

Mobile Application Development Laboratory  
Lab 6

## Menu and SharedPreferences

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**Aim:**

To make an android application that implements Menu and SharedPreferences.

**Description of App:**

We create an android application with the following specifications:

1. In an activity, have a Menu with a list of Menu Items such as Help, Control, Settings, Exit. Upon clicking on the Menu Items, do the following.
  - Help - Open help page of android using browser
  - Settings - Open settings app of the mobile
  - Exit - exit the application
  - Control - Have options for the following:
    - Switch on/off bluetooth
    - Increase or decrease the brightness value
    - Control the mobile volume
    - Change orientation of the mobile phone
2. Have text views and textboxes to get name, email id, mobile number from user and store it in SharedPreferences upon clicking a Button. Have another button, upon clicking which, retrieve the information entered and display it on the screen.

**Device Specifications:**

Model: Poco F1

Android Version: 9 (API Level 28)

Resolution: 2160 x 1080 pixels

**Technical Concepts Learnt:**

- To create and inflate Menus.
- To create and use SharedPreferences.
- To navigate and pass information between Activities using SharedPreferences.
- To declare and obtain user-permissions.

## Source Code:

### (i) MainActivity.java

```
package com.example.lab6;

import ...

public class MainActivity extends AppCompatActivity {

    int currentScreenBrightness;
    int currentVolume;

    private ContentResolver cResolver;
    private Window window;

    AudioManager mAudioManager;

    EditText mName, mEmail, mContact;
    Button mSubmit, mView;

    Boolean isStored = Boolean.FALSE;

    SharedPreferences mSharedPreferences;

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

        if (!Settings.System.canWrite(getApplicationContext())) {

            Intent intent = new
Intent(Settings.ACTION_MANAGE_WRITE_SETTINGS, Uri.parse("package:" +
getPackageName()));
            Toast.makeText(getApplicationContext(), "Please, allow
system settings for automatic logout ", Toast.LENGTH_LONG).show();
            startActivityForResult(intent, 200);
        }
    }
}
```

```

        cResolver = getContentResolver();

        window = getWindow();

        try
        {
            // To handle the auto
            Settings.System.putInt(cResolver,
                                   Settings.System.SCREEN_BRIGHTNESS_MODE,
                                   Settings.System.SCREEN_BRIGHTNESS_MODE_MANUAL);
            //Get the current system brightness
            currentScreenBrightness =
            Settings.System.getInt(cResolver, Settings.System.SCREEN_BRIGHTNESS);
        }
        catch (Settings.SettingNotFoundException e)
        {
            //Throw an error case it couldn't be retrieved
            Log.e("Error", "Cannot access system brightness");
            e.printStackTrace();
        }

        mAudioManager = (AudioManager)
        getApplicationContext().getSystemService(Context.AUDIO_SERVICE);
        currentVolume =
        mAudioManager.getStreamVolume(AudioManager.STREAM_MUSIC);

        mName = (EditText) findViewById(R.id.name);
        mEmail = (EditText) findViewById(R.id.email);
        mContact = (EditText) findViewById(R.id.phone);
        mSubmit = (Button) findViewById(R.id.submit);
        mView = (Button) findViewById(R.id.view);
        mSharedPreferences =
        getSharedPreferences(((Lab6Application)this.getApplication()).getSPKey(), Context.MODE_PRIVATE);
        String[] keys =
        ((Lab6Application)this.getApplication()).getSPValueKeys();

        getSPreferences();

```

```

        checkEmptyVal();

        mSubmit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String name = mName.getText().toString();
                String email = mEmail.getText().toString();
                String contact = mContact.getText().toString();

                if (name.equals("") || email.equals("") ||
contact.equals("")) {

                    } else {
                        SharedPreferences.Editor editor =
mSharedPreferences.edit();
                        editor.putString(keys[0], name);
                        editor.putString(keys[1], email);
                        editor.putString(keys[2], contact);
                        editor.commit();

                        isStored = Boolean.TRUE;
                        Toast.makeText(getApplicationContext(), "Saved in
Shared Preferences", Toast.LENGTH_SHORT).show();
                    }
                }
            });

            mView.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View view) {
                    if(isStored != Boolean.TRUE) {

                        } else {
                            Intent intent = new
Intent(getApplicationContext(), ViewActivity.class);
                            startActivity(intent);
                        }
                    }
                });

```

```

}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.main_menu, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle item selection
    switch (item.getItemId()) {
        case R.id.help:
            String url = "https://developer.android.com/";
            Intent helpIntent = new Intent(Intent.ACTION_VIEW);
            helpIntent.setData(Uri.parse(url));
            startActivity(helpIntent);
            return true;

        case R.id.settings:
            Intent settingsIntent = new
Intent(Settings.ACTION_SETTINGS);
            startActivity(settingsIntent);
            return true;

        case R.id.exit:
            finishAndRemoveTask();
            return true;

        case R.id.clear_sp:
            clearSharedPreferences();
            getSPreferences();
            Toast.makeText(getApplicationContext(), "Shared
Preferences Cleared", Toast.LENGTH_SHORT).show();
            return true;

        case R.id.bluetooth:
            BluetoothAdapter mBluetoothAdapter =

```

```
BluetoothAdapter.getDefaultAdapter();

        if (mBluetoothAdapter.isEnabled()) {
            mBluetoothAdapter.disable();
            Toast.makeText(getApplicationContext(),
"Bluetooth Disabled", Toast.LENGTH_SHORT).show();
        }
        else {
            mBluetoothAdapter.enable();
            Toast.makeText(getApplicationContext(),
"Bluetooth Enabled", Toast.LENGTH_SHORT).show();
        }

        return true;

        case R.id.b_inc:
            setBrightness(currentScreenBrightness + 64);
            Toast.makeText(getApplicationContext(), "Brightness
Increased", Toast.LENGTH_SHORT).show();
            return true;

        case R.id.b_dec:
            setBrightness(currentScreenBrightness - 64);
            Toast.makeText(getApplicationContext(), "Brightness
Decreased", Toast.LENGTH_SHORT).show();
            return true;

        case R.id.v_inc:
            setVolume(currentVolume + 25);
            Toast.makeText(getApplicationContext(), "Volume
Increased", Toast.LENGTH_SHORT).show();
            return true;

        case R.id.v_dec:
            setVolume(currentVolume - 25);
            Toast.makeText(getApplicationContext(), "Volume
Decreased", Toast.LENGTH_SHORT).show();
            return true;
```

```

        case R.id.orientation:
            if(getRequestedOrientation() ==
ActivityInfo.SCREEN_ORIENTATION_LANDSCAPE)

setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_PORTRAIT);
            else

setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_LANDSCAPE);

        default:
            return super.onOptionsItemSelected(item);
    }
}

public void setBrightness(int brightness) {
    if(brightness < 0)
        brightness = 0;
    else if(brightness > 255)
        brightness = 255;

    currentScreenBrightness = brightness;

    Settings.System.putInt(cResolver,
Settings.System.SCREEN_BRIGHTNESS, brightness);
    WindowManager.LayoutParams lp = window.getAttributes();
    lp.screenBrightness = brightness / (float)255;
    window.setAttributes(lp);
}

public void setVolume(int volume) {
    if(volume < 0)
        volume = 0;
    else if(volume > 100)
        volume = 100;

    currentVolume = volume;

    mAudioManager.setStreamVolume(
        AudioManager.STREAM_MUSIC,

```

```

        (int)
mAudioManager.getStreamMaxVolume(AudioManager.STREAM_MUSIC) * volume
/ 100,
        0);
    }

    private void getSPreferences() {
        String[] keys =
((Lab6Application)this.getApplication()).getSPValueKeys();
        mName.setText(mSharedPreferences.getString(keys[0], ""));
        mEmail.setText(mSharedPreferences.getString(keys[1], ""));
        mContact.setText(mSharedPreferences.getString(keys[2], ""));
    }

    private void clearSharedPreferences() {
        SharedPreferences.Editor editor = mSharedPreferences.edit();
        editor.clear();
        editor.apply();
    }

    private void checkEmptyVal() {
        String name = mName.getText().toString();
        String email = mEmail.getText().toString();
        String contact = mContact.getText().toString();
        if (!(name.equals("") || email.equals("") ||
contact.equals(""))) {
            isStored = Boolean.TRUE;
            Toast.makeText(getApplicationContext(), "Loading values
from Stored Preferences", Toast.LENGTH_SHORT).show();
        }
    }
}

```

(ii) View Activity

```

package com.example.lab6;

```



```

import ...

import org.w3c.dom.Text;

public class ViewActivity extends AppCompatActivity {

    TextView mName, mContact, mEmail;
    Button mBack;
    SharedPreferences mSharedPreferences;

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

        mName = (TextView) findViewById(R.id.name);
        mEmail = (TextView) findViewById(R.id.email);
        mContact = (TextView) findViewById(R.id.phone);
        mBack = (Button) findViewById(R.id.back);

        mSharedPreferences =
        getSharedPreferences(((Lab6Application)this.getApplication()).getSPKey(), Context.MODE_PRIVATE);
        String[] keys =
        ((Lab6Application)this.getApplication()).getSPValueKeys();
        mName.setText("NAME: " +
        mSharedPreferences.getString(keys[0], "No Name"));
        mEmail.setText("E-MAIL: " +
        mSharedPreferences.getString(keys[1], "No Email"));
        mContact.setText("CONTACT: " +
        mSharedPreferences.getString(keys[2], "No Phone"));

        mBack.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent = new Intent(getApplicationContext(),
                MainActivity.class);
                startActivity(intent);
            }
        });
    }
}

```

```
        }  
    });  
  
}
```

(iii) Lab6Application.java

```
package com.example.lab6;  
  
import android.app.Application;  
  
public class Lab6Application extends Application {  
    private String SPKey = "secret";  
    private String[] SPValueKeys = {"name", "email", "contact"};  
  
    public String getSPKey() {  
        return SPKey;  
    }  
  
    public String[] getSPValueKeys() {  
        return SPValueKeys;  
    }  
}
```

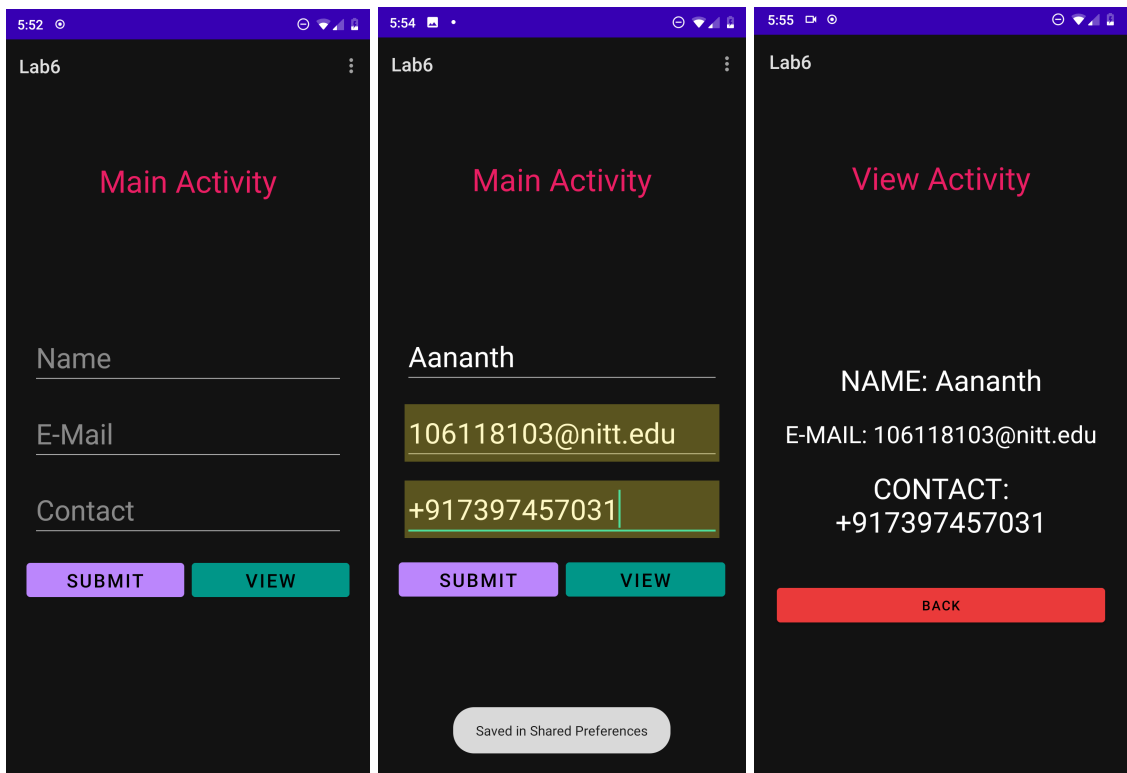
### Video Demo:

[https://drive.google.com/file/d/1LSkUCyT0\\_i-ckBjoNpTsb7UoWSHh3\\_oH/view?usp=sharing](https://drive.google.com/file/d/1LSkUCyT0_i-ckBjoNpTsb7UoWSHh3_oH/view?usp=sharing)

### APK:

<https://drive.google.com/file/d/1Eixcfyuoias9ba4WaOsrLdmCrP00Crzr/view?usp=sharing>

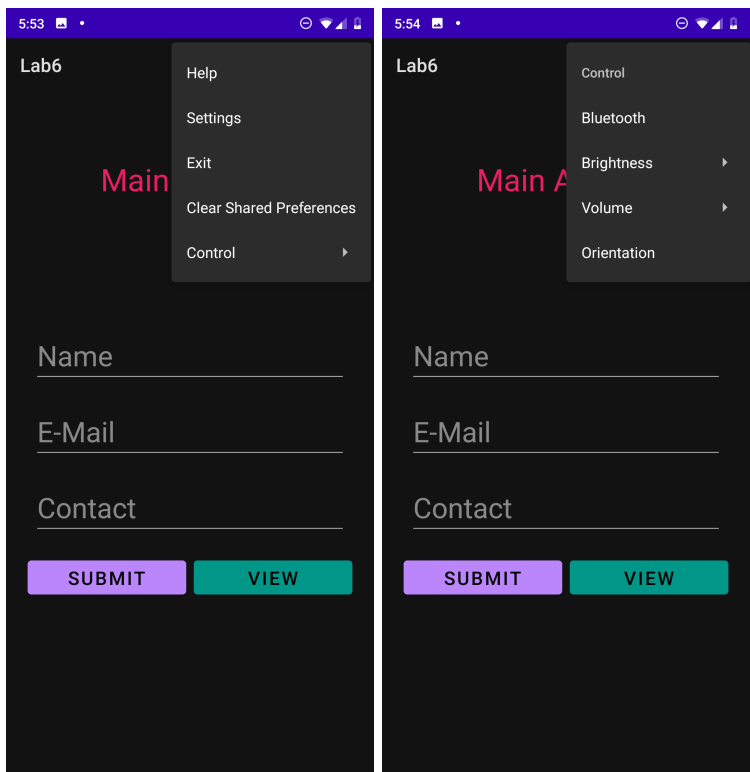
Screenshots:



(i) Main Activity

(ii) MainActivity - Input

(iii) ViewActivity



(iv) Main Menu

(v) Controls Menu

**Outcomes:**

An android application was developed using Menu and SharedPreferences.

Various concepts in Android App Development were explored including:

- Creating and inflating Menus.
- Creating and using SharedPreferences.
- Passing information between Activities using SharedPreferences.
- Declaring and obtaining user-permissions.