Dr. D.Y. Patil Unitech Society's

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Department of Computer Science
2024-2025
Practical Assignment – 3

Class:- T.Y.B.C.A.(Science)

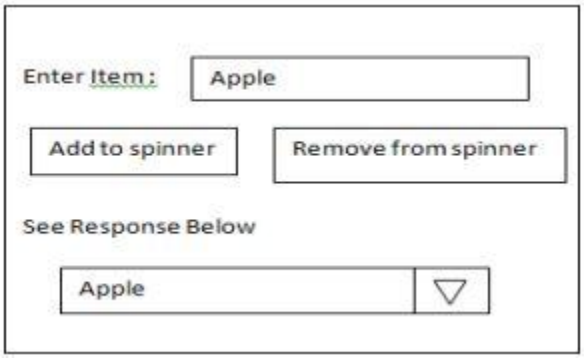
Subject:- Android Programming **Date:- 06/02/2025**

1. **Create a custom "Contact" layout to hold multiple pieces of information, including:Photo, Name, Contact Number, E-mail id.**

```
<?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="wrap_content"
    android:orientation="horizontal"
    android:padding="16dp">

    <!-- ImageView for the contact photo -->
    <ImageView
        android:id="@+id/contact_photo"
        android:layout_width="50dp"
        android:layout_height="50dp"
        android:src="@drawable/ic_person" <!-- Default placeholder image -->
        android:contentDescription="@string/contact_photo_description"
        android:layout_marginEnd="16dp"/>

    <!-- LinearLayout to hold the text views -->
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:orientation="vertical">

        <!-- TextView for the contact name -->
        <TextView
            android:id="@+id/contact_name"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Name"
            android:textSize="18sp"
```

```
            android:textStyle="bold"/>

        <!-- TextView for the contact number -->
        <TextView
            android:id="@+id/contact_number"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Contact Number"
            android:textSize="14sp"/>

        <!-- TextView for the email -->
        <TextView
            android:id="@+id/contact_email"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Email"
            android:textSize="14sp"/>
    </LinearLayout>
</LinearLayout>
```

2. **By using Spinner, Buttons. Write a program to draw following GUI**




```
<?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="20dp">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enter Item :"
```

```
    android:textSize="16sp"
    android:textStyle="bold" />

<EditText
    android:id="@+id/editText"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Enter item" />

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/btnAdd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Add to spinner" />

    <Button
        android:id="@+id/btnRemove"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Remove from spinner"
        android:layout_marginLeft="10dp"/>
</LinearLayout>

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="See Response Below"
    android:textSize="16sp"
    android:textStyle="bold"
    android:layout_marginTop="10dp"/>

<Spinner
    android:id="@+id/spinner"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

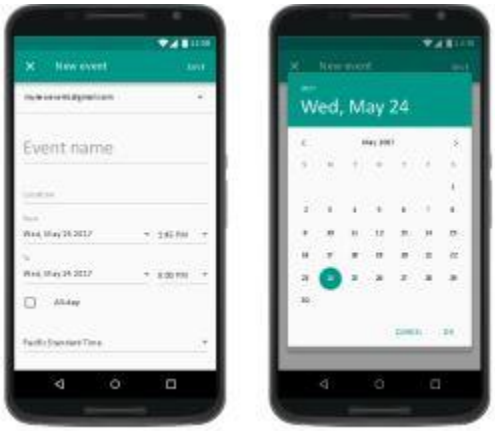
```
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.spinnerdemo;

import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    EditText editText;
    Button btnAdd, btnRemove;
    Spinner spinner;
    ArrayList<String> itemList;
    ArrayAdapter<String> adapter;

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

        editText = findViewById(R.id.editText);
        btnAdd = findViewById(R.id.btnAdd);
        btnRemove = findViewById(R.id.btnRemove);
        spinner = findViewById(R.id.spinner);

        itemList = new ArrayList<>();
        adapter = new ArrayAdapter<>(this,
android.R.layout.simple_spinner_dropdown_item, itemList);
        spinner.setAdapter(adapter);
```

```
        btnAdd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String item = editText.getText().toString().trim();
                if (!item.isEmpty() && !itemList.contains(item)) {
                    itemList.add(item);
                    adapter.notifyDataSetChanged();
                    editText.setText("");  // Clear input
                } else {
                    Toast.makeText(MainActivity.this, "Item already exists or is empty",
Toast.LENGTH_SHORT).show();
                }
            }
        });

        btnRemove.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String item = editText.getText().toString().trim();
                if (itemList.contains(item)) {
                    itemList.remove(item);
                    adapter.notifyDataSetChanged();
                    editText.setText("");  // Clear input
                } else {
                    Toast.makeText(MainActivity.this, "Item not found",
Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

3. **Create application to demonstrate date and time picker.**



MainActivity.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="20dp">

    <TextView
        android:id="@+id/textViewDateTime"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Select Date & Time"
        android:textSize="18sp"
        android:textStyle="bold"
        android:gravity="center"
        android:padding="10dp" />

    <Button
        android:id="@+id/btnPickDate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Pick Date"
        android:layout_marginTop="10dp"/>

    <Button
        android:id="@+id/btnPickTime"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Pick Time"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.datetimepicker;

import android.app.DatePickerDialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {

    TextView textViewDateTime;
    Button btnPickDate, btnPickTime;
    int year, month, day, hour, minute;

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

        textViewDateTime = findViewById(R.id.textViewDateTime);
        btnPickDate = findViewById(R.id.btnPickDate);
        btnPickTime = findViewById(R.id.btnPickTime);

        Calendar calendar = Calendar.getInstance();
        year = calendar.get(Calendar.YEAR);
```

```
    month = calendar.get(Calendar.MONTH);
    day = calendar.get(Calendar.DAY_OF_MONTH);
    hour = calendar.get(Calendar.HOUR_OF_DAY);
    minute = calendar.get(Calendar.MINUTE);

    btnPickDate.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            DatePickerDialog datePickerDialog = new DatePickerDialog(
                    MainActivity.this,
                    (view, selectedYear, selectedMonth, selectedDay) -> {
                        year = selectedYear;
                        month = selectedMonth;
                        day = selectedDay;
                        updateDateTimeText();
                    },
                    year, month, day
            );
            datePickerDialog.show();
        }
    });

    btnPickTime.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            TimePickerDialog timePickerDialog = new TimePickerDialog(
                    MainActivity.this,
                    (view, selectedHour, selectedMinute) -> {
                        hour = selectedHour;
                        minute = selectedMinute;
                        updateDateTimeText();
                    },
                    hour, minute, false
            );
            timePickerDialog.show();
        }
    });
}

private void updateDateTimeText() {
```

```
        String dateTime = "Selected Date & Time: " + day + "/" + (month + 1) + "/" +
year + " " + hour + ":" + minute;
        textViewDateTime.setText(dateTime);
    }
}
```

4. **Construct an app that toggles a light bulb on and off when the user clicks on toggle button.**

MainActivit.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"
    android:padding="20dp">

    <ImageView
        android:id="@+id/imageViewBulb"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:src="@drawable/bulb_off"/>

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textOn="Turn OFF"
        android:textOff="Turn ON"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.lightbulbtoggle;

import android.os.Bundle;
import android.widget.ImageView;
import android.widget.ToggleButton;
```

```
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    ToggleButton toggleButton;
    ImageView imageViewBulb;

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

        toggleButton = findViewById(R.id.toggleButton);
        imageViewBulb = findViewById(R.id.imageViewBulb);

        imageViewBulb.setImageResource(R.drawable.bulb_off);

        toggleButton.setOnCheckedChangeListener((buttonView, isChecked) -> {
            if (isChecked) {
                imageViewBulb.setImageResource(R.drawable.bulb_on);
            } else {
                imageViewBulb.setImageResource(R.drawable.bulb_off);
            }
        });
    }
}
```

5. **Create registration form given below. Also perform appropriate validation and display the message using dialog fragment.**


```
<?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"
    android:background="#E8F5E9">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Registration"
        android:textSize="20sp"
        android:gravity="center"
        android:padding="10dp"
        android:background="#A5D6A7"
        android:textColor="#000"/>

    <EditText
        android:id="@+id/etName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Name"/>

    <EditText
        android:id="@+id/etEmail"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
        android:hint="E-mail"
        android:inputType="textEmailAddress"/>

    <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword"/>

    <EditText
        android:id="@+id/etAge"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Age"
        android:inputType="number"/>

    <EditText
        android:id="@+id/etMobile"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Mobile No"
        android:inputType="phone"/>

    <Button
        android:id="@+id/btnRegister"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Register"
        android:background="#4CAF50"
        android:textColor="#FFF"
        android:padding="10dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.registrationform;

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;
import androidx.fragment.app.FragmentManager;

public class MainActivity extends AppCompatActivity {

    private EditText etName, etEmail, etPassword, etAge, etMobile;
    private Button btnRegister;

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

        etName = findViewById(R.id.etName);
        etEmail = findViewById(R.id.etEmail);
        etPassword = findViewById(R.id.etPassword);
        etAge = findViewById(R.id.etAge);
        etMobile = findViewById(R.id.etMobile);
        btnRegister = findViewById(R.id.btnRegister);

        btnRegister.setOnClickListener(view -> validateAndRegister());
    }

    private void validateAndRegister() {
        String name = etName.getText().toString().trim();
        String email = etEmail.getText().toString().trim();
        String password = etPassword.getText().toString().trim();
        String ageStr = etAge.getText().toString().trim();
        String mobile = etMobile.getText().toString().trim();

        if (TextUtils.isEmpty(name)) {
            etName.setError("Name is required");
            return;
        }
        if (!Patterns.EMAIL_ADDRESS.matcher(email).matches()) {
```

```
            etEmail.setError("Invalid email");
            return;
        }
        if (password.length() < 6) {
            etPassword.setError("Password must be at least 6 characters");
            return;
        }
        if (TextUtils.isEmpty(ageStr) || Integer.parseInt(ageStr) < 18) {
            etAge.setError("Age must be 18 or older");
            return;
        }
        if (!mobile.matches("\\d{10}")) {
            etMobile.setError("Enter a valid 10-digit mobile number");
            return;
        }

        FragmentManager fm = getSupportFragmentManager();
        SuccessDialogFragment dialogFragment =
SuccessDialogFragment.newInstance(name);
        dialogFragment.show(fm, "success_dialog");
    }
}
```

6. **Construct image switcher using setFactory().**

```
<?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"
    android:padding="16dp">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Image Switcher"
        android:textSize="20sp"
        android:textStyle="bold"
        android:layout_marginBottom="20dp"/>
```

```
    <ImageSwitcher
        android:id="@+id/imageSwitcher"
        android:layout_width="300dp"
        android:layout_height="300dp"
        android:background="#E0E0E0"/>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginTop="20dp">

        <Button
            android:id="@+id/btnPrev"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Previous"/>

        <Button
            android:id="@+id/btnNext"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Next"
            android:layout_marginLeft="10dp"/>
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```
package com.example.imageswitcher;

import android.os.Bundle;
import android.view.View;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageSwitcher;
import android.widget.ImageView;
import android.widget.ViewSwitcher;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
```

```
    private ImageSwitcher imageSwitcher;
    private Button btnNext, btnPrev;
    private int[] images = {R.drawable.image1, R.drawable.image2,
R.drawable.image3, R.drawable.image4};
    private int currentIndex = 0;

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

        imageSwitcher = findViewById(R.id.imageSwitcher);
        btnNext = findViewById(R.id.btnNext);
        btnPrev = findViewById(R.id.btnPrev);

        imageSwitcher.setFactory(new ViewSwitcher.ViewFactory() {
            @Override
            public View makeView() {
                ImageView imageView = new ImageView(getApplicationContext());
                imageView.setScaleType(ImageView.ScaleType.FIT_CENTER);
                imageView.setLayoutParams(new ImageSwitcher.LayoutParams(
                        ImageSwitcher.LayoutParams.MATCH_PARENT,
                        ImageSwitcher.LayoutParams.MATCH_PARENT));
                return imageView;
            }
        });

        imageSwitcher.setImageResource(images[currentIndex]);

        imageSwitcher.setInAnimation(AnimationUtils.loadAnimation(this,
android.R.anim.fade_in));
        imageSwitcher.setOutAnimation(AnimationUtils.loadAnimation(this,
android.R.anim.fade_out));

        btnNext.setOnClickListener(view -> {
            currentIndex = (currentIndex + 1) % images.length;
            imageSwitcher.setImageResource(images[currentIndex]);
        });
```

```
        btnPrev.setOnClickListener(view -> {
            currentIndex = (currentIndex - 1 + images.length) % images.length;
            imageSwitcher.setImageResource(images[currentIndex]);
        });
    }
}
```

7. **Construct a bank app to display different menu like windrow, deposite etc.**

```
<?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"
    android:padding="16dp">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="🏦 Welcome to My Bank"
        android:textSize="20sp"
        android:textStyle="bold"
        android:layout_marginBottom="20dp"/>

    <ListView
        android:id="@+id/listViewMenu"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:divider="@android:color/darker_gray"
        android:dividerHeight="1dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.bankapp;

import android.app.AlertDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
```

```
import android.widget.ArrayAdapter;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private ListView listViewMenu;
    private String[] menuOptions = {"Withdraw", "Deposit", "Check Balance",
"Exit"};
    private double accountBalance = 1000.0;

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

        listViewMenu = findViewById(R.id.listViewMenu);

        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
android.R.layout.simple_list_item_1, menuOptions);
        listViewMenu.setAdapter(adapter);

        listViewMenu.setOnItemClickListener((AdapterView<?> parent, View view, int
position, long id) -> {
            switch (position) {
                case 0: // Withdraw
                    showTransactionDialog("Withdraw");
                    break;
                case 1: // Deposit
                    showTransactionDialog("Deposit");
                    break;
                case 2: // Check Balance
                    showBalance();
                    break;
                case 3: // Exit
                    finish();
                    break;
```

```
        }
    });
}

private void showTransactionDialog(String transactionType) {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setTitle(transactionType);

    final EditText input = new EditText(this);
    input.setHint("Enter amount");
    builder.setView(input);

    builder.setPositiveButton("OK", (dialog, which) -> {
        String amountStr = input.getText().toString();
        if (!amountStr.isEmpty()) {
            double amount = Double.parseDouble(amountStr);
            if (transactionType.equals("Withdraw")) {
                withdrawAmount(amount);
            } else {
                depositAmount(amount);
            }
        } else {
            Toast.makeText(this, "Enter a valid amount",
Toast.LENGTH_SHORT).show();
        }
    });

    builder.setNegativeButton("Cancel", (dialog, which) -> dialog.dismiss());
    builder.show();
}

private void withdrawAmount(double amount) {
    if (amount > accountBalance) {
        Toast.makeText(this, "Insufficient Balance!",
Toast.LENGTH_SHORT).show();
    } else {
        accountBalance -= amount;
        Toast.makeText(this, "Withdrawn: $" + amount,
Toast.LENGTH_SHORT).show();
    }
```

```
    }

    private void depositAmount(double amount) {
        accountBalance += amount;
        Toast.makeText(this, "Deposited: $" + amount,
Toast.LENGTH_SHORT).show();
    }

    private void showBalance() {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setTitle("Account Balance");
        builder.setMessage("Your current balance is: $" + accountBalance);
        builder.setPositiveButton("OK", (dialog, which) -> dialog.dismiss());
        builder.show();
    }
}
```

8. **Construct an app to display the image on date wise.**

9. **Create a custom launcher icon.**
10. **Create application to demonstrate file explorer (Use ListView).**