(Q).writing a Java Android program to demonstrate a ListView Activity with operations such as **Insert**, **Delete**, and **Search**.

//MainActivity.java

package com.example.listviewoperations;

import android.os.Bundle;

import android.text.Editable;

import android.text.TextWatcher;

import android.view.View;

import android.widget.ArrayAdapter;

import android.widget.Button;

import android.widget.EditText;

import android.widget.ListView;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

EditText inputField, searchField;

Button addButton, deleteButton;

ListView listView;

ArrayList<String> itemList;

ArrayAdapter<String> adapter;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

inputField = findViewById(R.id.inputField);

searchField = findViewById(R.id.searchField);

addButton = findViewById(R.id.addButton);

deleteButton = findViewById(R.id.deleteButton);

listView = findViewById(R.id.listView);

itemList = new ArrayList<>();

adapter = new ArrayAdapter<>(this, android.R.layout.simple\_list\_item\_1, itemList);

listView.setAdapter(adapter);

// Add item to list

addButton.setOnClickListener(v -> {

String item = inputField.getText().toString().trim();

if (!item.isEmpty()) {

itemList.add(item);

adapter.notifyDataSetChanged();

inputField.setText("");

}

});

// Delete item from list

deleteButton.setOnClickListener(v -> {

String item = inputField.getText().toString().trim();

if (itemList.contains(item)) {

itemList.remove(item);

adapter.notifyDataSetChanged();

inputField.setText("");

}

});

// Search functionality

searchField.addTextChangedListener(new TextWatcher() {

@Override

public void beforeTextChanged(CharSequence s, int start, int count, int after) {}

@Override

public void onTextChanged(CharSequence s, int start, int before, int count) {

adapter.getFilter().filter(s);

}

@Override

public void afterTextChanged(Editable s) {}

});

}

}

//Activity-Main.xml

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/inputField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter item"

android:inputType="text" />

<Button

android:id="@+id/addButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Add" />

<Button

android:id="@+id/deleteButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Delete" />

<EditText

android:id="@+id/searchField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Search"

android:inputType="text" />

<ListView

android:id="@+id/listView"

android:layout\_width="match\_parent"

android:layout\_height="0dp"

android:layout\_weight="1" />

</LinearLayout>

*(Q).Create an application to demonstrate a login form with validation,"* here is a complete solution for building an Android application in Java:

//MainActivity.java

package com.example.loginform;

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 emailField, passwordField;

Button loginButton;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

emailField = findViewById(R.id.emailField);

passwordField = findViewById(R.id.passwordField);

loginButton = findViewById(R.id.loginButton);

loginButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

String email = emailField.getText().toString().trim();

String password = passwordField.getText().toString().trim();

// Perform Validation

if (TextUtils.isEmpty(email)) {

emailField.setError("Email is required");

} else if (!android.util.Patterns.EMAIL\_ADDRESS.matcher(email).matches()) {

emailField.setError("Enter a valid email");

} else if (TextUtils.isEmpty(password)) {

passwordField.setError("Password is required");

} else if (password.length() < 6) {

passwordField.setError("Password must be at least 6 characters");

} else {

// Login success

Toast.makeText(MainActivity.this, "Login Successful!", Toast.LENGTH\_SHORT).show();

}

}

});

}

}

//.xml

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/emailField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Email"

android:inputType="textEmailAddress"

android:padding="10dp" />

<EditText

android:id="@+id/passwordField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Password"

android:inputType="textPassword"

android:padding="10dp" />

<Button

android:id="@+id/loginButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="LOGIN"

android:layout\_marginTop="20dp"

android:padding="10dp" />

</LinearLayout>

*(Q).Create an application which reads a person's greet message from one activity and displays the greet message on another activity on the click of a button (use Intent),"* here's a solution:

//Activity 1: MainActivity.java

package com.example.greetmessage;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

EditText messageField;

Button sendButton;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

messageField = findViewById(R.id.messageField);

sendButton = findViewById(R.id.sendButton);

sendButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

// Get the message

String message = messageField.getText().toString().trim();

// Send the message to SecondActivity

Intent intent = new Intent(MainActivity.this, SecondActivity.class);

intent.putExtra("GREETING\_MESSAGE", message);

startActivity(intent);

}

});

}

}

//Activity 2: SecondActivity.java

package com.example.greetmessage;

import android.os.Bundle;

import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class SecondActivity extends AppCompatActivity {

TextView displayMessage;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_second);

displayMessage = findViewById(R.id.displayMessage);

// Get the message from the Intent

String message = getIntent().getStringExtra("GREETING\_MESSAGE");

// Display the message

if (message != null && !message.isEmpty()) {

displayMessage.setText(message);

} else {

displayMessage.setText("No message received!");

}

}

}

**//activity\_main.xml** (For MainActivity)

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/messageField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter your greeting message"

android:inputType="text"

android:padding="10dp" />

<Button

android:id="@+id/sendButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Send Message"

android:layout\_marginTop="20dp"

android:padding="10dp" />

</LinearLayout>

**//activity\_second.xml** (For SecondActivity)

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<TextView

android:id="@+id/displayMessage"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Your message will appear here"

android:textSize="18sp"

android:padding="10dp"

android:gravity="center" />

</LinearLayout>

*(Q).Create an application to change font size, color, and font family of a string,"* here’s the complete solution.

//MainActivity.java

package com.example.changefont;

import android.graphics.Typeface;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.Spinner;

import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

TextView textView;

Spinner fontSizeSpinner, fontColorSpinner, fontFamilySpinner;

Button applyButton;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

textView = findViewById(R.id.textView);

fontSizeSpinner = findViewById(R.id.fontSizeSpinner);

fontColorSpinner = findViewById(R.id.fontColorSpinner);

fontFamilySpinner = findViewById(R.id.fontFamilySpinner);

applyButton = findViewById(R.id.applyButton);

applyButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

// Change font size

String selectedSize = fontSizeSpinner.getSelectedItem().toString();

float size = Float.parseFloat(selectedSize);

textView.setTextSize(size);

// Change font color

String selectedColor = fontColorSpinner.getSelectedItem().toString();

switch (selectedColor) {

case "Red":

textView.setTextColor(getResources().getColor(android.R.color.holo\_red\_dark));

break;

case "Blue":

textView.setTextColor(getResources().getColor(android.R.color.holo\_blue\_dark));

break;

case "Green":

textView.setTextColor(getResources().getColor(android.R.color.holo\_green\_dark));

break;

default:

textView.setTextColor(getResources().getColor(android.R.color.black));

break;

}

// Change font family

String selectedFont = fontFamilySpinner.getSelectedItem().toString();

switch (selectedFont) {

case "Sans Serif":

textView.setTypeface(Typeface.SANS\_SERIF);

break;

case "Serif":

textView.setTypeface(Typeface.SERIF);

break;

case "Monospace":

textView.setTypeface(Typeface.MONOSPACE);

break;

}

}

});

}

}

//activity\_main.xml

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<TextView

android:id="@+id/textView"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Hello, change my style!"

android:textSize="20sp"

android:gravity="center"

android:layout\_marginBottom="20dp" />

<Spinner

android:id="@+id/fontSizeSpinner"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:entries="@array/font\_sizes"

android:layout\_marginBottom="10dp" />

<Spinner

android:id="@+id/fontColorSpinner"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:entries="@array/font\_colors"

android:layout\_marginBottom="10dp" />

<Spinner

android:id="@+id/fontFamilySpinner"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:entries="@array/font\_families"

android:layout\_marginBottom="20dp" />

<Button

android:id="@+id/applyButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Apply Changes" />

</LinearLayout>

**//res/values/strings.xml**

Define the options for font size, color, and family in an arrays.xml file.

<resources>

<string-array name="font\_sizes">

<item>14</item>

<item>16</item>

<item>18</item>

<item>20</item>

<item>24</item>

</string-array>

<string-array name="font\_colors">

<item>Red</item>

<item>Blue</item>

<item>Green</item>

<item>Black</item>

</string-array>

<string-array name="font\_families">

<item>Sans Serif</item>

<item>Serif</item>

<item>Monospace</item>

</string-array>

</resources>

*(Q)Create an application for the registration form given below. Also perform appropriate validation,"* here's a solution

//MainActivity.java

package com.example.registrationform;

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 nameField, emailField, phoneField, passwordField, confirmPasswordField;

Button registerButton;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

nameField = findViewById(R.id.nameField);

emailField = findViewById(R.id.emailField);

phoneField = findViewById(R.id.phoneField);

passwordField = findViewById(R.id.passwordField);

confirmPasswordField = findViewById(R.id.confirmPasswordField);

registerButton = findViewById(R.id.registerButton);

registerButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

String name = nameField.getText().toString().trim();

String email = emailField.getText().toString().trim();

String phone = phoneField.getText().toString().trim();

String password = passwordField.getText().toString().trim();

String confirmPassword = confirmPasswordField.getText().toString().trim();

if (validateInputs(name, email, phone, password, confirmPassword)) {

Toast.makeText(MainActivity.this, "Registration Successful!", Toast.LENGTH\_SHORT).show();

}

}

});

}

private boolean validateInputs(String name, String email, String phone, String password, String confirmPassword) {

// Name validation

if (TextUtils.isEmpty(name)) {

nameField.setError("Name is required");

return false;

}

// Email validation

if (TextUtils.isEmpty(email)) {

emailField.setError("Email is required");

return false;

} else if (!android.util.Patterns.EMAIL\_ADDRESS.matcher(email).matches()) {

emailField.setError("Enter a valid email");

return false;

}

// Phone number validation

if (TextUtils.isEmpty(phone)) {

phoneField.setError("Phone number is required");

return false;

} else if (!phone.matches("\\d{10}")) {

phoneField.setError("Enter a valid 10-digit phone number");

return false;

}

// Password validation

if (TextUtils.isEmpty(password)) {

passwordField.setError("Password is required");

return false;

} else if (password.length() < 6) {

passwordField.setError("Password must be at least 6 characters");

return false;

}

// Confirm password validation

if (!password.equals(confirmPassword)) {

confirmPasswordField.setError("Passwords do not match");

return false;

}

return true;

}

}

//activity\_main.xml

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:padding="16dp">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:orientation="vertical">

<EditText

android:id="@+id/nameField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Name"

android:inputType="textPersonName"

android:padding="10dp" />

<EditText

android:id="@+id/emailField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Email"

android:inputType="textEmailAddress"

android:padding="10dp" />

<EditText

android:id="@+id/phoneField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Phone"

android:inputType="phone"

android:padding="10dp" />

<EditText

android:id="@+id/passwordField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Password"

android:inputType="textPassword"

android:padding="10dp" />

<EditText

android:id="@+id/confirmPasswordField"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Confirm Password"

android:inputType="textPassword"

android:padding="10dp" />

<Button

android:id="@+id/registerButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Register"

android:layout\_marginTop="20dp"

android:padding="10dp" />

</LinearLayout>

</ScrollView>

(Q). creating an Android application to accept a number and display the multiplication table using a table layout,

// MainActivity.java

package com.example.multiplicationtable;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TableLayout;

import android.widget.TableRow;

import android.widget.TextView;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

private EditText inputNumber;

private Button generateButton;

private TableLayout tableLayout;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

// Initialize views

inputNumber = findViewById(R.id.inputNumber);

generateButton = findViewById(R.id.generateButton);

tableLayout = findViewById(R.id.tableLayout);

generateButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

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

if (!input.isEmpty()) {

int number = Integer.parseInt(input);

generateTable(number);

} else {

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

}

}

});

}

private void generateTable(int number) {

// Clear the table layout before adding rows

tableLayout.removeAllViews();

for (int i = 1; i <= 10; i++) {

TableRow row = new TableRow(this);

row.setLayoutParams(new TableRow.LayoutParams(TableRow.LayoutParams.MATCH\_PARENT, TableRow.LayoutParams.WRAP\_CONTENT));

// Create TextViews for the table

TextView column1 = new TextView(this);

column1.setText(String.valueOf(number));

column1.setPadding(16, 16, 16, 16);

TextView column2 = new TextView(this);

column2.setText("x");

column2.setPadding(16, 16, 16, 16);

TextView column3 = new TextView(this);

column3.setText(String.valueOf(i));

column3.setPadding(16, 16, 16, 16);

TextView column4 = new TextView(this);

column4.setText("=");

column4.setPadding(16, 16, 16, 16);

TextView column5 = new TextView(this);

column5.setText(String.valueOf(number \* i));

column5.setPadding(16, 16, 16, 16);

// Add TextViews to the row

row.addView(column1);

row.addView(column2);

row.addView(column3);

row.addView(column4);

row.addView(column5);

// Add row to the table layout

tableLayout.addView(row);

}

}

}

// activity\_main.xml

<LinearLayout

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<!-- Input field for the number -->

<EditText

android:id="@+id/inputNumber"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter a number"

android:inputType="number"

android:padding="10dp" />

<!-- Button to generate table -->

<Button

android:id="@+id/generateButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Generate Table"

android:marginTop="16dp" />

<!-- TableLayout to display the multiplication table -->

<ScrollView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:marginTop="16dp">

<TableLayout

android:id="@+id/tableLayout"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:stretchColumns="0" />

</ScrollView>

</LinearLayout>

(Q).