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GitHub link:
https://github.com/LukeT11/WebMobileProgramming/tree/main/Mobile_Lessons/Mobile_ICP1

Mobile ICP1

Android Studio Introduction

Introduction

Android is a mobile operating system that uses a modified version of the Linux Kernel. It is used and managed using the programming language Java and uses Google developed Java libraries. Android apps can be split up into four components including activity, service, content provider and broadcast receiver.

Android Studio is used for mobile app development, specifically for the Android operating system. Android apps are written in the programming language of Java. Android Studio allows you to use a physical or a virtual device while creating an application making it easier to layout and design the app as you go.

Tasks

Mobile ICP1 tasks, description and example uses.

Tasks (Android Studio Introduction Login Application):

- Basic Login Application
  - Contain Username and Password
  - Create a 'login' button on the login screen
  - Clicking login button should take you to a welcome screen with valid credentials
    - Otherwise, display a message with incorrect credentials
    'LOGOUT" button on the welcome screen
  - 'LOGOUT' button takes you back to the login screen

- Code

```xml
1   <?xml version="1.0" encoding="utf-8"?>
2   <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3       xmlns:app="http://schemas.android.com/apk/res-auto"
4       xmlns:tools="http://schemas.android.com/tools"
5       android:layout_width="match_parent"
6       android:layout_height="match_parent"
7       tools:context=".MainActivity">
8
9       /*Sign-in text display box*/
10      <TextView
11          android:id="@+id/logo"
12          android:layout_width="match_parent"
13          android:layout_height="wrap_content"
14          android:layout_margin="20dp"
15          android:gravity="center"
16          android:padding="20dp"
17          android:text="Sign In"
18          android:textSize="40sp" />
19
20      /*Edit text box to enter username*/
21      <EditText
22          android:id="@+id/username"
23          android:layout_width="match_parent"
```

```xml
22          android:id="@+id/username"
23          android:layout_width="match_parent"
24          android:layout_height="wrap_content"
25          android:layout_below="@+id/logo"
26          android:layout_marginStart="20dp"
27          android:layout_marginTop="20dp"
28
29          android:layout_marginEnd="20dp"
30          android:layout_marginBottom="20dp"
31          android:hint="Username"
32          android:padding="20dp" />
33
34      /*Edit text box to enter password*/
35      <EditText
36          android:id="@+id/password"
37          android:layout_width="match_parent"
38          android:layout_height="wrap_content"
39          android:layout_below="@+id/username"
40          android:layout_marginStart="20dp"
41          android:layout_marginTop="20dp"
42
43          android:layout_marginEnd="20dp"
44          android:layout_marginBottom="20dp"
```

```xml
43            android:layout_marginEnd="20dp"
44            android:layout_marginBottom="20dp"
45            android:hint="Password"
46            android:padding="20dp"
47            />
48
49        /*Button to login the account*/
50        <Button
51            android:id="@+id/btn"
52            android:layout_width="match_parent"
53            android:layout_height="wrap_content"
54            android:text="Login"
55            android:layout_below="@+id/password"
56            android:layout_margin="20dp"
57            android:padding="20dp"
58            />
59
60    </RelativeLayout>
```

```java
1     /*Mobile ICP1 Login Application*/
2
3     package com.example.appdemo;
4
5     import ...
13
14    public class MainActivity extends AppCompatActivity {
15        /*Used Components class creation*/
16        EditText username;
17        EditText password;
18        Button btn;
19
20        @Override
21        protected void onCreate(Bundle savedInstanceState) {
22            super.onCreate(savedInstanceState);
23            setContentView(R.layout.activity_main);
24
25            /*Creates object for GUI interactive components*/
26            username = findViewById(R.id.username);
27            password = findViewById(R.id.password);
28            btn = findViewById(R.id.btn);
29
30            /*Login Button clicked checks for valid entered credentials and performs actions*/
31            btn.setOnClickListener(new View.OnClickListener() {
```

```java
btn = findViewById(R.id.btn);

/*Login Button clicked checks for valid entered credentials and performs actions*/
btn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        /*If username and password combined are valid, display next screen and message*/
        if(username.getText().toString().equals("user") && password.getText().toString().equals("pass")) {
            Intent intent = new Intent( packageContext: MainActivity.this, MainActivity2.class);
            startActivity(intent);
            Toast.makeText( context: MainActivity.this, text: "You entered the right value", Toast.LENGTH_SHORT).
        }
        /*Username and password not valid, display message*/
        else{
            Toast.makeText( context: MainActivity.this, text: "Value is not correct", Toast.LENGTH_SHORT).show();
        }
    }
});
}
}
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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=".MainActivity2">

    /*Welcome text display box*/
    <TextView
        android:id="@+id/Welcome"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:padding="20dp"
        android:text="Welcome"
        android:textSize="40sp"
        android:textAlignment="center"
        />
```

```xml
20              android:textSize="40sp"
21              android:textAlignment="center"
22          />
23
24      /*Logout Button back to sign-in screen*/
25      <Button
26          android:id="@+id/logout"
27          android:layout_width="match_parent"
28          android:layout_height="wrap_content"
29          android:layout_below="@+id/Welcome"
30          android:layout_margin="20dp"
31          android:layout_marginStart="20dp"
32          android:layout_marginTop="20dp"
33          android:layout_marginEnd="20dp"
34          android:layout_marginBottom="20dp"
35          android:padding="20dp"
36          android:text="LOGOUT" />
37  </RelativeLayout>
```
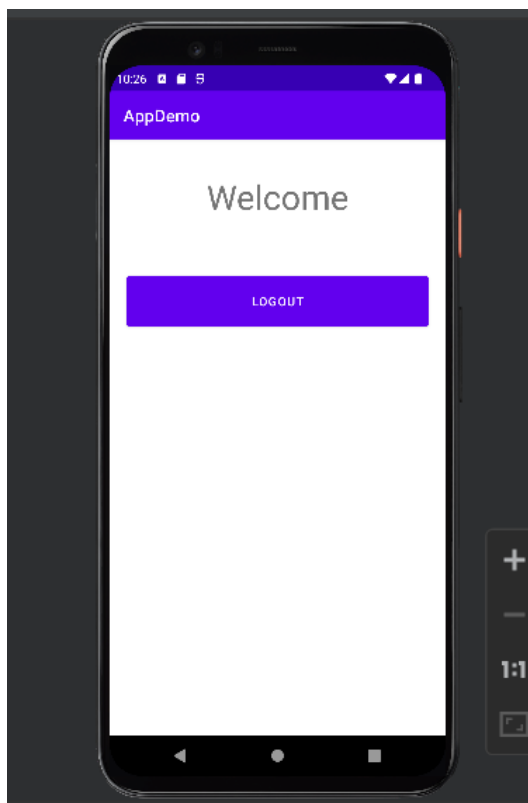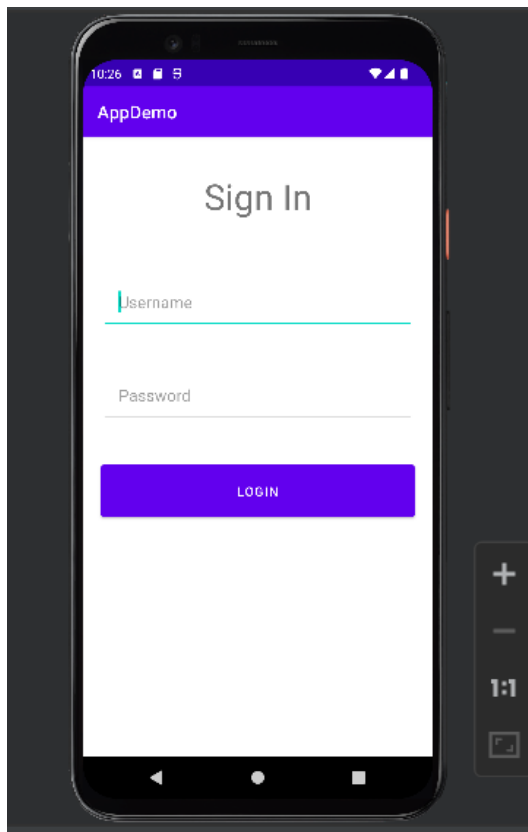
```java
1   package com.example.appdemo;
2
3   import ...
9
10  public class MainActivity2 extends AppCompatActivity {
11      /*Used components class creation*/
12      Button logout;
13
14      @Override
15      protected void onCreate(Bundle savedInstanceState) {
16          super.onCreate(savedInstanceState);
17          setContentView(R.layout.activity_main2);
18
19          /*Creates object for GUI interactive component*/
20          logout = findViewById(R.id.logout);
21
22          /*Logout button clicked takes user back to sign-in screen*/
23          logout.setOnClickListener(new View.OnClickListener() {
24              @Override
25              public void onClick(View v) {
26                  Intent intent = new Intent( packageContext: MainActivity2.this, MainActivity.class);
27                  startActivity(intent);
28              }
29          });
30      }
```

- Output

Button

Edit Text Fields

Navigate Screens

```java
public void onClick(View v) {
    /*If username and password combined are valid, display next screen and message*/
    if(username.getText().toString().equals("user") && password.getText().toString().equals("pass")) {
        Intent intent = new Intent( packageContext: MainActivity.this, MainActivity2.class);
        startActivity(intent);
        Toast.makeText( context: MainActivity.this, text: "You entered the right value", Toast.LENGTH_SHORT).show();
```

Message

Contributors

I worked independently, so I am the sole contributor.

Conclusion

I used Android Studio to develop a simple login application using Java and learned how to create, build and debug in Android Studio. This application displays a login or sign-in screen that has the user enter a username and password to login to an account within the application and a button to login with. If the entered credentials are valid, then it displays a message saying it's valid and moves on to the next screen, which is the welcome screen. If the entered credentials are incorrect, it displays a message that they are incorrect. Within the welcome page, there is a logout button which takes the user back to the login page and logs the user out.