PART A

1. Design four checkboxes namely any four food items and one button. Find total amount of food items selected in Toast message after clicking the button.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
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="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:padding="20dp"
    android:orientation="vertical"
    tools:context=".CheckBoxesActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Choose your food items"
        android:textSize="20sp"
        android:textColor="#000"
        android:layout_marginBottom="10dp"/>
    <CheckBox
        android:id="@+id/biscuit_cb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Biscuit ----- Rs. 10"
        android:textSize="18sp" />
    <CheckBox
        android:id="@+id/bread_cb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Bread ----- Rs. 20"
        android:textSize="18sp" />
    <CheckBox
        android:id="@+id/cake_cb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Cake ----- Rs. 25"
        android:textSize="18sp" />
    <CheckBox
        android:id="@+id/chips_cb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Chips ----- Rs. 5"
        android:textSize="18sp" />
    <Button
        android:id="@+id/order_btn"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Order" />
</LinearLayout>
```

```
package com.example.see_part_a;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.Toast;
public class CheckBoxesActivity extends AppCompatActivity {
    CheckBox biscuitCb, breadCb, cakeCb, chipsCb;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_check_boxes);
        biscuitCb = findViewById(R.id.biscuit_cb);
        breadCb = findViewById(R.id.bread_cb);
        cakeCb = findViewById(R.id.cake_cb);
        chipsCb = findViewById(R.id.chips_cb);
        btn = findViewById(R.id.order_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int cost = 0;
                if(biscuitCb.isChecked())
                    cost += 10;
                if(breadCb.isChecked())
                    cost += 20;
                if(cakeCb.isChecked())
                    cost += 25;
                if(chipsCb.isChecked())
                    cost += 5;
                Toast.makeText(getApplicationContext(), "Total Cost:
" + cost, Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

2. Create an application which generates a random color on each click.

```
<?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"
    android:id="@+id/random_color_layout"
    tools:context=".RandomColorClickActivity">
    <Button
        android:id="@+id/random_color_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Generate Random Color"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.util.Random;
public class RandomColorClickActivity extends AppCompatActivity {
    Button btn;
    ConstraintLayout layout;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_random_color_click);
        layout = findViewById(R.id.random_color_layout);
        btn = findViewById(R.id.random_color_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Random random = new Random();
                int r = random.nextInt(256);
                int g = random.nextInt(256);
                int b = random.nextInt(256);
                layout.setBackgroundColor(Color.rgb(r, g, b));
            }
        });
    }
}
```

3. Implement option menu concept in application to choose between two activities.

```
package com.example.see_part_a;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
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) {
        super.onCreateOptionsMenu(menu);
        getMenuInflater().inflate(R.menu.activity_menu, menu);
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        super.onOptionsItemSelected(item);
        switch (item.getItemId()) {
            case R.id.checkboxes_pgm:
                startActivity(new Intent(getApplicationContext(),
CheckBoxesActivity.class));
                return true;
            case R.id.random_color_click_pgm:
                startActivity(new Intent(getApplicationContext(),
RandomColorClickActivity.class));
                return true;
            default: return false;
        }
    }
}
```

4. Implement context menu concept in application to change the background color.

```
<?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"
    android:id="@+id/context_menu_layout"
    tools:context=".ContextMenuActivity">
    <TextView
        android:id="@+id/choose_color_tv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Choose color"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.graphics.Color;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.MenuItem;
import android.view.View;
import android.widget.TextView;
public class ContextMenuActivity extends AppCompatActivity {
    ConstraintLayout layout;
    TextView chooseColorTv;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_context_menu);
        layout = findViewById(R.id.context_menu_layout);
        chooseColorTv = findViewById(R.id.choose_color_tv);
        registerForContextMenu(chooseColorTv);
    }
    @Override
    public void onCreateContextMenu(ContextMenu menu, View v,
ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        getMenuInflater().inflate(R.menu.context_menu, menu);
    }
    @Override
    public boolean onContextItemSelected(MenuItem item) {
        super.onContextItemSelected(item);
        chooseColorTv.setTextColor(Color.WHITE);
        switch (item.getItemId()) {
            case R.id.red:
                layout.setBackgroundColor(Color.RED);
                return true;
```

```
            case R.id.blue:
                layout.setBackgroundColor(Color.BLUE);
                return true;
            case R.id.green:
                layout.setBackgroundColor(Color.GREEN);
                return true;
            default: return false;
        }
    }
}
```

5. Write an application to send SMS using Intent class.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:orientation="vertical"
    android:padding="20dp"
    tools:context=".SMSActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:text="Enter SMS details"
        android:textColor="#000"
        android:layout_marginBottom="10dp" />
    <EditText
        android:id="@+id/sms_phone_no"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="phone"
        android:hint="Phone number" />
    <EditText
        android:id="@+id/sms_message"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="Message" />
    <Button
        android:id="@+id/sms_send_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
        android:text="Send" />
</LinearLayout>
```

```
package com.example.see_part_a;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class SMSActivity extends AppCompatActivity {
    EditText phoneInput, msgInput;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_sms);
        phoneInput = findViewById(R.id.sms_phone_no);
        msgInput = findViewById(R.id.sms_message);
        btn = findViewById(R.id.sms_send_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(Intent.ACTION_VIEW,
Uri.parse("sms:" + phoneInput.getText().toString()));
                i.putExtra("sms_body",
msgInput.getText().toString());
                startActivity(i);
            }
        });
    }
}
```

Implement phone call concept in application by passing number from the user.

```
<?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=".PhoneCallActivity">
    <EditText
        android:id="@+id/phone_call_no"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:ems="10"
        android:inputType="phone"
        android:hint="Phone number"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <Button
        android:id="@+id/phone_call_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="24dp"
        android:text="Call"
        app:layout_constraintEnd_toEndOf="@+id/phone_call_no"
        app:layout_constraintStart_toStartOf="@+id/phone_call_no"
        app:layout_constraintTop_toBottomOf="@+id/phone_call_no" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
    package com.example.see_part_a;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.Manifest;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class PhoneCallActivity extends AppCompatActivity {
    EditText phoneInput;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_phone_call);
        phoneInput = findViewById(R.id.phone_call_no);
        btn = findViewById(R.id.phone_call_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

ActivityCompat.requestPermissions(PhoneCallActivity.this, new
String[] {Manifest.permission.CALL_PHONE}, 1);
                Intent i = new Intent(Intent.ACTION_CALL);
                i.setData(Uri.parse("tel:" +
phoneInput.getText().toString()));
                try {
                    startActivity(i);
                } catch (Exception e) {
```

```
                Toast.makeText(getApplicationContext(), "Cannot
call!", Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}



<uses-permission android:name="android.permission.CALL_PHONE" />
```

Demonstrate the sending of an email with the help of a registered email client on your android phone.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:orientation="vertical"
    android:padding="20dp"
    tools:context=".EmailActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Enter Email details"
        android:textSize="20sp"
        android:textColor="#000"
        android:layout_marginBottom="10dp" />
    <EditText
        android:id="@+id/email_id"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:inputType="textEmailAddress"
        android:hint="Email" />
    <EditText
        android:id="@+id/email_subject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="Subject" />
```

```
    <EditText
        android:id="@+id/email_msg"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="Message" />
    <Button
        android:id="@+id/email_send_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Send" />
</LinearLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class EmailActivity extends AppCompatActivity {
    EditText emailInput, subjectInput, msgInput;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_email);
        emailInput = findViewById(R.id.email_id);
        subjectInput = findViewById(R.id.email_subject);
        msgInput = findViewById(R.id.email_msg);
        btn = findViewById(R.id.email_send_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(Intent.ACTION_SENDTO);
                i.setData(Uri.parse("mailto:" +
emailInput.getText().toString()));
                i.putExtra(Intent.EXTRA_SUBJECT,
subjectInput.getText().toString());
                i.putExtra(Intent.EXTRA_TEXT,
msgInput.getText().toString());
                startActivity(i);
            }
        });
    }
}
```

Write an application to make a dialogue box to confirm the change of background color or image.

```
<?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"
    android:id="@+id/dialog_box_layout"
    tools:context=".DialogBoxActivity">
    <Button
        android:id="@+id/dialog_box_change_bg_color_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Background Color"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <Button
        android:id="@+id/dialog_box_change_bg_img_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="8dp"
        android:text="Change Background Image"

app:layout_constraintEnd_toEndOf="@+id/dialog_box_change_bg_color_
btn"

app:layout_constraintStart_toStartOf="@+id/dialog_box_change_bg_co
lor_btn"

app:layout_constraintTop_toBottomOf="@+id/dialog_box_change_bg_col
or_btn" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.content.DialogInterface;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.util.Random;
public class DialogBoxActivity extends AppCompatActivity {
    ConstraintLayout layout;
```

```
    Button colorBtn, imgBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_dialog_box);
        layout = findViewById(R.id.dialog_box_layout);
        colorBtn =
findViewById(R.id.dialog_box_change_bg_color_btn);
        imgBtn = findViewById(R.id.dialog_box_change_bg_img_btn);
        colorBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                AlertDialog.Builder builder = new
AlertDialog.Builder(DialogBoxActivity.this);
                builder.setTitle("Confirm change");
                builder.setMessage("Are you sure you want to change
background color?");
                builder.setPositiveButton("Yes", new
DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int
which) {
                        Random random = new Random();

layout.setBackgroundColor(Color.rgb(random.nextInt(256),
random.nextInt(256), random.nextInt(256)));
                    }
                });
                builder.setNegativeButton("No", new
DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int
which) {
                        // do nothing
                    }
                });
                builder.show();
            }
        });
        imgBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                AlertDialog.Builder builder = new
AlertDialog.Builder(DialogBoxActivity.this);
                builder.setTitle("Confirm change");
                builder.setMessage("Are you sure you want to change
background image?");
                builder.setPositiveButton("Yes", new
DialogInterface.OnClickListener() {
                    @Override
```

```
                public void onClick(DialogInterface dialog, int
which) {

layout.setBackgroundResource(R.drawable.wallpaper);
                }
            });
            builder.setNegativeButton("No", new
DialogInterface.OnClickListener() {
                @Override
                public void onClick(DialogInterface dialog, int
which) {
                    // do nothing
                }
            });
            builder.show();
        }
    });
  }
}
```

Write an app to read phone status and phone number using telephony API.

```
<?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">
    <TextView
        android:id="@+id/phone_no"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        android:textSize="20sp"
        android:textColor="#000" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_telephony;
import androidx.annotation.NonNull;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.Manifest;
import android.content.Context;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.PhoneStateListener;
import android.telephony.TelephonyManager;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    TextView phoneTxt;
    TelephonyManager manager;
    PhoneStateListener listener;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        phoneTxt = findViewById(R.id.phone_no);
        ActivityCompat.requestPermissions(MainActivity.this, new
String[] { Manifest.permission.READ_PHONE_STATE }, 1);
        manager = (TelephonyManager)
getSystemService(Context.TELEPHONY_SERVICE);
        if(ActivityCompat.checkSelfPermission(this,
Manifest.permission.READ_PHONE_STATE) !=
PackageManager.PERMISSION_GRANTED &&
                ActivityCompat.checkSelfPermission(this,
Manifest.permission.READ_PHONE_NUMBERS) !=
PackageManager.PERMISSION_GRANTED
        ) {
            return;
        }
        phoneTxt.setText("Phone number: " +
manager.getLine1Number());
        listener = new PhoneStateListener() {
            @Override
            public void onCallStateChanged(int state, String
phoneNumber) {
                super.onCallStateChanged(state, phoneNumber);
                if(state == TelephonyManager.CALL_STATE_IDLE) {
                    Toast.makeText(getApplicationContext(), "Phone is
idle", Toast.LENGTH_SHORT).show();
                } else if(state ==
TelephonyManager.CALL_STATE_RINGING) {
                    Toast.makeText(getApplicationContext(), "Phone
call from " + phoneNumber, Toast.LENGTH_SHORT).show();
                } else if (state ==
TelephonyManager.CALL_STATE_OFFHOOK) {
                    Toast.makeText(getApplicationContext(), "In call",
Toast.LENGTH_SHORT).show();
                }
```

```
            }
        };
        manager.listen(listener,
PhoneStateListener.LISTEN_CALL_STATE);
    }
}
```

```
<uses-permission
android:name="android.permission.READ_PHONE_STATE"></uses-
permission>
```

```
<uses-permission
android:name="android.permission.READ_PHONE_NUMBERS"></uses-
permission>
```

Write an app to capture the image using camera and set it as background for your app.

```
<?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"
    android:id="@+id/background_image_layout"
    tools:context=".BackgroundImageActivity">
    <Button
        android:id="@+id/capture_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Capture and set background"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_part_a;
```

```
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.content.Intent;
import android.graphics.Bitmap;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
```

```
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
public class BackgroundImageActivity extends AppCompatActivity {
    ConstraintLayout layout;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_background_image);
        layout = findViewById(R.id.background_image_layout);
        btn = findViewById(R.id.capture_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                startActivityForResult(new
Intent(MediaStore.ACTION_IMAGE_CAPTURE), 1);
            }
        });
    }
    @Override
    protected void onActivityResult(int requestCode, int
resultCode, @Nullable Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if(requestCode == 1 && resultCode == RESULT_OK) {
            Bitmap image = (Bitmap) data.getExtras().get("data");
            BitmapDrawable drawable = new BitmapDrawable(image);
            layout.setBackground(drawable);
        }
    }
}
```

PART B

Implement an AsyncTask to count from 1 to 1000 in the background and the display the progress using progress bar on the screen.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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="wrap_content"
    android:layout_height="wrap_content"
```

```
    android:layout_gravity="center"
    android:orientation="vertical"
    android:padding="20dp"
    tools:context=".AsyncTaskActivity">
    <TextView
        android:id="@+id/async_progress_txt"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Async Progress"
        android:textSize="20sp"
        android:textColor="#000"
        android:layout_marginBottom="10dp" />
    <ProgressBar
        android:id="@+id/async_progressBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="250dp"
        android:layout_height="wrap_content" />
    <Button
        android:id="@+id/async_start_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Start"
        android:layout_marginTop="10dp" />
</LinearLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ProgressBar;
import android.widget.TextView;
import android.widget.Toast;
public class AsyncTaskActivity extends AppCompatActivity {
    TextView progressTxt;
    ProgressBar progressBar;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_async_task);
        progressTxt = findViewById(R.id.async_progress_txt);
        progressBar = findViewById(R.id.async_progressBar);
        btn = findViewById(R.id.async_start_btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                progressBar.setMax(1000);
                new Task().execute("1000");
```

```
            btn.setVisibility(View.INVISIBLE);
        }
    });
}
class Task extends AsyncTask<String, Integer, String> {
    @Override
    protected String doInBackground(String... strings) {
        int max = Integer.parseInt(strings[0]);
        for(int i = 1; i <= 1000; ++i) {
            try {
                Thread.sleep(100);
            } catch (Exception e) {
                e.printStackTrace();
            }
            publishProgress(i);
        }
        return "Successful";
    }
    @Override
    protected void onProgressUpdate(Integer... values) {
        super.onProgressUpdate(values);
        progressBar.setProgress(values[0]);
        progressTxt.setText("Progress: " + values[0]);
    }
    @Override
    protected void onPostExecute(String s) {
        super.onPostExecute(s);
        Toast.makeText(getApplicationContext(), s,
Toast.LENGTH_SHORT).show();
        btn.setVisibility(View.VISIBLE);
    }
}
}
```

Implement a service concept to play the music in the background for long duration and perform a foreground job.

```
<?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">
    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:layout_editor_absoluteX="157dp">
        <Button
            android:id="@+id/start_music_btn"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="20dp"
            android:layout_marginRight="20dp"
            android:text="Start" />
        <Button
            android:id="@+id/stop_music_btn"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="20dp"
            android:layout_marginRight="20dp"
            android:text="Stop" />
    </LinearLayout>
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="My Music"
        android:textSize="30sp"
        app:layout_constraintBottom_toTopOf="@+id/linearLayout"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.musicservice;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    Button startBtn, stopBtn;
    Intent service;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        startBtn = findViewById(R.id.start_music_btn);
        stopBtn = findViewById(R.id.stop_music_btn);
        service = new Intent(MainActivity.this,
BackgroundService.class);
        startBtn.setOnClickListener(new View.OnClickListener() {
```

```
            @Override
            public void onClick(View v) {
                startService(service);
            }
        });
        stopBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                stopService(service);
            }
        });
    }
}
```

```
package com.example.musicservice;
```

```
import android.app.Service;
import android.content.Intent;
import android.media.MediaPlayer;
import android.os.IBinder;
import androidx.annotation.Nullable;
public class BackgroundService extends Service {
    MediaPlayer mediaPlayer;
    @Override
    public void onCreate() {
        super.onCreate();
        mediaPlayer = MediaPlayer.create(getApplicationContext(),
R.raw.two_steps_from_hell);
    }
    @Override
    public void onStart(Intent intent, int startId) {
        super.onStart(intent, startId);
        if(!mediaPlayer.isPlaying())
            mediaPlayer.start();
    }
    @Override
    public void onDestroy() {
        super.onDestroy();
        if(mediaPlayer.isPlaying())
            mediaPlayer.stop();
        mediaPlayer.release();
    }
    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }
}
```

```
<service                    android:name=".BackgroundService"
    android:enabled="true"></service>
```

Implement broadcast receiver...

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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"
    android:orientation="vertical"
    android:padding="20dp"
    android:id="@+id/battery_lvl_layout"
    tools:context=".BatteryLvlActivity">
    <TextView
        android:id="@+id/battery_lvl_txt"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Battery Level: "
        android:textSize="20sp"
        android:textColor="#000" />
    <ProgressBar
        android:id="@+id/battery_lvl_progressBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:max="100"
        android:layout_marginTop="20dp" />
</LinearLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.graphics.Color;
import android.os.BatteryManager;
import android.os.Bundle;
import android.widget.LinearLayout;
import android.widget.ProgressBar;
import android.widget.TextView;
public class BatteryLvlActivity extends AppCompatActivity {
    LinearLayout layout;
    TextView batteryLvlTxt;
    ProgressBar progressBar;
    BroadcastReceiver receiver;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_battery_lvl);
        layout = findViewById(R.id.battery_lvl_layout);
        batteryLvlTxt = findViewById(R.id.battery_lvl_txt);
        progressBar = findViewById(R.id.battery_lvl_progressBar);
        receiver = new BroadcastReceiver() {
            @Override
            public void onReceive(Context context, Intent intent) {
                int lvl =
intent.getIntExtra(BatteryManager.EXTRA_LEVEL, 0);
                progressBar.setProgress(lvl);
                batteryLvlTxt.setText("Battery Level: " + lvl + "
%");
                if(lvl > 60)
                    layout.setBackgroundColor(Color.GREEN);
                else if(lvl > 30)
                    layout.setBackgroundColor(Color.BLUE);
                else if(lvl > 10 && lvl <= 20)
                    layout.setBackgroundColor(Color.RED);
            }
        };
    }
    @Override
    protected void onStart() {
        super.onStart();
        registerReceiver(receiver, new
IntentFilter(Intent.ACTION_BATTERY_CHANGED));
    }
}
```

Write an application to toast your joining date and course selected for engineering using date picker and list view.

```
<?xml version="1.0" encoding="utf-8"?>
<TextView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="List Item"
    android:textSize="18sp"
    android:padding="10dp"
    android:textColor="#000" />
```

```
<?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=".JoinDateCourseActivity">
    <DatePicker
        android:id="@+id/date_picker"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:calendarViewShown="false"
        android:datePickerMode="spinner"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <ListView
        android:id="@+id/list_view"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/date_picker" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_part_a;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.DatePicker;
import android.widget.ListView;
import android.widget.Toast;
import java.util.ArrayList;
public class JoinDateCourseActivity extends AppCompatActivity {
    DatePicker dp;
    ListView lv;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_join_date_course);
        dp = findViewById(R.id.date_picker);
        lv = findViewById(R.id.list_view);
        String[] items = { "CSE", "ISE", "ME", "EC", "EE" };
        final ArrayAdapter<String> adapter = new
ArrayAdapter<>(this, R.layout.list_item, items);
        lv.setAdapter(adapter);
        lv.setOnItemClickListener(new
AdapterView.OnItemClickListener() {
```

```
        @Override
        public void onItemClick(AdapterView<?> parent, View
view, int position, long id) {
            String item = adapter.getItem(position);
            int day = dp.getDayOfMonth();
            int month = dp.getMonth() + 1;
            int year = dp.getYear();
            String msg = "Course: " + item + "\nJoining date: " +
day + "/" + month + "/" + year;
            Toast.makeText(getApplicationContext(), msg,
Toast.LENGTH_SHORT).show();
        }
    });
  }
}
```

Implement web view concept in application which contains multiple activity and default HTML pages.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   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="wrap_content"
   android:layout_height="wrap_content"
   android:layout_gravity="center"
   android:padding="20dp"
   android:orientation="vertical"
   tools:context=".MainActivity">
   <TextView
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Enter web site"
      android:layout_marginBottom="10dp"
      android:textColor="#000"
      android:textSize="20sp" />
   <EditText
      android:id="@+id/web_site"
      android:layout_width="300dp"
      android:layout_height="wrap_content"
      android:hint="Website" />
   <Button
      android:id="@+id/open_web_site_btn"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
```

```
        android:text="Open" />
    <Button
        android:id="@+id/open_default_web_site_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Open Default"
        android:layout_marginTop="20dp" />
</LinearLayout>
```

```
package com.example.see_webview;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    EditText websiteInput;
    Button openBtn, openDefaultBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        websiteInput = findViewById(R.id.web_site);
        openBtn = findViewById(R.id.open_web_site_btn);
        openDefaultBtn =
findViewById(R.id.open_default_web_site_btn);
        openBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(MainActivity.this,
WebViewActivity.class);
                i.putExtra("website",
websiteInput.getText().toString());
                startActivity(i);
            }
        });
        openDefaultBtn.setOnClickListener(new View.OnClickListener()
{
            @Override
            public void onClick(View v) {
                Intent i = new Intent(MainActivity.this,
WebViewActivity.class);
                i.putExtra("website", "http://guru.nmamit.in");
                startActivity(i);
            }
        });
    }
}
```

```
<?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=".WebViewActivity">
    <WebView
        android:id="@+id/web_view"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.see_webview;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.webkit.WebView;
import android.webkit.WebViewClient;
public class WebViewActivity extends AppCompatActivity {
    WebView webView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_web_view);
        webView = findViewById(R.id.web_view);
        String website =
getIntent().getExtras().getString("website");
        webView.setWebViewClient(new WebViewClient());
        webView.loadUrl(website);
    }
}
```

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

```
<manifest
xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.see_webview">
    <uses-permission
android:name="android.permission.INTERNET"></uses-permission>
    <uses-permission
android:name="android.permission.ACCESS_NETWORK_STATE"></uses-
permission>
    <application
        android:usesCleartextTraffic="true"
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
```

```
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".WebViewActivity"></activity>
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category
android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

Implement an application to store and retrieve data by using shared preference. (Include save, delete and retrieve operations)

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

```
<LinearLayout
    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="wrap_content"
    android:layout_height="wrap_content"
    android:padding="20dp"
    android:orientation="vertical"
    android:layout_gravity="center"
    tools:context=".SharedPrefsActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Enter details"
        android:textSize="20sp"
        android:textColor="#000" />
    <EditText
        android:id="@+id/shared_prefs_name"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="Name" />
    <EditText
        android:id="@+id/shared_prefs_phone"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:inputType="phone"
        android:hint="Phone" />
    <Button
        android:id="@+id/shared_prefs_save_btn"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Save" />
    <View
        android:id="@+id/divider"
        android:layout_width="match_parent"
        android:layout_height="1dp"
        android:layout_margin="10dp"
        android:background="?android:attr/listDivider" />
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Saved Details"
        android:textSize="20sp"
        android:textColor="#000" />
    <TextView
        android:id="@+id/shared_prefs_saved_details"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="18sp" />
    <Button
        android:id="@+id/shared_prefs_show_data_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="show data" />
    <View
        android:id="@+id/divider1"
        android:layout_width="match_parent"
        android:layout_height="1dp"
        android:layout_margin="10dp"
        android:background="?android:attr/listDivider" />
    <Button
        android:id="@+id/shared_prefs_delete_data"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="delete data"/>
</LinearLayout>
```

```
package com.example.see_part_a;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class SharedPrefsActivity extends AppCompatActivity {
    EditText nameInput, phoneInput;
```

```
    Button saveBtn, showBtn, deleteBtn;
    TextView showDataTv;
    final static String PREFS_KEY = "myprefs", NAME_KEY = "myname",
PHONE_KEY = "myphone";
    SharedPreferences prefs;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_shared_prefs);
        nameInput = findViewById(R.id.shared_prefs_name);
        phoneInput = findViewById(R.id.shared_prefs_phone);
        saveBtn = findViewById(R.id.shared_prefs_save_btn);
        showBtn = findViewById(R.id.shared_prefs_show_data_btn);
        deleteBtn = findViewById(R.id.shared_prefs_delete_data);
        showDataTv = findViewById(R.id.shared_prefs_saved_details);
        prefs = getSharedPreferences(PREFS_KEY,
Context.MODE_PRIVATE);
        saveBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                SharedPreferences.Editor editor = prefs.edit();
                editor.putString(NAME_KEY,
nameInput.getText().toString());
                editor.putString(PHONE_KEY,
phoneInput.getText().toString());
                editor.commit();
                Toast.makeText(getApplicationContext(), "Data
Saved!", Toast.LENGTH_SHORT).show();
            }
        });
        showBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String msg = "No data";
                if(prefs.contains(NAME_KEY))
                    msg = "Name: " + prefs.getString(NAME_KEY, "") +
"\nPhone: " + prefs.getString(PHONE_KEY, "");
                showDataTv.setText(msg);
            }
        });
        deleteBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                SharedPreferences.Editor editor = prefs.edit();
                editor.clear();
                editor.commit();
                Toast.makeText(getApplicationContext(), "Data
deleted", Toast.LENGTH_SHORT).show();
            }
        });
    }
```

```
}
```