



<b>BATCH AND ROLL NO:</b> 42340
<b>EXPERIMENT NO.:</b> 03
<b>TITLE:</b> Design a mobile application to create the login page using sqlite / firebase
<b>DATE OF PERFORMANCE:</b>
<b>DATE OF SUBMISSION:</b>

**Title:** Design a mobile application to create the login page using sqlite /firebase

**Requirements:**

- 1 Android studio
2. Sqlite /firebase

**Theory:**

In the rapidly evolving landscape of mobile application development, creating a seamless and secure login experience is a fundamental aspect. The login page serves as the gateway for users to access the application's features and functionalities. Two widely utilized technologies for implementing login systems are SQLite and Firebase.

**SQLite:**

SQLite is a self-contained, serverless, and zero-configuration relational database engine. It is embedded into the mobile application to handle local data storage efficiently. For mobile applications, SQLite provides a lightweight and efficient solution to manage databases directly on the user's device. In this lab, we will explore the integration of SQLite to design a local database for storing user credentials securely.

**Firebase:**

Firebase, on the other hand, is a comprehensive mobile and web application development platform provided by Google. Firebase offers a real-time NoSQL database, allowing for seamless synchronization of data between different devices. Additionally, Firebase Authentication simplifies the process of user authentication, providing a secure and scalable solution for managing user logins in mobile applications.

**Objective of the Lab:**

The primary objective of this lab is to guide you through the process of designing a mobile application login page. You will have the opportunity to choose between two robust technologies: SQLite for local database storage or Firebase for a cloud-based solution. By the end of this lab, you should be proficient in implementing a secure and user-friendly login system in your mobile application.



**Lab Prerequisites:**

- Basic understanding of mobile application development concepts.
- Familiarity with the chosen development environment (e.g., Android Studio).
- Prior knowledge of programming languages such as Java (for Android)

**Steps:**

**Using SQLite:**

**Step 1: Set Up SQLite Database**

- Create a SQLite database to store user credentials.
- Define a table structure to hold user information, including fields such as username and password.
- Implement methods to create, read, update, and delete user records in the SQLite database.

**Step 2: Design the Login Page UI**

- Create a login page UI with input fields for username and password.
- Include a "Login" button that triggers the authentication process.

**Step 3: Authenticate User**

- Retrieve user input from the login page.
- Query the SQLite database to verify the entered username and password.
- Grant access if the credentials are valid; otherwise, display an error message.

**Common Steps:**

**Step 1: Handle User Input**

- Implement error handling for invalid inputs on the login page.
- Validate and sanitize user input to enhance security.

**Step 2: Test Your Implementation**

- Test the login functionality thoroughly, considering various scenarios (valid and invalid credentials, edge cases).
- Debug and resolve any issues that may arise during testing.

**Step 3: Enhance Security**

- Implement secure coding practices to protect user data.



**XML Code:**

**Register Page :-**

```
<?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:layout_gravity="center"

    android:gravity="center"

    android:background="#30BBBB"

    tools:context=".MainActivity">

    <androidx.cardview.widget.CardView

        android:layout_width="match_parent"

        android:layout_height="450dp"

        android:layout_margin="20dp"

        android:outlineSpotShadowColor="@color/black"

        app:cardBackgroundColor="#66FAE8"

        app:cardCornerRadius="25dp">

        <TextView
```



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android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="20dp"

android:fontFamily="@font/actor"

android:gravity="center"

android:padding="10dp"

android:text="PICT\nWelcomes"

android:textColor="#164FE1"

android:textSize="30sp" />

<EditText

android:id="@+id/email\_register"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_marginBottom="16dp"

android:layout\_marginTop="140dp"

android:layout\_marginLeft="38dp"

android:layout\_marginRight="38dp"

android:hint="Email"

android:fontFamily="@font/actor"

android:gravity="center"

android:inputType="textEmailAddress" />

<EditText



android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_marginRight="38dp"

android:layout\_marginTop="210dp"

android:layout\_marginLeft="38dp"

android:layout\_marginBottom="16dp"

android:hint="Password"

android:fontFamily="@font/actor"

android:gravity="center"

android:inputType="textPassword" />

<Button

android:id="@+id/buttonRegister"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:fontFamily="@font/actor"

android:textSize="20sp"

android:layout\_marginTop="290dp"

android:layout\_marginLeft="25dp"

android:layout\_marginRight="25dp"

android:text="Register" />

<TextView

android:layout\_width="wrap\_content"



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android:layout\_height="wrap\_content"

android:layout\_marginTop="360dp"

android:layout\_marginLeft="50dp"

android:text="Already have an account?" />

<TextView

android:id="@+id/login\_Screen"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginLeft="219dp"

android:layout\_marginTop="360dp"

android:text="Login here"

android:textColor="#03A0B4"

android:textStyle="bold" />

</androidx.cardview.widget.CardView>

</LinearLayout>

### **Login Page :-**

<?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"



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android:orientation="vertical"

android:layout\_gravity="center"

android:gravity="center"

android:background="#30BBBB"

tools:context=".MainActivity">

<androidx.cardview.widget.CardView

android:layout\_width="match\_parent"

android:layout\_height="450dp"

android:layout\_margin="20dp"

android:outlineSpotShadowColor="@color/black"

app:cardBackgroundColor="#66FAE8"

app:cardCornerRadius="25dp">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="20dp"

android:fontFamily="@font/actor"

android:gravity="center"

android:padding="10dp"

android:text="PICT\nWelcomes"

android:textColor="#164FE1"

android:textSize="30sp" />



<EditText

```
android:id="@+id/email_login"
android:layout_width="match_parent"
android:layout_height="50dp"
android:layout_marginBottom="16dp"
android:layout_marginTop="140dp"
android:layout_marginLeft="38dp"
android:layout_marginRight="38dp"
android:hint="Email"
android:fontFamily="@font/actor"
android:gravity="center"
android:inputType="textEmailAddress" />
```

<EditText

```
android:id="@+id/password_login"
android:layout_width="match_parent"
android:layout_height="50dp"
android:layout_marginRight="38dp"
android:layout_marginTop="210dp"
android:layout_marginLeft="38dp"
android:layout_marginBottom="16dp"
android:hint="Password"
android:fontFamily="@font/actor"
android:gravity="center"
```





<Button

```
android:id="@+id/buttonLogin"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:fontFamily="@font/actor"

android:textSize="20sp"

android:layout_marginTop="290dp"

android:layout_marginLeft="25dp"

android:layout_marginRight="25dp"

android:text="Login" />
```

<TextView

```
android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_marginTop="360dp"

android:layout_marginLeft="40dp"

android:text="Don't have an account?" />
```

<TextView

```
android:id="@+id/register_Screen"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_marginLeft="195dp"
```



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android:layout\_marginTop="360dp"

android:text="Register here"

android:textColor="#03A0B4"

android:textStyle="bold" />

</androidx.cardview.widget.CardView>

</LinearLayout>

### **Home Page:-**

<?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:layout\_gravity="center"

android:gravity="center"

tools:context=".HomeActivity">

<TextView

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:textSize="40sp"

android:text="Hello Home Screen"/>

</LinearLayout>



**JAVA Code:**

**Register Page :-**

```
package com.example.ad_exp_3;

import androidx.annotation.NonNull;
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;
import android.widget.TextView;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.auth.AuthResult;
import com.google.firebase.auth.FirebaseAuth;

public class Register extends AppCompatActivity {
    TextView login_Screen;
    EditText editTextEmail, editTextPassword;
    FirebaseAuth mAuth;
    Button buttonRegister;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_register);

        init();
        initiate();
    }
    private void init()
    {
        mAuth = FirebaseAuth.getInstance();
        editTextEmail = findViewById(R.id.email_register);
        editTextPassword = findViewById(R.id.password_register);
        buttonRegister = findViewById(R.id.buttonRegister);
        login_Screen = findViewById(R.id.login_Screen);
    }
    private void initiate()
    {
        buttonRegister.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = editTextEmail.getText().toString();
```



```
String password = editTextPassword.getText().toString();
registerUser(email, password);
    }
});
login_Screen.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        startActivity(new Intent(Register.this, MainActivity.class));
    }
});
}
private void registerUser(String email, String password)
{
    mAuth.createUserWithEmailAndPassword(email, password)
        .addOnCompleteListener(new OnCompleteListener<AuthResult>() {
            @Override
            public void onComplete(@NonNull Task<AuthResult> task) {
                if (task.isSuccessful()) {
                    // Registration successful
                    Toast.makeText(Register.this, "Registration successful",
Toast.LENGTH_SHORT).show();
                    startActivity(new Intent(Register.this, HomeActivity.class));
                    finish();
                } else {
                    // Registration failed
                    Toast.makeText(Register.this, "Registration failed",
Toast.LENGTH_SHORT).show();
                }
            }
        });
}
}
```

#### Login Page :-

```
package com.example.ad_exp_3;

import androidx.annotation.NonNull;
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;
import android.widget.TextView;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.auth.AuthResult;
```



```
public class MainActivity extends AppCompatActivity {
    TextView register_Screen;
    EditText editTextEmail, editTextPassword;
    FirebaseAuth mAuth;
    Button buttonLogin;

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

        init();
        initiate();
    }
    private void init()
    {
        mAuth = FirebaseAuth.getInstance();
        editTextEmail = findViewById(R.id.email_login);
        editTextPassword = findViewById(R.id.password_login);
        buttonLogin = findViewById(R.id.buttonLogin);
        register_Screen = findViewById(R.id.register_Screen);
    }
    private void initiate()
    {
        buttonLogin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = editTextEmail.getText().toString();
                String password = editTextPassword.getText().toString();
                loginUser(email, password);
            }
        });

        register_Screen.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                startActivity(new Intent(MainActivity.this, Register.class));
            }
        });
    }

    private void loginUser(String email, String password)
    {
        mAuth.signInWithEmailAndPassword(email, password)
            .addOnCompleteListener(new OnCompleteListener<AuthResult>() {
                @Override
                public void onComplete(@NonNull Task<AuthResult> task) {
                    if (task.isSuccessful()) {
```



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// Login successful

Toast.makeText(MainActivity.this, "Login successful",

Toast.LENGTH\_SHORT).show();

startActivity(new Intent(MainActivity.this, HomeActivity.class));

finish();

} else {

// Login failed

Toast.makeText(MainActivity.this, "Authentication failed",

Toast.LENGTH\_SHORT).show();

}

}

});

}

}

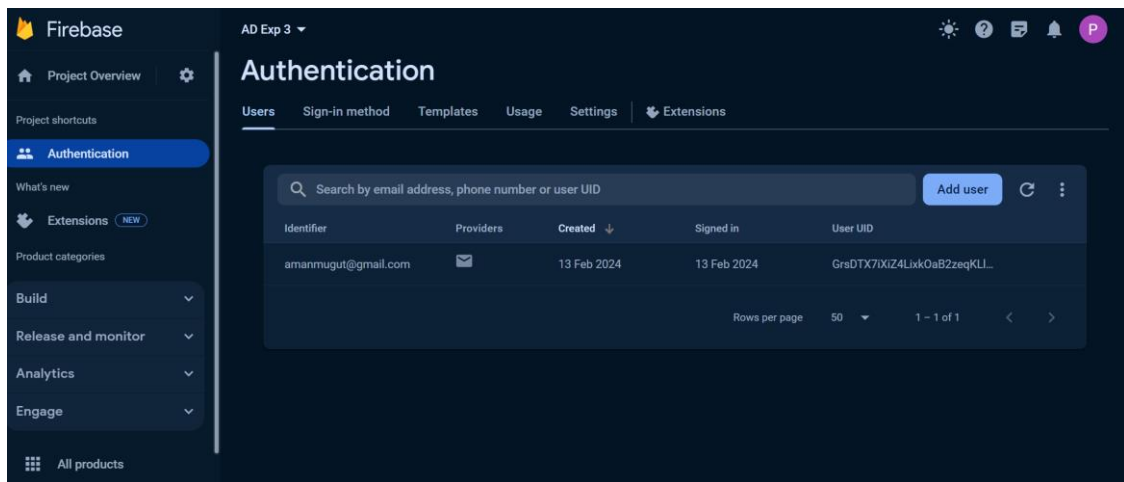
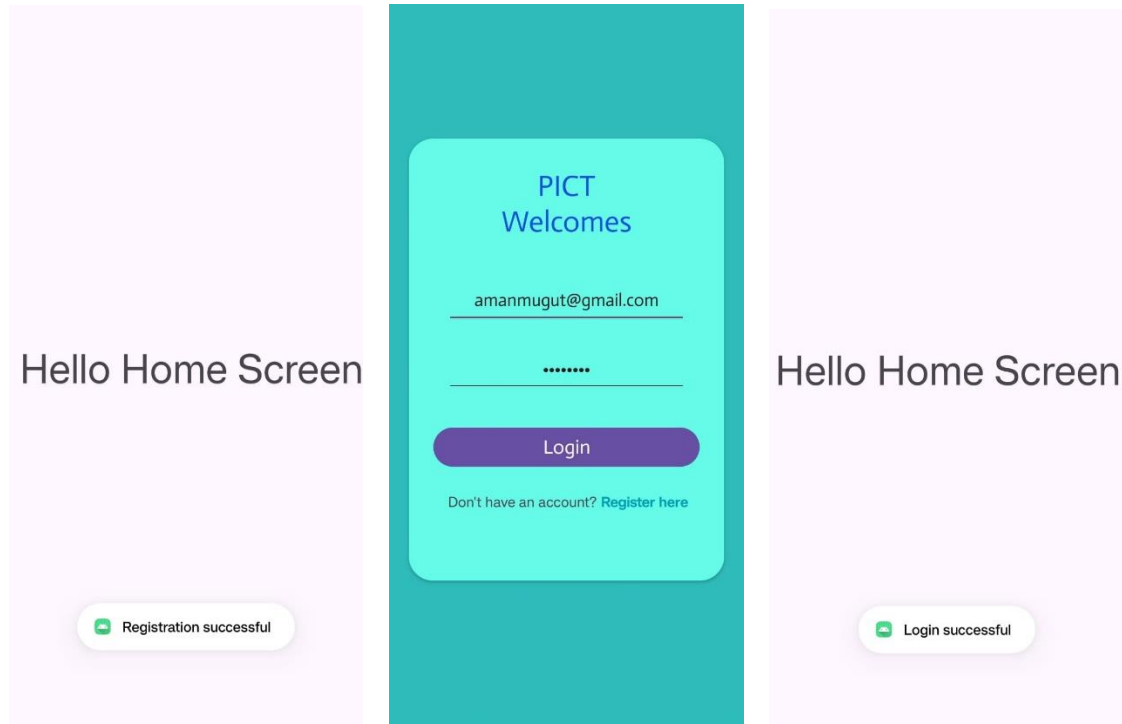
**Output:**

The output displays three sequential screenshots of a mobile application interface for PICT (Pune Institute of Computer Technology). Each screen has a teal background and a light blue rounded rectangle containing the login/register form.

- Screen 1 (Login):** Displays "PICT Welcomes" at the top. Below are input fields for "Email" and "Password". A purple "Login" button is at the bottom. A link "Don't have an account? Register here" is at the very bottom.
- Screen 2 (Registration):** Displays "PICT Welcomes" at the top. Below are input fields for "Email" and "Password". A purple "Register" button is at the bottom. A link "Already have an account? Login here" is at the very bottom.
- Screen 3 (Registration with input):** Displays "PICT Welcomes" at the top. The "Email" field contains "amanmugut@gmail.com" and the "Password" field contains "\*\*\*\*\*". A purple "Register" button is at the bottom. A link "Already have an account? Login here" is at the very bottom.



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**Conclusion:**

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