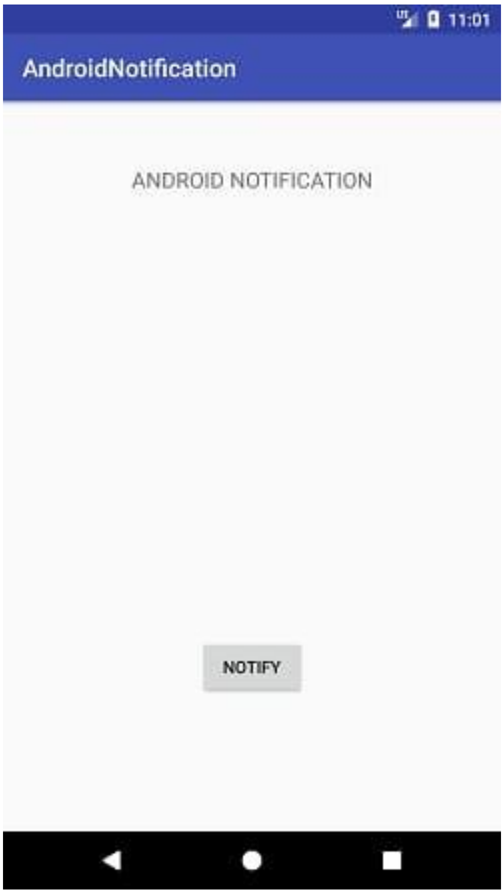
1. Create an android application to implement the concept of Notification builder class

```
<?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="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <TextView
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Notification builder"
      android:layout_marginTop="20dp"
      android:gravity="center"
      android:textSize="25dp"

      />

   <Button
      android:id="@+id/btnShowNotification"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="center"
      android:layout_marginTop="60dp"
      android:text="Show Notification" />


</LinearLayout>
```

Java file—

```
package com.example.notification;

import android.app.Notification;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.content.Context;
import android.os.Build;
import android.os.Bundle;
import android.view.View;

import androidx.annotation.RequiresApi;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;
import androidx.core.app.NotificationManagerCompat;
```

```
public class MainActivity extends AppCompatActivity {

    private static final String CHANNEL_ID = "MyChannelID";

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

        createNotificationChannel();

        findViewById(R.id.btnShowNotification).setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                showNotification();
            }
        });
    }

    private void createNotificationChannel() {
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
            CharSequence name = "My Channel";
            String description = "Channel description";
            int importance = NotificationManager.IMPORTANCE_DEFAULT;
            NotificationChannel channel = new NotificationChannel(CHANNEL_ID, name,
importance);
            channel.setDescription(description);

            NotificationManager notificationManager =
getSystemService(NotificationManager.class);
            notificationManager.createNotificationChannel(channel);
        }
    }

    private void showNotification() {
        NotificationCompat.Builder builder = new NotificationCompat.Builder(this,
CHANNEL_ID)
                .setSmallIcon(R.drawable.ic_notification)
                .setContentTitle("My Notification")
                .setContentText("This is a notification.")
                .setPriority(NotificationCompat.PRIORITY_DEFAULT);

        NotificationManagerCompat notificationManager =
NotificationManagerCompat.from(this);
        notificationManager.notify(1, builder.build());
    }
}
```



2. Create an android application to implement the concept of Web view with various functionality

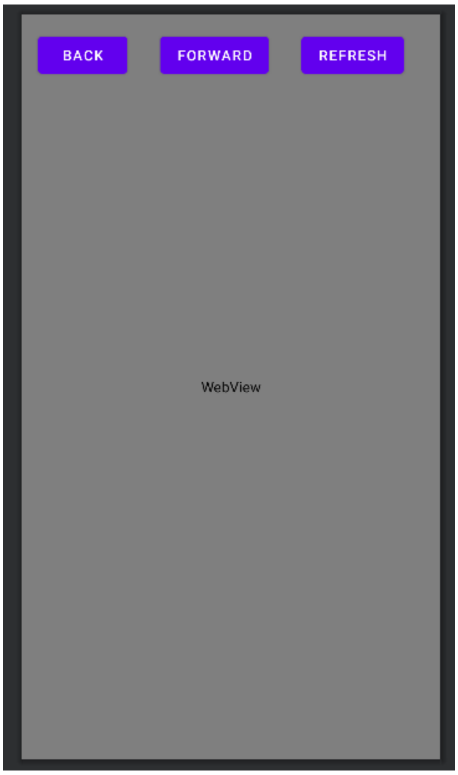
```
<RelativeLayout  xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">

  <WebView
      android:id="@+id/webView"
      android:layout_width="match_parent"
      android:layout_height="match_parent"/>

   <Button
      android:id="@+id/btnBack"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Back"
      android:layout_margin="16dp"/>

   <Button
```

```
    android:id="@+id/btnForward"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Forward"
    android:layout_margin="16dp"
    android:layout_toRightOf="@id/btnBack"/>

  <Button
    android:id="@+id/btnRefresh"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Refresh"
    android:layout_margin="16dp"
    android:layout_toRightOf="@id/btnForward"/>
</RelativeLayout>
```

Java file—

```
import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.View;
import android.webkit.WebChromeClient;
import android.webkit.WebSettings;
import android.webkit.WebView;
import android.webkit.WebViewClient;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

  private WebView webView;

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

    webView = findViewById(R.id.webView);
    WebSettings webSettings = webView.getSettings();
    webSettings.setJavaScriptEnabled(true);

    // Load a webpage
    webView.loadUrl("https://www.example.com");

    // Enable navigation buttons
    Button backButton = findViewById(R.id.btnBack);
```

```
        backButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (webView.canGoBack()) {
                    webView.goBack();
                }
            }
        });

        Button forwardButton = findViewById(R.id.btnForward);
        forwardButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (webView.canGoForward()) {
                    webView.goForward();
                }
            }
        });

        // Enable refresh button
        Button refreshButton = findViewById(R.id.btnRefresh);
        refreshButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                webView.reload();
            }
        });

        // Set WebView clients
        webView.setWebViewClient(new WebViewClient());
        webView.setWebChromeClient(new WebChromeClient());
    }
}
```



3. Create an android application to perform database connectivity using SQLite database and SQLite Helper class

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:background="@drawable/signup">

  <TextView
    android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Register here!"
    android:layout_marginTop="60dp"
    android:gravity="center"
```

```
      android:textColor="@color/black"


      android:textSize="30dp"
      tools:ignore="MissingConstraints" />


    <EditText
      android:id="@+id/Name"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:ems="10"
      android:inputType="textPersonName"
      android:hint="Enter your name :-"
      android:textColorHint="@color/black"
      android:textAlignment="center"
      android:layout_marginTop="50dp"


      tools:ignore="MissingConstraints"
     />


    <EditText
      android:id="@+id/Email"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:ems="10"
      android:inputType="textEmailAddress"
      android:hint="Enter Email :-"
      android:textColorHint="@color/black"
      android:textAlignment="center"
      tools:ignore="MissingConstraints"
      android:layout_marginTop="30dp"
      />
```

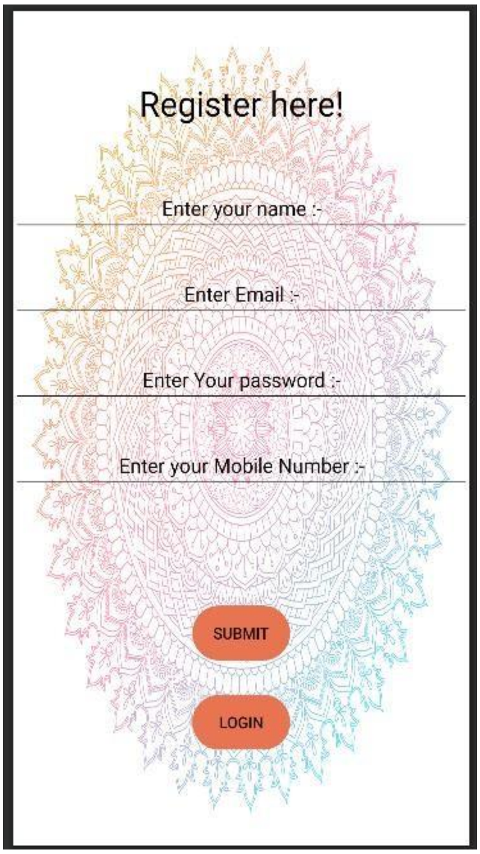
```
  <EditText
    android:id="@+id/Password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:backgroundTint="@color/black"
    android:ems="10"
    android:hint="Enter Your password :-"
    android:textColorHint="@color/black"
    android:textAlignment="center"
    android:layout_marginTop="30dp"
    android:inputType="textPassword"
    tools:ignore="MissingConstraints"
     />

  <EditText
    android:id="@+id/Phone"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="phone"
    android:hint="Enter your Mobile Number :-"
    android:textColorHint="@color/black"
    android:textAlignment="center"
    android:layout_marginTop="30dp"
    tools:ignore="MissingConstraints"
     />
 <Button
    android:id="@+id/Submit"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
        android:text="Submit"
        android:layout_gravity="center"
        android:layout_marginTop="100dp"
        tools:ignore="MissingConstraints"
        android:background="@drawable/style"/>

    <Button
        android:id="@+id/Login"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login"
        android:layout_gravity="center"
        android:gravity="center"
        android:layout_marginTop="30dp"
        tools:ignore="MissingConstraints"
        android:background="@drawable/style"/>
</LinearLayout>
```

Sign -Up page java: -

```
package com.example.dlogin;
import android.content.ContentValues;
import android.content.Intent;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;
public class signup extends AppCompatActivity {
private EditText editTextUsername, editTextPassword, Email, Phone;
```

```
  private Button buttonRegister, login;
 private DatabaseHelper databaseHelper;
@Override
  protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.sign_up);
      editTextUsername = findViewById(R.id.Name);
      editTextPassword = findViewById(R.id.Password);
      Email = findViewById(R.id.Email);
        Phone = findViewById(R.id.Phone);
      buttonRegister = findViewById(R.id.Submit);
      login = findViewById(R.id.Login);
      databaseHelper = new DatabaseHelper(this);
      buttonRegister.setOnClickListener(new View.OnClickListener() {
          @Override
          public void onClick(View v) {
              String username = editTextUsername.getText().toString().trim();
              String password = editTextPassword.getText().toString().trim();
              String email = Email.getText().toString().trim();
              String phoneno = Phone.getText().toString().trim();
            if (!username.isEmpty() && !password.isEmpty()) {
                  SQLiteDatabase db = databaseHelper.getWritableDatabase();
                  ContentValues values = new ContentValues();
                  values.put(DatabaseHelper.COLUMN_USERNAME, username);
                  values.put(DatabaseHelper.COLUMN_PASSWORD,   password);
                  values.put(DatabaseHelper.COLUMN_Email, email);
                  values.put(DatabaseHelper.COLUMN_PHONE, phoneno);
                  long newRowId = db.insert(DatabaseHelper.TABLE_USERS, null, values);
                  db.close();
              if (newRowId != -1) {
                      Toast.makeText(signup.this, "Registration successful", Toast.LENGTH_SHORT).show();
      } else {
        Toast.makeText(signup.this, "Registration failed", Toast.LENGTH_SHORT).show();
      }
    } else {
      Toast.makeText(signup.this, "Please fill in all fields", Toast.LENGTH_SHORT).show();
    }
  }
});
login.setOnClickListener(new View.OnClickListener() {
  @Override
  public void onClick(View view) {
    Intent i = new Intent(getApplicationContext(), loginActivity.class);
    startActivity(i);
  } }); }}
```



4. Create an android application to perform database connectivity using SQLite database and SQLite Helper class and perform insert, update and delete operations

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  tools:context=".MainActivity">

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

  <EditText
    android:id="@+id/editTextContent"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/editTextTitle"
    android:layout_marginTop="8dp"
    android:hint="Content" />

  <Button
    android:id="@+id/addButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/editTextContent"
    android:layout_marginTop="16dp"
    android:text="Add Note" />

  <Button
    android:id="@+id/updateButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/addButton"
    android:layout_marginTop="8dp"
    android:text="Update Note" />

  <Button
    android:id="@+id/deleteButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/updateButton"
    android:layout_marginTop="8dp"
    android:text="Delete Note" />
```

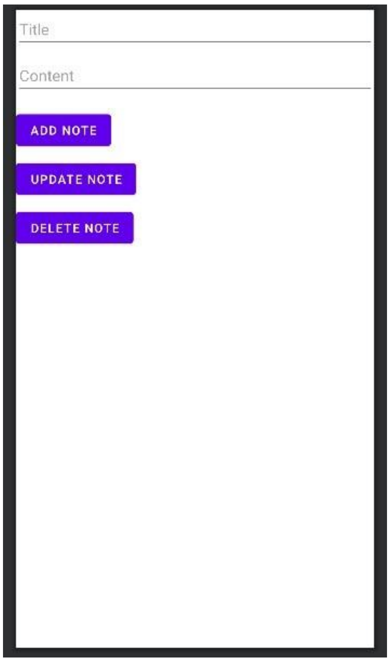
```
</RelativeLayout>
```

Java file----

```
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class DatabaseHelper extends SQLiteOpenHelper {

    // Database Information
    private static final String DATABASE_NAME = "mydatabase";
    private static final int DATABASE_VERSION = 1;

    // Table Information
    private static final String TABLE_NAME = "notes";
    private static final String COLUMN_ID = "id";
    private static final String COLUMN_TITLE = "title";
    private static final String COLUMN_CONTENT = "content";

    // Constructor
    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    // Creating the table
    @Override
    public void onCreate(SQLiteDatabase db) {
        String createTableQuery = "CREATE TABLE " + TABLE_NAME + " (" +
                COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
                COLUMN_TITLE + " TEXT, " +
                COLUMN_CONTENT + " TEXT)";
        db.execSQL(createTableQuery);
    }

    // Upgrading the table if needed
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
        onCreate(db);
    }

    // Inserting a new note
    public long insertNote(Note note) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put(COLUMN_TITLE, note.getTitle());
        values.put(COLUMN_CONTENT, note.getContent());
        long insertedId = db.insert(TABLE_NAME, null, values);
        db.close();
        return insertedId;
    }

    // Updating a note
    public int updateNote(Note note) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put(COLUMN_TITLE, note.getTitle());
        values.put(COLUMN_CONTENT, note.getContent());
        int rowsAffected = db.update(TABLE_NAME, values, COLUMN_ID + " = ?",
                new String[]{String.valueOf(note.getId())});
        db.close();
        return rowsAffected;
    }

    // Deleting a note
    public int deleteNote(int noteId) {
        SQLiteDatabase db = this.getWritableDatabase();
        int deletedRows = db.delete(TABLE_NAME, COLUMN_ID + " = ?",
                new String[]{String.valueOf(noteId)});
        db.close();
        return deletedRows;
    }

    // Getting all notes
    public Cursor getAllNotes() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.query(TABLE_NAME, null, null, null, null, null, null);
    }
}
```

Db file---

```
public class Note {
    private int id;
    private String title;
    private String content;

    public Note(String title, String content) {
        this.title = title;
        this.content = content;
    }

    // Getters and setters for id, title, and content
}
```



5. Create the steps of flutter installation.

1. *System Requirements:*

- Flutter supports Windows, macOS, and Linux. Ensure your system meets the [system requirements](https://flutter.dev/docs/get-started/install) for your operating system.

2. *Download Flutter:*

- Download the latest stable version of Flutter from the [official Flutter website](https://flutter.dev/docs/get-started/install).

3. *Extract the ZIP file:*

- Extract the downloaded ZIP file to a location on your computer.

4. *Update System Path:*

- Add the flutter/bin directory to your system PATH. This step allows you to run the flutter command from any terminal window.

- *On macOS and Linux:*

```
bash
export PATH="$PATH:`<path_to_flutter_directory>`/flutter/bin"
```

- *On Windows:*

- Open the System Properties.

- Click on "Advanced system settings" -> "Environment Variables..."

- In the "System variables" section, select the "Path" variable and click "Edit..."

- Add a new entry with the path to the flutter\bin directory.

5. **Run flutter doctor:**

- Open a terminal window and run the following command to check if there are any dependencies you still need to install:

```
bash
flutter doctor
```

6. *Install Flutter dependencies:*

- The flutter doctor command will guide you on installing any missing dependencies. Follow the instructions provided.

7. *Android Studio/VS Code Setup (Optional but recommended):*

- For a better development experience, it's recommended to use Android Studio or Visual Studio Code with the Flutter and Dart plugins.
- If you choose Android Studio, make sure to install the Flutter and Dart plugins from the marketplace.

8. **Run flutter pub get:**

- In your Flutter project directory, run the following command to get the dependencies specified in your pubspec.yaml file:

```
bash
flutter pub get
```

9. *Verify Installation:*

- Run the following command to verify that Flutter is installed correctly:

```
bash
flutter --version
```

- Run the following command to verify that all dependencies are satisfied:

```
bash
flutter doctor
```

10. *Create a Flutter project:*

- Create a new Flutter project by running the following command in your terminal:

```
bash
flutter create my_flutter_project
```

11. *Run your Flutter project:*

- Change into your project directory and run your app using the following commands:

```
bash
cd my_flutter_project
flutter run
```