putString("dataKey", "Data from Fragment One");
            fragmentTwo.setArguments(args);
            loadFragment(fragmentTwo);
        });
    }

    private void loadFragment(Fragment fragment) {
        FragmentManager fragmentManager =
getSupportFragmentManager();
        FragmentTransaction fragmentTransaction =
fragmentManager.beginTransaction();
        fragmentTransaction.replace(R.id.fragment_container,
fragment);
        fragmentTransaction.addToBackStack(null);
        fragmentTransaction.commit();
    }
}
```

FragmentOne.java

```
package com.example.fragmentexample;
import android.os.Bundle;
import android.view.*;
import androidx.fragment.app.Fragment;
public class FragmentOne extends Fragment {
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup
container, Bundle savedInstanceState) {
        return inflater.inflate(R.layout.fragment_one, container,
false);
    }
}
```

FragmentTwo.java

```
package com.example.fragmentexample;
import android.os.Bundle;
import android.view.*;
import androidx.fragment.app.Fragment;
import android.widget.TextView;
public class FragmentTwo extends Fragment {
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup
container, Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_two,
container, false);
        TextView textViewFragmentTwo =
view.findViewById(R.id.textViewFragmentTwo);
        Bundle args = getArguments();
        if (args != null) {
```

```
            String data = args.getString("dataKey", "");
            textViewFragmentTwo.setText(data);
        }
        return view;
    }
}
```

3.2 Output Window

4 Develop android to create context, option and popup menu.

4.1 Source Code

Menu.xml

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

    <item android:id="@+id/home"
        android:title="home">Home</item>
    <item android:id="@+id/about_us"
        android:title="About us">About Us</item>
    <item android:id="@+id/rate_us"
        android:title="Share">Share</item>
    <item android:id="@+id/context_menu"
        android:title="contextmenu">context menu</item>
    <item android:id="@+id/popup_menu"
        android:title="popup menu">popup menu</item>
</menu>
```

Context_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/profile"
        android:title="profile">view profile</item>
    <item android:id="@+id/call"
        android:title="call">call</item>
</menu>
```

Popup.xml

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

```
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/hide"
        android:title="hide">hide</item>
    <item android:id="@+id/show"
        android:title="show">show</item>
</menu>
```

activity_popup_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".PopupMenuShow">

    <Button
            android:id="@+id/btn"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="show popup menu"
        />

</LinearLayout>
```

activity_context_menu.java

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

```
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".ContextMenu">

    <ListView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/listview"
        />

</LinearLayout>
```

PopMenuShow.java

```
package com.example.menuexample;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.*;
import android.widget.*;
public class PopupMenuShow extends AppCompatActivity {
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_popup_menu);

        btn=findViewById(R.id.btn);
```

```
        btn.setOnClickListener(v -> {

            PopupMenu popupMenu = new PopupMenu(this,btn);

           popupMenu.getMenuInflater().inflate(R.menu.popup,popupMenu.
           getMenu());
            popupMenu.show();
            popupMenu.setOnMenuItemClickListener(item -> {
                Toast.makeText(PopupMenuShow.this, "you
clicked"+item.getTitle(), Toast.LENGTH_SHORT).show();
                return true;
            });
        });

    }
}
```

MainActivity.java

```
package com.example.menuexample;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

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

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu, menu);
    return super.onCreateOptionsMenu(menu);
}

@Override
public boolean onOptionsItemSelected(@NonNull MenuItem item) {
    switch(item.getItemId()){
        case R.id.about_us:
            Toast.makeText(this, "you are going to about us
            activity....", Toast.LENGTH_SHORT).show();
            break;

        case R.id.rate_us:
            Toast.makeText(this, "you are going to share
            activity....", Toast.LENGTH_SHORT).show();
            break;

        case R.id.home:
            Toast.makeText(this, "you are going to home
            activity....", Toast.LENGTH_SHORT).show();
            break;
```

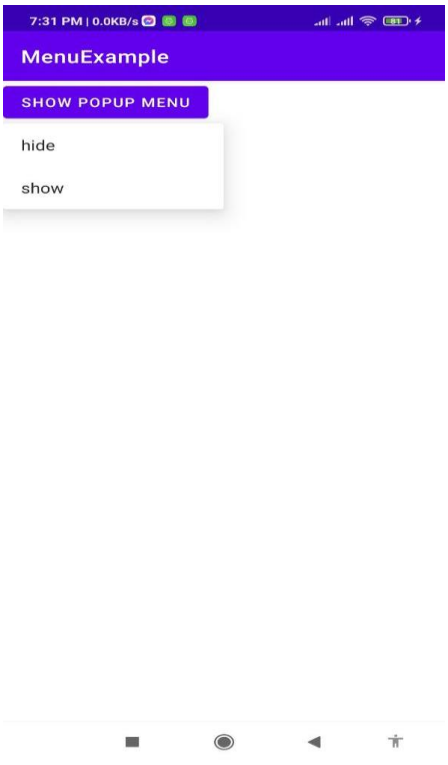
```
            case R.id.context_menu:
                Intent intent = new Intent(this,ContextMenu.class);
                startActivity(intent);
                break;

            case R.id.popup_menu:
                 Intent intent2 = new Intent(this,
                 PopupMenuShow.class);
                startActivity(intent2);
                break;

        }
        return super.onOptionsItemSelected(item);
    }
}
```

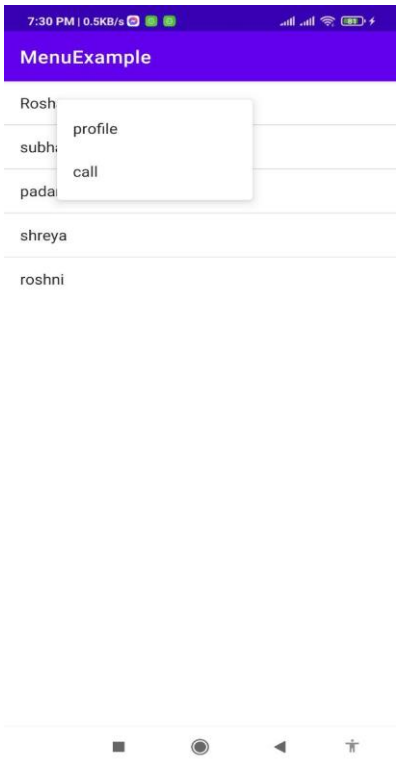
ContextMenu.java

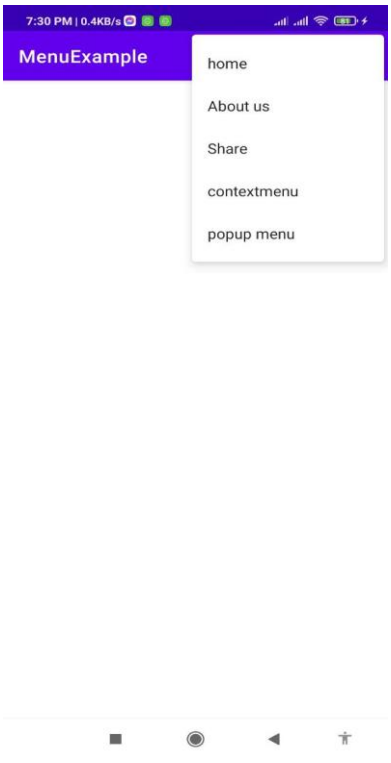
```
package com.example.menuexample;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.*;
import android.widget.*;
public class ContextMenu extends AppCompatActivity {
    ListView listView;
    String
contacts[]={"Roshan","subhanjal","padam","shreya","roshni"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_context_menu);
        listView=findViewById(R.id.listview);
        ArrayAdapter<String> adapter=new
ArrayAdapter<>(this,android.R.layout.simple_list_item_1,contacts);
        listView.setAdapter(adapter);
        registerForContextMenu(listView);
    }
    @Override
    public void onCreateContextMenu(android.view.ContextMenu menu,
View v, android.view.ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        getMenuInflater().inflate(R.menu.context_menu,menu);
    }
    @Override
    public boolean onContextItemSelected(@NonNull MenuItem item) {
        switch(item.getItemId()){
            case R.id.profile:
                Toast.makeText(this, "viewing profile....",
                Toast.LENGTH_SHORT).show();
                break;

            case R.id.call:
                Toast.makeText(this, "calling....",
                Toast.LENGTH_SHORT).show();
                break;
        }
        return super.onContextItemSelected(item);
    }
}
```

4.2 Output Window







5 Develop an android application to create a dialog box.

5.1 Source Code

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:orientation="vertical"
    android:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
       >
        <Button
            android:id="@+id/one_button_dialog"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="one button Dialog"
            />

        <Button
            android:id="@+id/multi_button_dialog"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="multi button Dialog"
```

```
            />
        <Button
            android:id="@+id/custom_dialog"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="custom Dialog"
            />
        <Button
            android:id="@+id/dialog_frgment"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Dialog Fragment"
            />

    </LinearLayout>
</LinearLayout>
```

fragment_custom_dialog.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">
       <TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="#DD922121"
```

```
    android:textSize="44dp"
    android:textAllCaps="false"
    android:text="do you want to close this dialog: "/>
    <Button
        android:id="@+id/yesf"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="30dp"
        android:text="yes"
        />
    <Button
        android:id="@+id/nof"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="30dp"
        android:text="no"
        />
</LinearLayout>
```

activity_custom_dialog.xml

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

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="#DD922121"
    android:textSize="44dp"
    android:text="do you want to close this dialog: "/>
    <Button
        android:id="@+id/yes"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="30dp"
        android:text="yes"
        />
    <Button
        android:id="@+id/no"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="30dp"
        android:text="no"
        />
</LinearLayout>
```

MainActivity.java

```
package com.example.dialogexample;
import android.app.Dialog;
import android.content.DialogInterface;
import android.graphics.Color;
import android.graphics.drawable.ColorDrawable;
import android.os.Bundle;
import android.view.View;
```

```
import android.widget.*;
import androidx.appcompat.app.*;
public class MainActivity extends AppCompatActivity {
    Button one,multi,custom,dialogFragmentbtn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        one=findViewById(R.id.one_button_dialog);
        multi=findViewById(R.id.multi_button_dialog);
        custom=findViewById(R.id.custom_dialog);
        dialogFragmentbtn=findViewById(R.id.dialog_frgment);

        one.setOnClickListener(v -> {
                AlertDialog alertDialog=new
AlertDialog.Builder(MainActivity.this).create();
                alertDialog.setTitle("press ok");
                alertDialog.setMessage("this is single button");
                alertDialog.setCancelable(false);

alertDialog.setButton(DialogInterface.BUTTON_POSITIVE, "Ok",
(dialog, which) -> Toast.makeText(MainActivity.this, "you just
finished  single button test", Toast.LENGTH_SHORT).show());
                alertDialog.show();
        });
        multi.setOnClickListener(v -> {
```

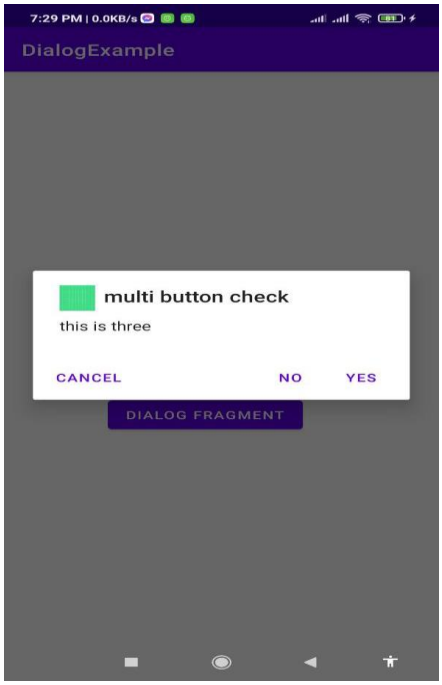
```
            AlertDialog.Builder alertDialogBuilder = new
AlertDialog.Builder(MainActivity.this);
            alertDialogBuilder.setTitle("multi button check");
    alertDialogBuilder.setIcon(R.drawable.ic_launcher_background);
            alertDialogBuilder.setCancelable(false);
            alertDialogBuilder.setMessage("this is three");
            alertDialogBuilder.setPositiveButton("yes", (dialog,
            which) -> {
            Toast.makeText(MainActivity.this, "you just press yes
            button ", Toast.LENGTH_SHORT).show();
                System.out.println(which);
            });
            alertDialogBuilder.setNegativeButton("No", (dialog,
            which) -> {
                Toast.makeText(MainActivity.this, "you just press
                No button ", Toast.LENGTH_SHORT).show();
                System.out.println(which);
            });

            alertDialogBuilder.setNeutralButton("cancel", (dialog,
which) -> {
                Toast.makeText(MainActivity.this, "you just press
cancel button ", Toast.LENGTH_SHORT).show();
                System.out.println(which);
            });
            alertDialogBuilder.show();
        });
        custom.setOnClickListener(v -> {
            Button yes,no;
            Dialog dialog = new Dialog(MainActivity.this);
```

```
dialog.setContentView(R.layout.activity_custom_dialog);
            dialog.getWindow().setBackgroundDrawable(new
ColorDrawable(Color.TRANSPARENT));
            yes=dialog.findViewById(R.id.yes);
            no=dialog.findViewById(R.id.no);
            yes.setOnClickListener(v1 -> {
                dialog.dismiss();
                Toast.makeText(MainActivity.this, "you close
dialog", Toast.LENGTH_SHORT).show();
            });
            no.setOnClickListener(v12 ->
Toast.makeText(MainActivity.this, "you clicked no ",
Toast.LENGTH_SHORT).show());
            dialog.show();
        });

        dialogFragmentbtn.setOnClickListener(v -> {
            CustomDialogFragment customDialogFragment = new
CustomDialogFragment();
            customDialogFragment.setCancelable(false);

customDialogFragment.show(getSupportFragmentManager(),"dialog");
        });


    }

}
```

CustomDialogFragment.java

```
package com.example.dialogexample;
import android.graphics.Color;
import android.graphics.drawable.ColorDrawable;
import android.os.Bundle;
import android.view.*;
import android.widget.*;
import androidx.fragment.app.DialogFragment;
public class CustomDialogFragment extends DialogFragment {
    public View onCreateView(LayoutInflater inflater,  ViewGroup
parent, Bundle savedInstanceState) {
        Button yes,no;
        View view =
inflater.inflate(R.layout.fragment_custom_dialog,parent,false);
        yes=view.findViewById(R.id.yesf);
        no=view.findViewById(R.id.nof);
        getDialog().getWindow().setBackgroundDrawable(new
ColorDrawable(Color.TRANSPARENT));
        yes.setOnClickListener(v -> {
            getDialog().dismiss();
            Toast.makeText(getContext(), "you close dialog",
Toast.LENGTH_SHORT).show();
        });
        no.setOnClickListener(v -> Toast.makeText(getContext(),
"you clicked no ", Toast.LENGTH_SHORT).show());
        return view;
    }
}
```

5.2 Output Window



6 Develop an android application to store the data in database and display it using recycler view.

6.1 Source Code

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">

    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/rv_quotes"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

contact_item.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:background="#E6E5E5"
android:id="@+id/ll_contact_item"
android:padding="16dp">

<ImageView
    android:id="@+id/contact_image"
    android:layout_width="64dp"
    android:layout_height="64dp"
    android:scaleType="centerCrop"
    android:src="@drawable/avatar" />

<LinearLayout
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:orientation="vertical"
    android:paddingStart="16dp">

    <TextView
        android:id="@+id/contact_name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textColor="#000"
        android:textSize="16sp"
        tools:text="John Doe" />

    <TextView
        android:id="@+id/contact_email"
```

```
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:textColor="#666"
            android:textSize="14sp"
            tools:text="john.doe@example.com" />
        <TextView
            android:id="@+id/contact_phone"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:textColor="#666"
            android:textSize="14sp"
            tools:text="(555) 555-1212" />
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```
package com.example.sqllitedemo;
import android.os.Bundle;
import android.view.Menu;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.*;
import java.util.ArrayList;
public class MainActivity extends AppCompatActivity {
    private RecyclerViewAdapter recyclerViewAdapter;
    private RecyclerView rvContacts;
    private LinearLayoutManager layoutManager;
    private ArrayList<Contact> contacts;
    private DatabaseHelper dbHelper;
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        rvContacts = findViewById(R.id.rv_quotes);
        layoutManager = new LinearLayoutManager(this);
        rvContacts.setLayoutManager(layoutManager);
        dbHelper = new DatabaseHelper(this);
        saveSomeTempContacts();
        contacts = dbHelper.getAllContacts();
        recyclerViewAdapter = new RecyclerViewAdapter(this ,
contacts);
        rvContacts.setAdapter(recyclerViewAdapter);

    }

    public boolean onCreateOptionsMenu(Menu menu) {

getMenuInflater().inflate(R.menu.recycler_view_option_menu,menu);
        return true;
    }
    private void saveSomeTempContacts(){
        String[] names = {
                "John Smith",
                "Mary Jones",
                "Peter Brown",
                "Susan Green",
                "David Williams",
                "Sarah Davis",
                "Michael Carter",
```

```
        "Jessica Garcia",
        "William Hernandez",
        "Linda Lopez"
};

String[] emails = {
        "john.smith@gmail.com",
        "mary.jones@yahoo.com",
        "peter.brown@hotmail.com",
        "susan.green@aol.com",
        "david.williams@outlook.com",
        "sarah.davis@icloud.com",
        "michael.carter@msn.com",
        "jessica.garcia@yahoo.com",
        "william.hernandez@gmail.com",
        "linda.lopez@hotmail.com"
};

String[] phoneNumbers = {
        "9841234567",
        "9851234567",
        "9861234567",
        "9871234567",
        "9881234567",
        "9891234567",
        "9841234567",
        "9851234567",
        "9861234567",
        "9871234567",
```

```
        };

        for (int i = 0; i < names.length; i++) {
            Contact contact = new Contact(i + 1, names[i],
phoneNumbers[i], emails[i]);
            dbHelper.saveContact(contact);
        }
    }
}
```

DatabaseHelper.java

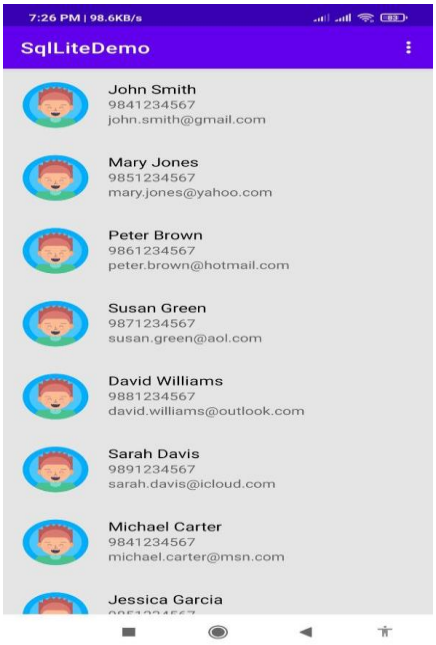
```
package com.example.sqllitedemo;

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

import androidx.annotation.Nullable;

import java.util.ArrayList;
import java.util.Arrays;

public class DatabaseHelper extends SQLiteOpenHelper {
    private String TAG = "Database Helper";
    private static final String DB_NAME = "phone_directory_db";
    private static final int DB_VERSION = 1;
```

```
    private Context context;

    public DatabaseHelper(@Nullable Context context) {
        super(context, DB_NAME, null, DB_VERSION);
        this.context=context;
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        String CREATE_TABLE_QUERY = "CREATE TABLE contacts(id INTEGER
PRIMARY KEY AUTOINCREMENT, name TEXT, phone TEXT, email TEXT)";
        db.execSQL(CREATE_TABLE_QUERY);
        Toast.makeText(context, "", Toast.LENGTH_SHORT).show();
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int
newVersion) {
        String DROP_TABLE_QUERY = "DROP TABLE IF EXISTS contacts";
        db.execSQL(DROP_TABLE_QUERY);
        onCreate(db);
    }

    public boolean saveContact(Contact contact){
        SQLiteDatabase db = this.getWritableDatabase();

        ContentValues values = new ContentValues();
        values.put("id", contact.getId());
        values.put("name", contact.getName());
```

```
        values.put("phone", contact.getPhone());
        values.put("email", contact.getEmail());

        long result = db.insert("contacts", null, values);
        db.close();
        return result > -1;
    }



    public ArrayList<Contact> getAllContacts() {
        ArrayList<Contact> contactList = new ArrayList<>();

        SQLiteDatabase database = this.getReadableDatabase();
        Cursor cursor = database.rawQuery("SELECT * FROM contacts",
null);

        String[] columns = {"id", "name", "email", "phone"};
        String[] args = {"Ram", "2"};
        Log.d(TAG, "getAllContacts: " + Arrays.toString(columns));
              Cursor cursor1 = database.query("contacts", columns,
           null, null, null, null, null);
        if (cursor.moveToFirst()) {
            int idIndex = cursor.getColumnIndex("id");
            int nameIndex = cursor.getColumnIndex("name");
            int emailIndex = cursor.getColumnIndex("email");
            int phoneIndex = cursor.getColumnIndex("phone");
```

```
            do {
                int id = cursor.getInt(idIndex);
                String name = cursor.getString(nameIndex);
                String email = emailIndex != -1 ?
                cursor.getString(emailIndex) : null;
                String phone = phoneIndex != -1 ?
                cursor.getString(phoneIndex) : null;
                Contact contact = new Contact(id, name, email, phone);
                contactList.add(contact);
            } while (cursor.moveToNext());
                    cursor.close();
            }
        database.close();
        return contactList;
    }
}
```

6.2 Output Window



7 Develop android application to read data from the server and display it.

7.1 Source Code

activity_main.java

```
<?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">
    <ScrollView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        >
        <TextView
            android:id="@+id/textView"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="TextView"
            android:textSize="30dp"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent" />
```

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

MainActivity.java

```
package com.example.retrofitexample;
import android.os.Bundle;
import android.util.Log;
import android.webkit.*;
import android.widget.*;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import com.google.gson.Gson;
import com.google.gson.GsonBuilder;
import java.io.IOException;
import java.util.List;
import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;
import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;
public class MainActivity extends AppCompatActivity {
    private TextView textView;

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

        textView = findViewById(R.id.textView);
```

```
        Retrofit retrofit = new Retrofit.Builder()
                .baseUrl("https://conforming-
entrance.000webhostapp.com/api/")

.addConverterFactory(GsonConverterFactory.create())
                .build();

        JsonPlaceHolderApi jsonPlaceHolderApi =
retrofit.create(JsonPlaceHolderApi.class);

        Call<List<Book>> call =
jsonPlaceHolderApi.getPost("104006205261242708831");

        call.enqueue(new Callback<List<Book>>() {
            @Override
            public void onResponse(@NonNull Call<List<Book>> call,
Response<List<Book>> response) {
                if (response.isSuccessful()) {
                    StringBuilder content = new StringBuilder();
                    String id, file, name;
                    List<Book> books = response.body();
                    for (Book book : books) {
                        id = book.getIsbnno();
                        name = book.getName();
                        file = book.getAuthor();
                        content.append("\n\nid=
").append(id).append("\nname=
").append(name).append("\nauthor=").append(file);
```

```
                    }
                    textView.setText(content.toString());
                } else {
                    textView.setText("error response code: " +
response.code());
                    Log.d("fail", "onResponse: " +
response.code());
                }
            }

            @Override
            public void onFailure(Call<List<Book>> call, Throwable
            t) {
                textView.setText("Error: " + t.getMessage());
                Log.d("API Call Error", t.getMessage(), t);
            }
        });
    }

}
```

Book.java

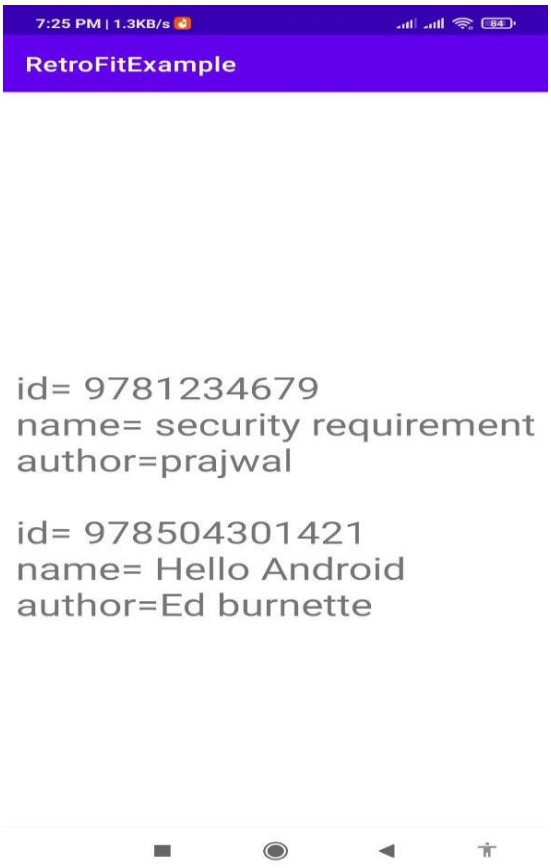
```
package com.example.retrofitexample;
public class Book {
    private String isbnno;
    private String name;
    private String author;
    public Book(String isbnno, String name, String author) {
        this.isbnno = isbnno;
        this.name = name;
```

```
        this.author = author;
    }
    public String getIsbnno() {
        return isbnno;
    }
    public String getName() {
        return name;
    }

    public String getAuthor() {
        return author;
    }

}
```

JsonPlaceholderApi.java

```
package com.example.retrofitexample;
import java.util.List;
import retrofit2.Call;
import retrofit2.http.*;
public interface JsonPlaceHolderApi {
    @Headers({"Accept: application/json","Accept-Language:en-
US,en"})
    @GET("{username}")
    Call<List<Book>> getPost(@Path("username") String username);
}
```

7.2 Output Window



8 Develop android application to implement Google map.

8.1 Source Code

MapsActivity.java

```
package com.example.map;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import androidx.fragment.app.FragmentActivity;
import android.content.pm.PackageManager;
import android.location.*;
import android.os.Bundle;
import android.widget.Toast;
import com.google.android.gms.maps.*;
import com.google.android.gms.maps.model.*;
public class MapsActivity extends AppCompatActivity implements
OnMapReadyCallback {
    private GoogleMap mMap;
    private MapView mapView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_maps);
        mapView = findViewById(R.id.map_view);
        mapView.onCreate(savedInstanceState);
        mapView.getMapAsync(this);
        }

        @Override
```

```
    public void onMapReady(GoogleMap map) {
        mMap = map;
        LatLng sydney = new LatLng(-33.870453, 151.208755);
        mMap.addMarker(new
       MarkerOptions().position(sydney).title("Sydney"));
        CameraUpdate cameraUpdate =
        CameraUpdateFactory.newLatLngZoom(sydney, 15.0f);
        mMap.moveCamera(cameraUpdate);
        mMap.animateCamera(cameraUpdate);
        mMap.setMapType(GoogleMap.MAP_TYPE_SATELLITE);
    }
}
```

activity_maps.xml

```
 <RelativeLayout
 xmlns:android="http://schemas.android.com/apk/res/android"
 xmlns:tools="http://schemas.android.com/tools"
 android:layout_width="match_parent"
 android:layout_height="match_parent">
 <com.google.android.gms.maps.MapView
 android:id="@+id/map_view"
 android:layout_width="match_parent"
 android:layout_height="match_parent"
 tools:context=".MapsActivity" />
 </RelativeLayout>
```

8.2 Output Window