Mobile Application Development Laboratory
Lab 5

Implicit and Explicit Intents

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Aim:

To make an android application that uses Implicit and Explicit intents.

Description of App:

We create an android application with the following specifications:

1. Create four activities. In the MainActivity, include a title, 3 radio buttons (Set alarm, Play music, Compose mail) and a submit button. Selection of each radio button calls an explicit intent and redirects to an activity.
2. In Activity 1, have TextViews and EditTexts for the taking time information and alarm message from the user. Have a ‘Set Alarm’ Button, upon clicking it should open the Alarm app with the contents using implicit intents.
3. In Activity 2, have a ‘Play’ button which will play some music/song with a music app.
4. In Activity 3, have TextViews and EditTexts for the sender address, subject of the mail and body of the mail. Have a ‘Send’ button, upon clicking it should open the Gmail app with the contents using implicit intents.

Device Specifications:

Model: Poco F1
Android Version: 9 (API Level 28)
Resolution: 2160 x 1080 pixels

Technical Concepts Learnt:

- To create and launch implicit and explicit Intents.
- To understand actions and parse URIs.
- To navigate and pass information between Activities.
- To create and manage RadioButtons and RadioGroups.
- To declare and obtain user-permissions.
- To use <providers> and obtain File access.
- To create and display toasts.

Source Code:

(i) MainActivity.java

```
package com.example.lab5;

import androidx.appcompat.app.AppCompatActivity;

import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioGroup;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    RadioGroup mGroup;
    Button mSubmitButton;

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

        if
(checkSelfPermission(Manifest.permission.READ_EXTERNAL_STORAGE)
                != PackageManager.PERMISSION_GRANTED) {

            requestPermissions(new
String[]{Manifest.permission.READ_EXTERNAL_STORAGE},
                    0);

            return;
        }
```

```
        mGroup = (RadioGroup) findViewById(R.id.radio);
        mSubmitButton = (Button) findViewById(R.id.submit);

        mSubmitButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                int i = mGroup.getCheckedRadioButtonId();

                Intent intent;

                switch (i) {
                    case R.id.alarm:
                        intent = new Intent(getApplicationContext(),
Alarm.class);
                        startActivity(intent);
                        break;
                    case R.id.email:
                        intent = new Intent(getApplicationContext(),
Email.class);
                        startActivity(intent);
                        break;
                    case R.id.play:
                        intent = new Intent(getApplicationContext(),
Music.class);
                        startActivity(intent);
                        break;
                    default:
                        Toast.makeText(getApplicationContext(),
"Please choose an option", Toast.LENGTH_SHORT);
                }
            }
        });
    }
}
```

(ii) Alarm.java

```
package com.example.lab5;
```

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

import android.app.TimePickerDialog;
import android.content.Intent;
import android.os.Bundle;
import android.provider.AlarmClock;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;
import java.util.Calendar;

public class Alarm extends AppCompatActivity implements
TimePickerDialog.OnTimeSetListener {

    EditText mMessage;
    TextView mTime;
    Button mSetButton, mPick;

    int mHour, mMinute;

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

        mTime = findViewById(R.id.alarm_time);
        mMessage = findViewById(R.id.alarm_message);
        mSetButton = findViewById(R.id.set_alarm);
        mPick = (Button) findViewById(R.id.pick);

        mPick.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Calendar calendar = Calendar.getInstance();
                int hour = calendar.get(Calendar.HOUR);
```

```
                int minute = calendar.get(Calendar.MINUTE);
                TimePickerDialog timePickerDialog = new
TimePickerDialog(Alarm.this, Alarm.this, hour, minute, true);
                timePickerDialog.show();
            }
        });
        mSetButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (mTime.getText().toString().equals("") ||
mMessage.getText().toString().equals("")) {
                    Toast.makeText(getApplicationContext(), "Enter
Valid Input", Toast.LENGTH_SHORT).show();
                    return;
                }

                Intent i = new Intent(AlarmClock.ACTION_SET_ALARM);
                i.putExtra(AlarmClock.EXTRA_MESSAGE,
mMessage.getText().toString());
                i.putExtra(AlarmClock.EXTRA_HOUR, mHour);
                i.putExtra(AlarmClock.EXTRA_MINUTES, mMinute);
                startActivity(i);
            }
        });
    }

    @Override
    public void onTimeSet(TimePicker view, int hourOfDay, int minute)
{
        mHour = hourOfDay;
        mMinute = minute;
        mTime.setText(mHour + ":" + mMinute);
    }
}
```

(iii) Music.java

```
package com.example.lab5;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.content.FileProvider;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

import java.io.File;

public class Music extends AppCompatActivity {

    Button mPlayButton;

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

        mPlayButton = (Button) findViewById(R.id.play);

        mPlayButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i = new Intent(Intent.ACTION_VIEW);
                File audio = new
File(Environment.getExternalStorageDirectory().getPath() +
"/Music/Lab5.mp3");
                i.addFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION);
                String extension =
android.webkit.MimeTypeMap.getFileExtensionFromUrl(Uri.fromFile(audio
).toString());
                String mimeType =
android.webkit.MimeTypeMap.getSingleton().getMimeTypeFromExtension(ex
tension);
```

```
                Uri uri = FileProvider.getUriForFile(Music.this,
BuildConfig.APPLICATION_ID + ".provider",audio);
                i.setDataAndType(uri, mimeType);

                if (audio != null) {
                    Toast.makeText(getApplicationContext(),
Uri.fromFile(audio).toString(), Toast.LENGTH_SHORT).show();
                    startActivity(i);
                } else {
                    Toast.makeText(getApplicationContext(), "suck",
Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

(iv) Email.java

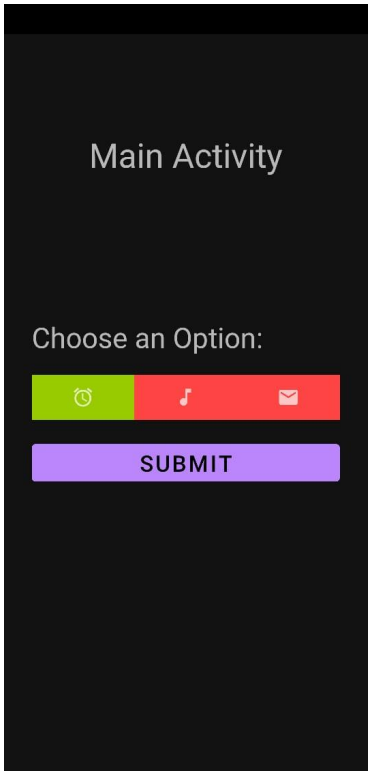
```
package com.example.lab5;

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;
import android.widget.Toast;

public class Email extends AppCompatActivity {

    EditText mEmail, mSubject, mBody;
    Button mSendButton;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_email);

        mEmail = findViewById(R.id.email);
        mSubject = findViewById(R.id.subject);
        mBody = findViewById(R.id.body);

        mSendButton = findViewById(R.id.send);

        mSendButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                if (mEmail.getText().toString().equals("") ||
mSubject.getText().toString().equals("") ||
mBody.getText().toString().equals("")) {
                    Toast.makeText(getApplicationContext(), "Enter
Valid Input", Toast.LENGTH_SHORT).show();
                    return;
                }

                String toArr[] = {mEmail.getText().toString()};

                Intent i = new Intent(Intent.ACTION_SENDTO);
                i.setData(Uri.parse("mailto:")); // only email apps
should handle this
                i.putExtra(Intent.EXTRA_EMAIL, toArr);
                i.putExtra(Intent.EXTRA_TEXT,
mSubject.getText().toString());
                i.putExtra(Intent.EXTRA_SUBJECT,
mBody.getText().toString());
                if (i.resolveActivity(getPackageManager()) != null) {
                    startActivity(i);
                }
            }
        });
    }
}
```

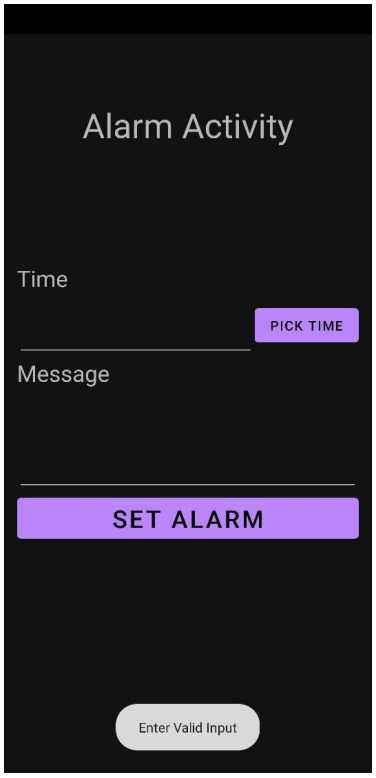
Video Demo:
https://drive.google.com/file/d/1J2foM2l1Zf4x2jtccBfmDBeaOAvAfqg0/view?usp=sharing

APK:
https://drive.google.com/file/d/1nBacD3IUGtQsDo88xbPQ0JAq8UIb98ZU/view?usp=sharing

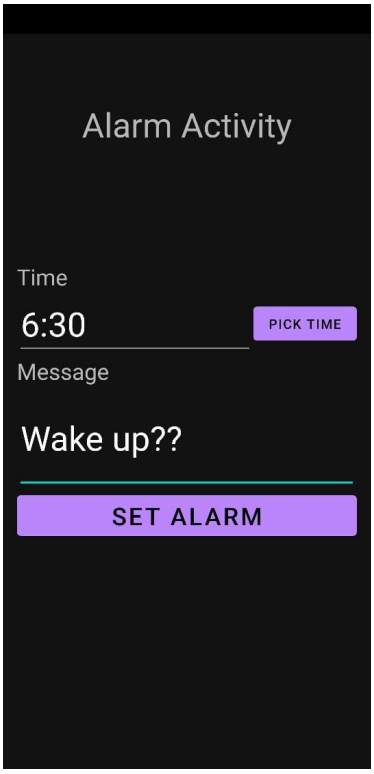
Screenshots:



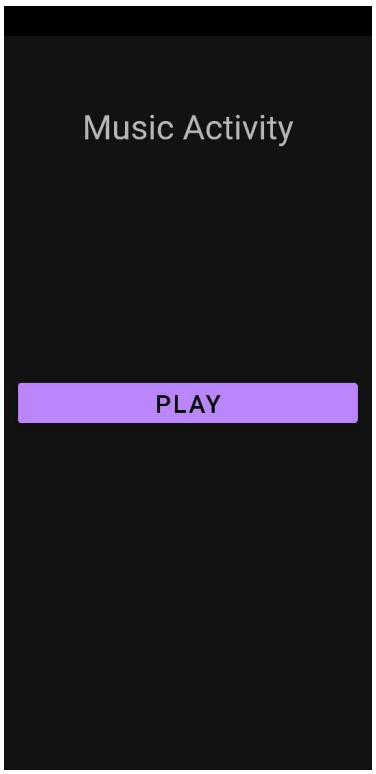
(i) Main Activity



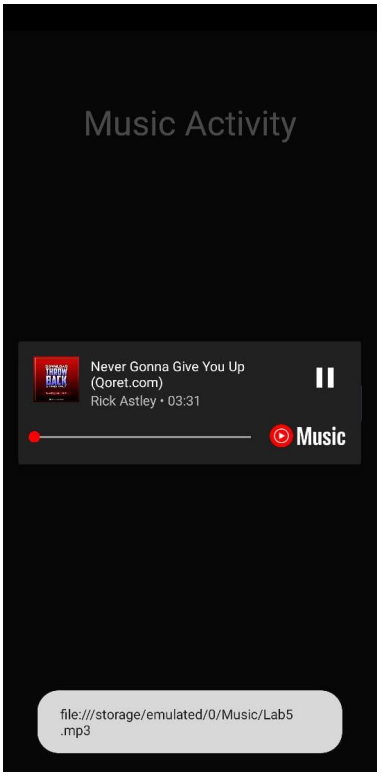
(ii) Alarm - Validation



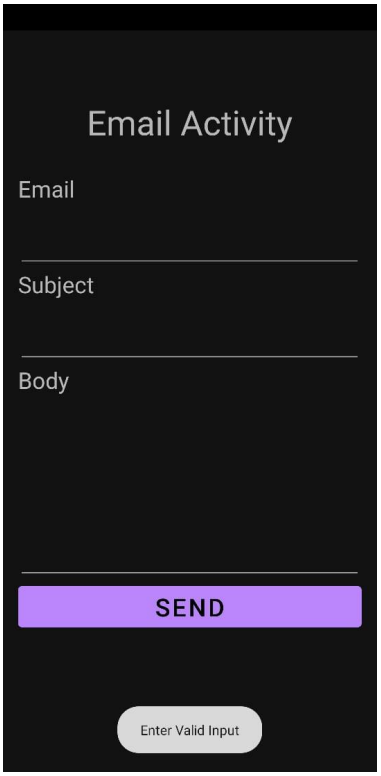
(iii) Alarm - Input



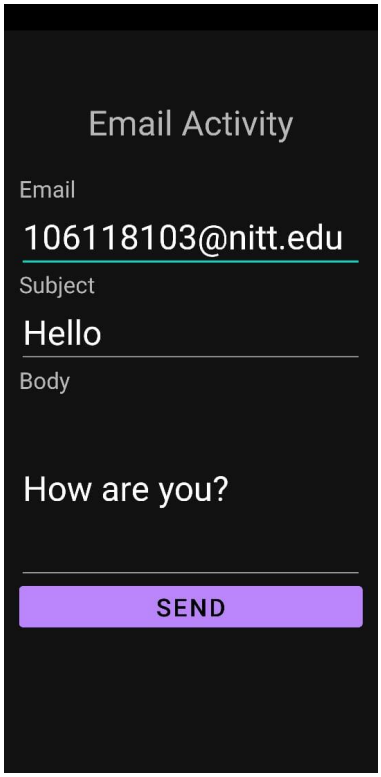
(iv) Music Activity



(v) Music Playing



(vi) Email - Validation



(vi) Email - Input

Outcomes:

An android application was developed using Implicit and Explicit intents. Various concepts in Android App Development were explored including:

- Creating and launching implicit and explicit Intents.
- Understanding actions and parsing URIs.
- Navigating and passing information between Activities.
- Creating and managing RadioButtons and RadioGroups.
- Declaring and obtaining user-permissions.
- Using <providers> and obtaining File access.
- Creating and displaying toasts.