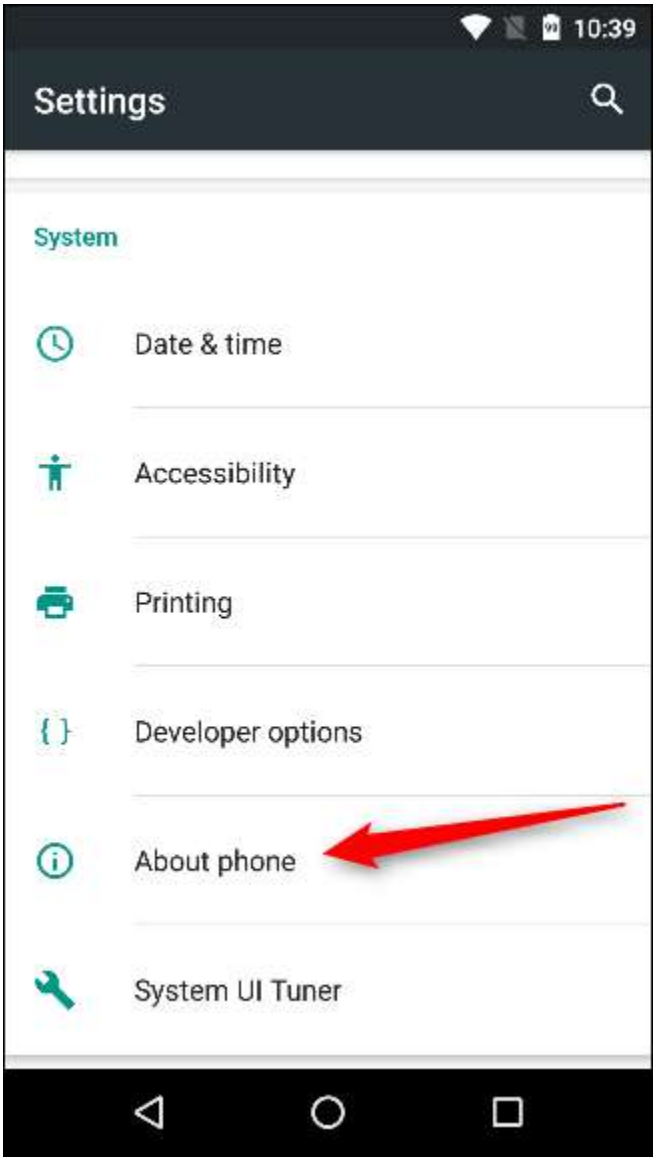
Android Programming Practical Journal

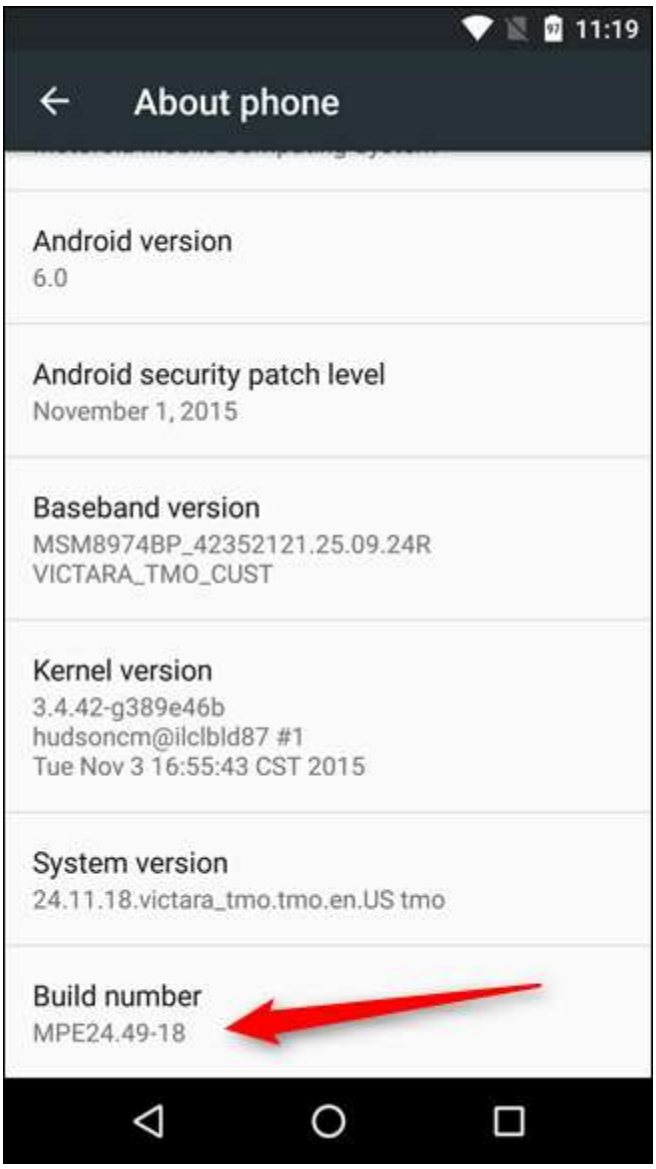
Practical 1

Q1. Setting up Android Developer Mode.
Ans:

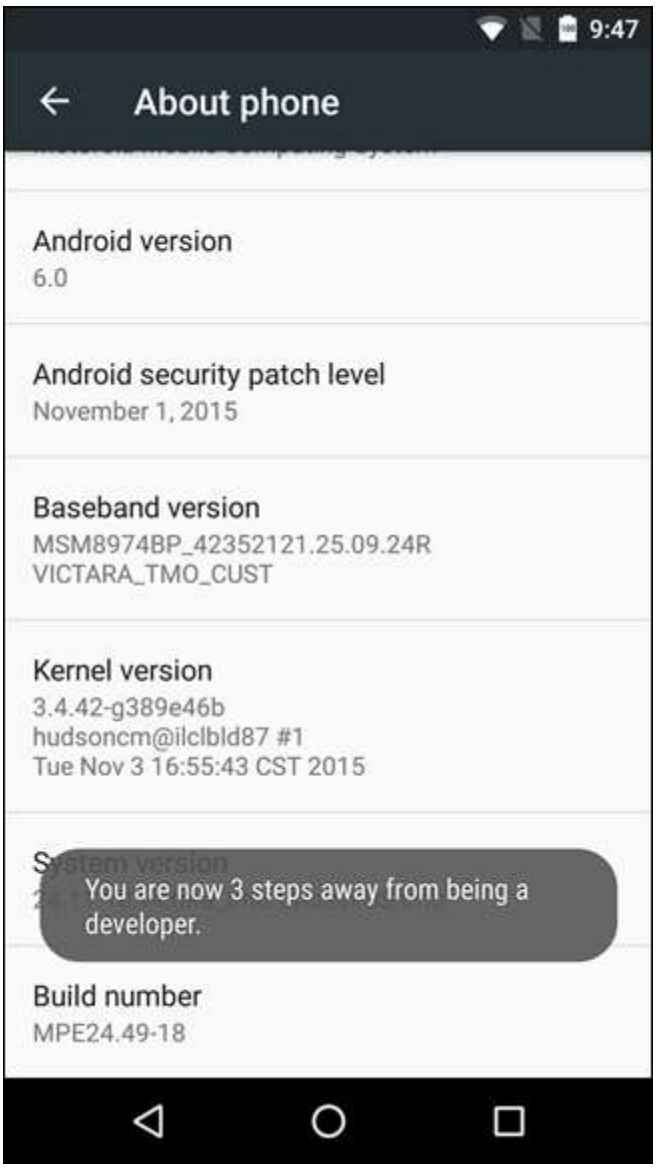
To enable Developer Options, open the Settings screen, scroll down to the bottom, and tap About phone or About tablet.



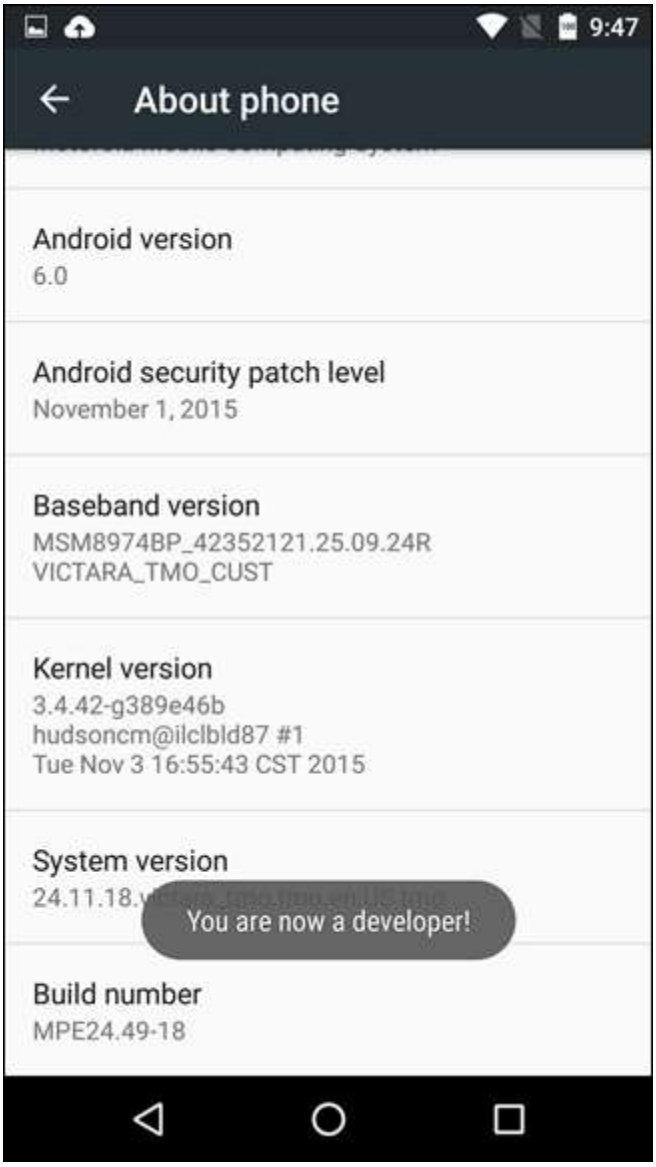
Scroll down to the bottom of the About screen and find the Build number.



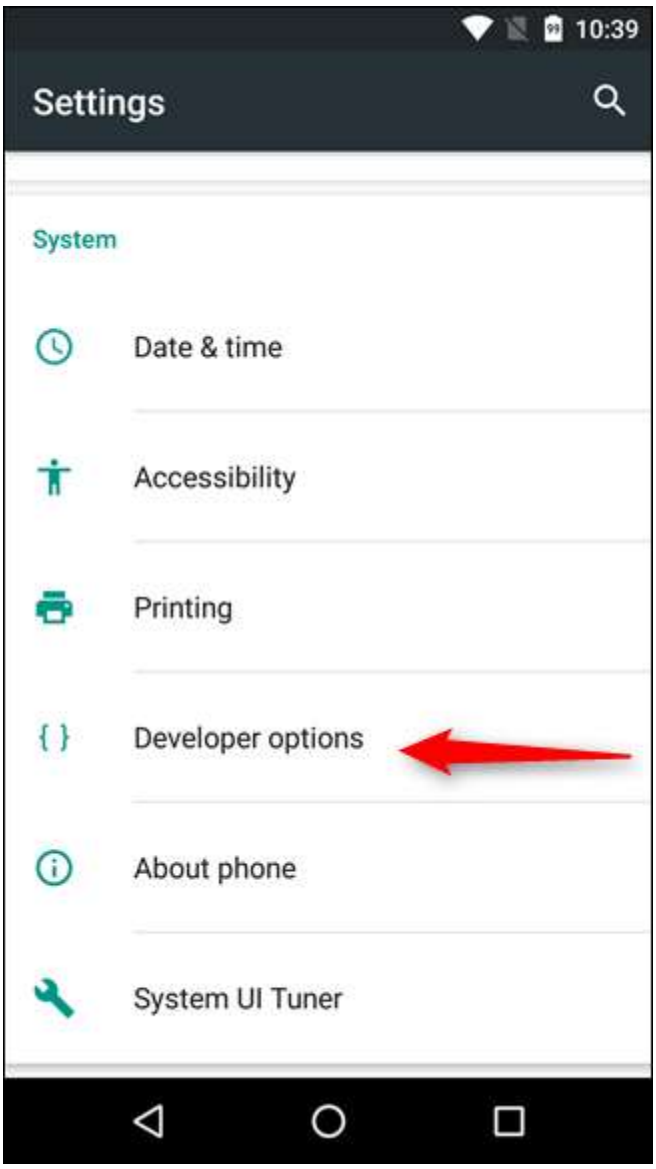
Tap the Build number field seven times to enable Developer Options. Tap a few times and you'll see a toast notification with a countdown that reads "You are now *X* steps way from being a developer."



When you're done, you'll see the message "You are now a developer!". Congratulations. Don't let this newfound power go to your head.

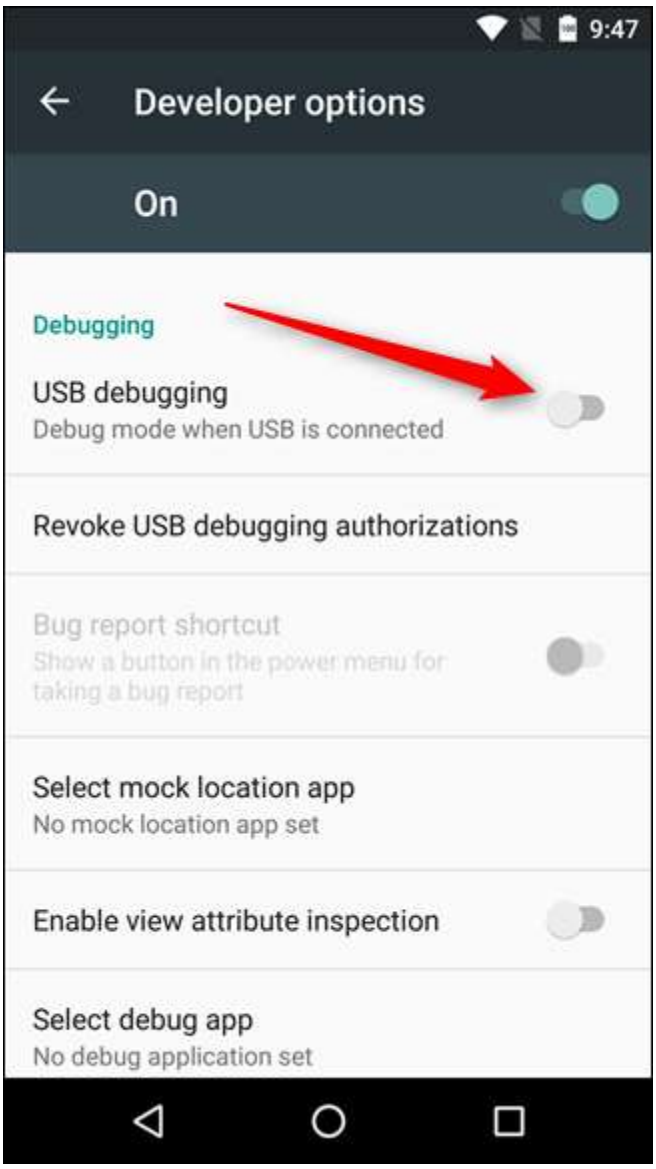


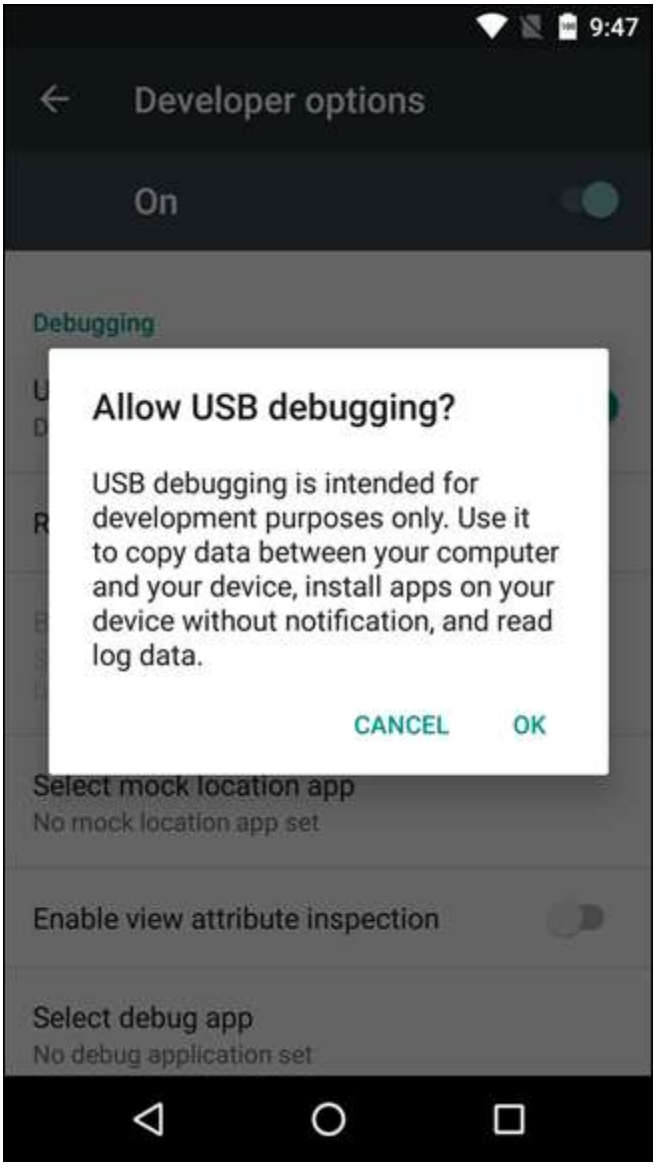
Tap the Back button and you'll see the Developer options menu just above the "About Phone" section in Settings. This menu is now enabled on your device—you won't have to repeat this process again unless you perform a factory reset.



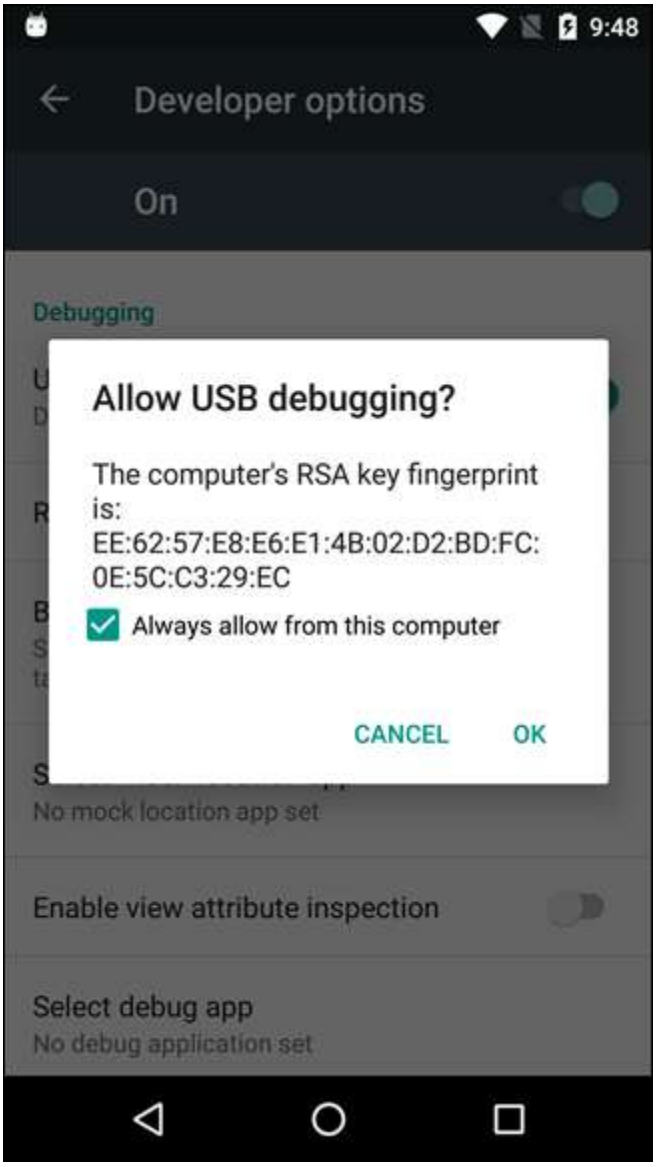
How to Enable USB Debugging

To enable USB Debugging, you'll need to jump into the Developer options menu, scroll down to the Debugging section, and toggle the "USB Debugging" slider.


9:47
Developer options
On
Debugging
USB debugging
Debug mode when USB is connected
Revoke USB debugging authorizations
Bug report shortcut
Show a button in the power menu for taking a bug report
Select mock location app
No mock location app set
Enable view attribute inspection
Select debug app
No debug application set



Once upon a time, USB Debugging was thought to be a security risk if left on all the time. Google has done a few things that make that less of an issue now, because debugging requests have to be granted on the phone—when you plug the device into an unfamiliar PC, it will prompt you to allow USB debugging (as seen in the screenshot below).



Practical 2

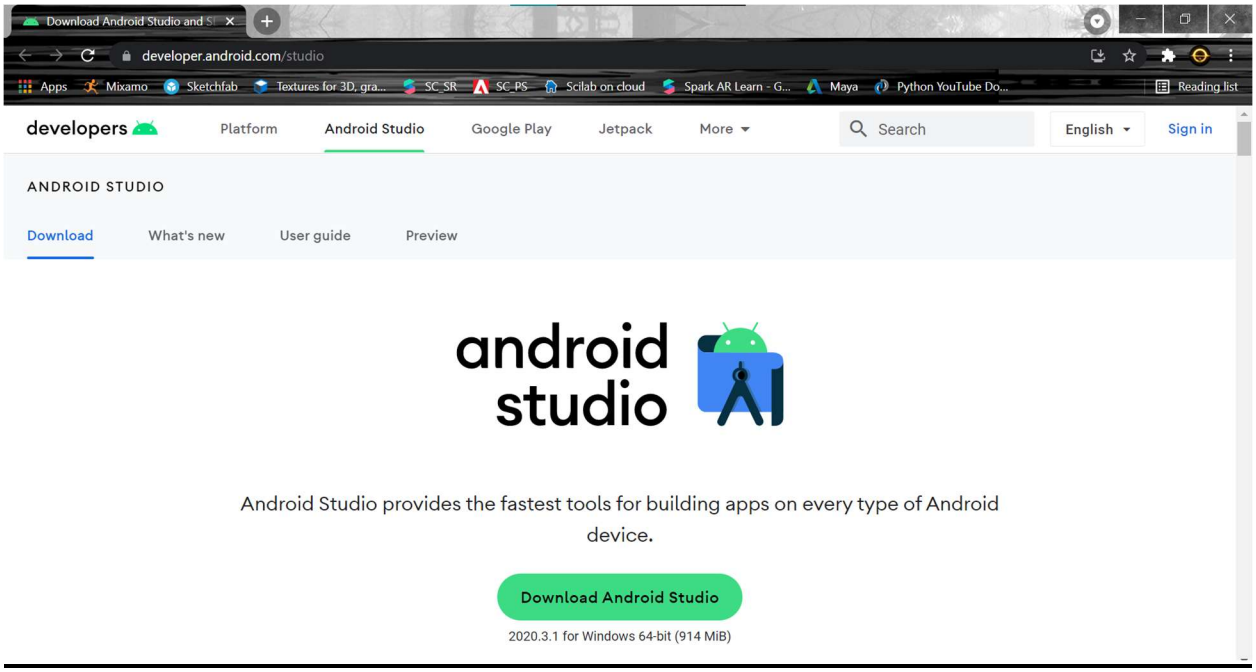
Installation of Android Studio.

Step 1

To download the Android Studio, visit the official Android Studio website in your web browser.

Step 2

Click on the "Download Android Studio" option.

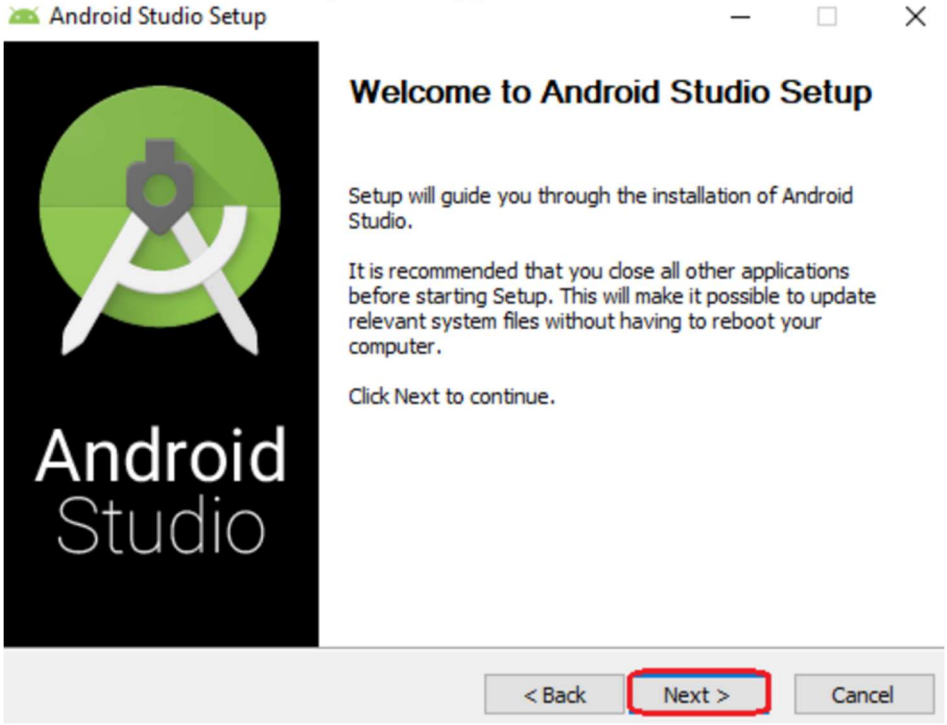


Step 3

Double click on the downloaded "Android Studio-ide.exe" file.

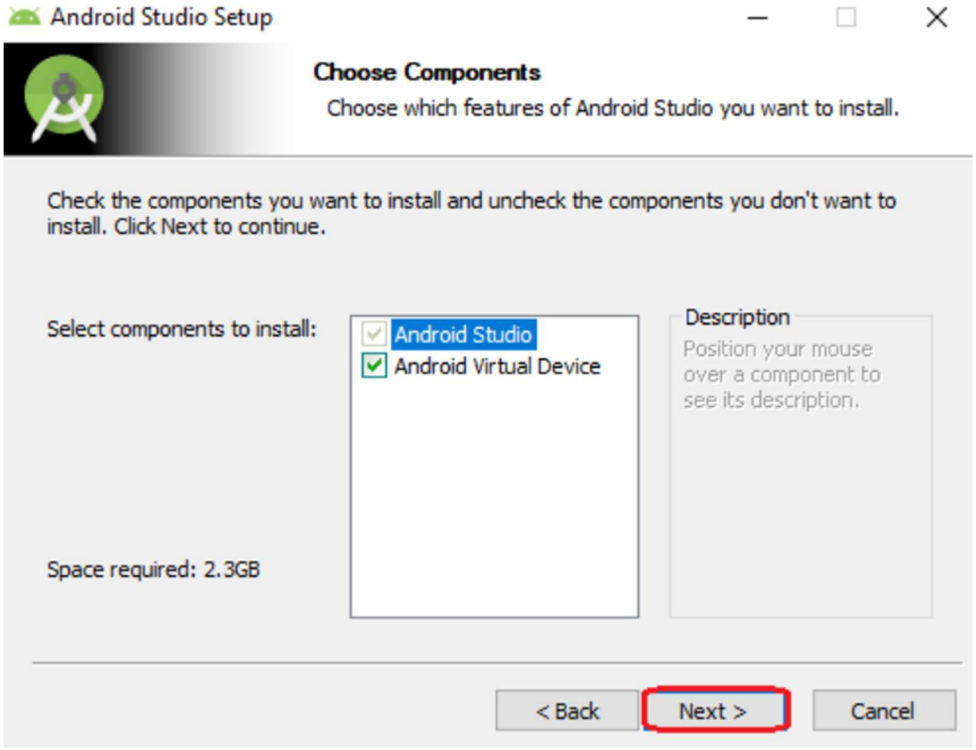
Step 4

"Android Studio Setup" will appear on the screen and click "Next" to proceed.



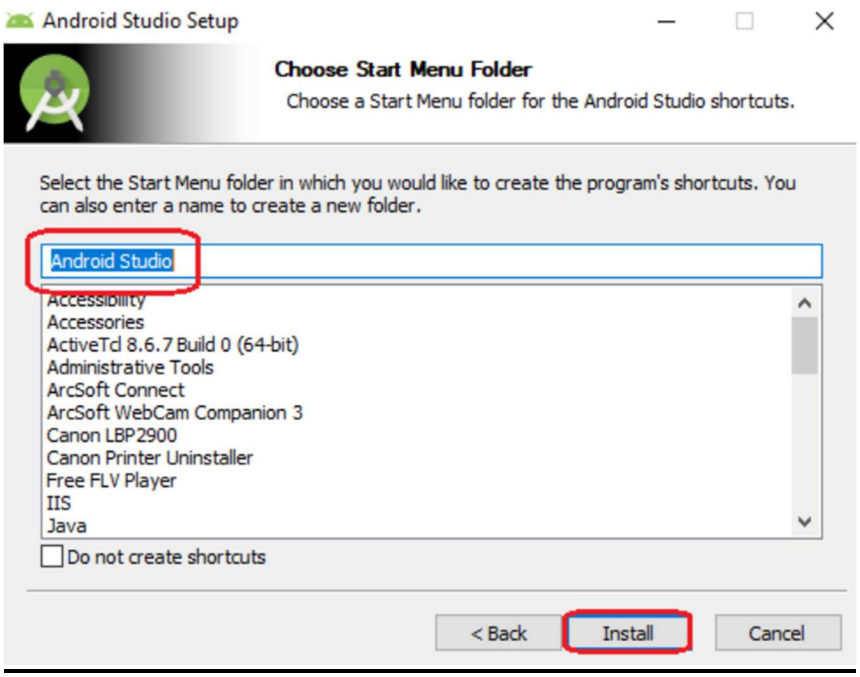
Step 5

Select the components that you want to install and click on the "Next" button.



Step 6

Now, browse the location where you want to install the Android Studio and click "Next" to proceed. And then Choose a start menu folder for the "Android Studio" shortcut and click the "Install" button to proceed.

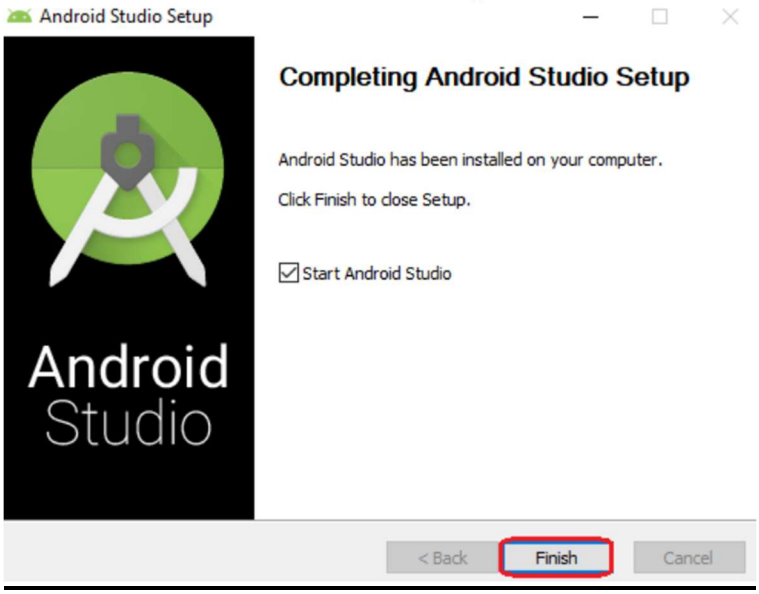


Step 7

After the successful completion of the installation, click on the "Next" button.

Step 8

Click on the "Finish" button to proceed.



Practical 3

Creating First Application in Android Studio.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
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="com.example.hamza.p3.MainActivity">

    <ImageView
        android:id="@+id/imageView3"
        android:layout_width="696dp"
        android:layout_height="890dp"
        app:srcCompat="@drawable/a1"
        tools:layout_editor_absoluteX="-122dp"
        tools:layout_editor_absoluteY="-122dp" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hamza Mitkar Practical 3"
        android:textSize="20dp"
        android:textColor="@color/colorAccent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.067" />

</android.support.constraint.ConstraintLayout>
```

Mainactivity.java

```
package com.example.hamza.p3;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

Design


7:00
p 3
Hamza Mitkar Practical 3

Practical 4

Creating Multi Activity Application with Graphics and Animations.

Steps:

1. Modify src/MainActivity.java file to add animation code
2. Modify layout XML file res/layout/activity_main.xml add any GUI component if required.
3. Create a new folder under res directory and call it anim. Confirm it by visiting res/anim
4. Right click on anim and click on new and select Android XML file You have to create different files that are listed below.
5. Create files myanimation.xml, clockwise.xml, fade.xml, move.xml, blink.xml, slide.xml and add the XML code.
6. No need to change default string constants. Android studio takes care of default constants at values/string.xml.
7. Run the application and choose a running android device and install the application on it and verify the results.

activity_main.xml file

```
<?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"
    >
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/a1"
        android:layout_alignBottom="@+id/button4"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Practical 4"
        android:id="@+id/textView"
        android:textColor="@color/colorAccent"
        android:textSize="35dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hamza Mitkar"
        android:id="@+id/textView2"
        android:textColor="#F8F8FF"
        android:textSize="35dp"
        android:layout_below="@+id/textView"
        android:layout_centerHorizontal="true" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
```

```
        android:layout_marginBottom="72dp"
        android:layout_marginEnd="23dp"
        android:layout_marginRight="23dp"
        android:layout_toLeftOf="@+id/button2"
        android:layout_toStartOf="@+id/button2"
        android:onClick="clockwise"
        android:text="zoom" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="clockwise"
        android:id="@+id/button2"
        android:layout_alignTop="@+id/button"
        android:layout_centerHorizontal="true"
        android:onClick="zoom"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="fade"
        android:id="@+id/button3"
        android:layout_alignTop="@+id/button2"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"
        android:onClick="fade"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="blink"
        android:onClick="blink"
        android:id="@+id/button4"
        android:layout_below="@+id/button"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="move"
        android:onClick="move"
        android:id="@+id/button5"
        android:layout_below="@+id/button2"
        android:layout_alignRight="@+id/button2"
        android:layout_alignEnd="@+id/button2"
        android:layout_alignLeft="@+id/button2"
        android:layout_alignStart="@+id/button2" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="slide"
        android:onClick="slide"
        android:id="@+id/button6"
        android:layout_below="@+id/button3"
        android:layout_toRightOf="@+id/textView2"
        android:layout_toEndOf="@+id/textView2" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.hamza.p4;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
```

```
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void clockwise(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation = AnimationUtils.loadAnimation(getApplicationContext(),
                R.anim.myanimation);
        image.startAnimation(animation);
    }

    public void zoom(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation1 = AnimationUtils.loadAnimation(getApplicationContext(),
                R.anim.clockwise);
        image.startAnimation(animation1);
    }

    public void fade(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation1 =
                AnimationUtils.loadAnimation(getApplicationContext(),
                        R.anim.fade);
        image.startAnimation(animation1);
    }

    public void blink(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation1 =
                AnimationUtils.loadAnimation(getApplicationContext(),
                        R.anim.blink);
        image.startAnimation(animation1);
    }

    public void move(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation1 =
                AnimationUtils.loadAnimation(getApplicationContext(), R.anim.move);
        image.startAnimation(animation1);
    }

    public void slide(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation1 =
                AnimationUtils.loadAnimation(getApplicationContext(), R.anim.slide);
        image.startAnimation(animation1);
    }
}
```

res/anim

blink.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <alpha android:fromAlpha="0.0"
        android:toAlpha="1.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:duration="600"
        android:repeatMode="reverse"
        android:repeatCount="infinite"/>
</set>
```

fade.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/accelerate_interpolator">
    <alpha
        android:fromAlpha="0"
        android:toAlpha="1"
        android:duration="2000" >
    </alpha>

    <alpha
        android:startOffset="2000"
        android:fromAlpha="1"
        android:toAlpha="0"
        android:duration="2000" >
    </alpha>

</set>
```

clockwise.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <rotate xmlns:android="http://schemas.android.com/apk/res/android"
        android:fromDegrees="0"
        android:toDegrees="360"
        android:pivotX="50%"
        android:pivotY="50%"
        android:duration="5000" >
    </rotate>

    <rotate xmlns:android="http://schemas.android.com/apk/res/android"
        android:startOffset="5000"
        android:fromDegrees="360"
        android:toDegrees="0"
        android:pivotX="50%"
        android:pivotY="50%"
        android:duration="5000" >
    </rotate>
</set>
```

myanimation.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <scale xmlns:android="http://schemas.android.com/apk/res/android"
        android:fromXScale="0.5"
        android:toXScale="3.0"
        android:fromYScale="0.5"
        android:toYScale="3.0"
        android:duration="5000"
        android:pivotX="50%"
        android:pivotY="50%" >
    </scale>

    <scale xmlns:android="http://schemas.android.com/apk/res/android"
        android:startOffset="5000"
        android:fromXScale="3.0"
        android:toXScale="0.5"
        android:fromYScale="3.0"
        android:toYScale="0.5"
        android:duration="5000"
        android:pivotX="50%"
        android:pivotY="50%" >
    </scale>


</set>
```

slide.xml

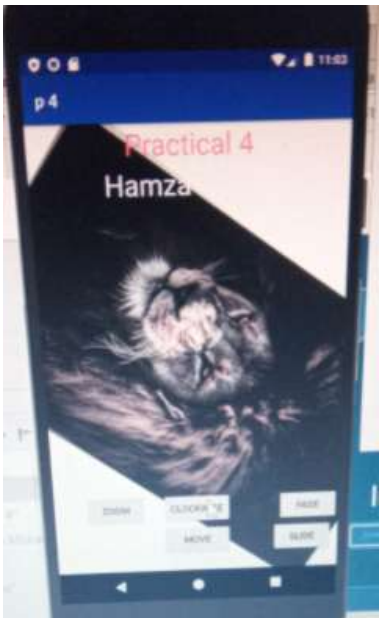
```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    android:fillAfter="true" >

    <scale
        android:duration="500"
        android:fromXScale="1.0"
        android:fromYScale="1.0"
        android:interpolator="@android:anim/linear_interpolator"
        android:toXScale="1.0"
        android:toYScale="0.0" />
</set>
```

move.xml

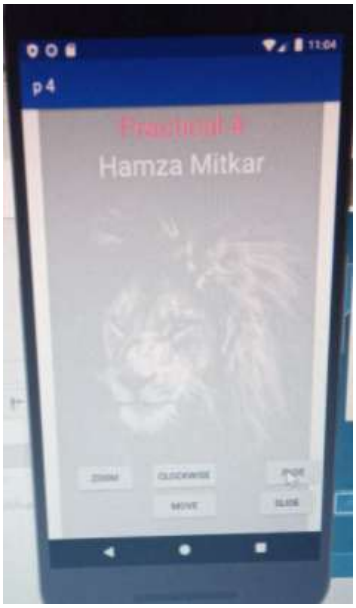
```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/linear_interpolator"
    android:fillAfter="true">

    <translate
        android:fromXDelta="0%p"
        android:toXDelta="75%p"
        android:duration="800" />
</set>
```

Output

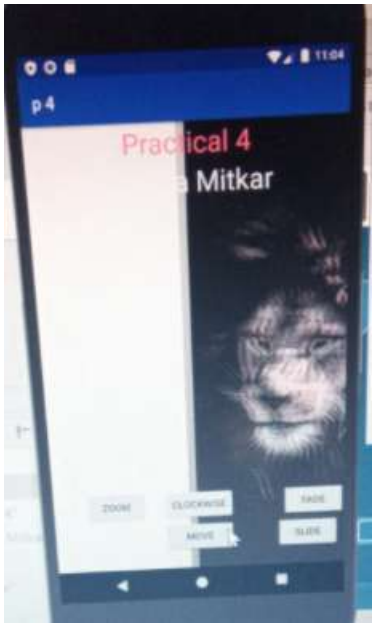
Zoom(button)



Clockwise(button)



Fade(button)



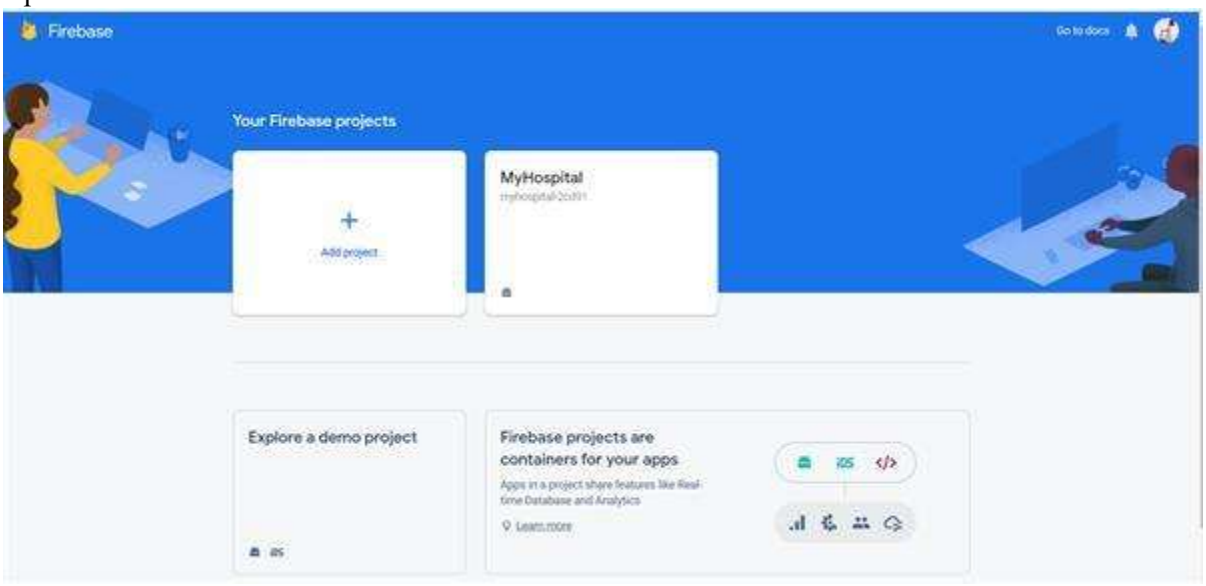
Move(button)

Slide(button)

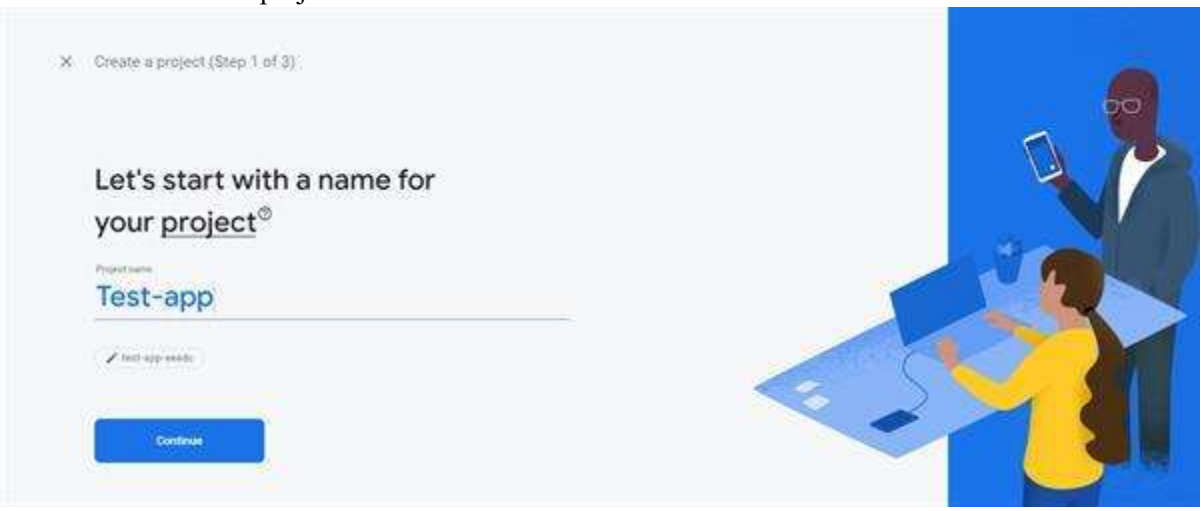
Practical 5

Creating Application with Firebase Database.

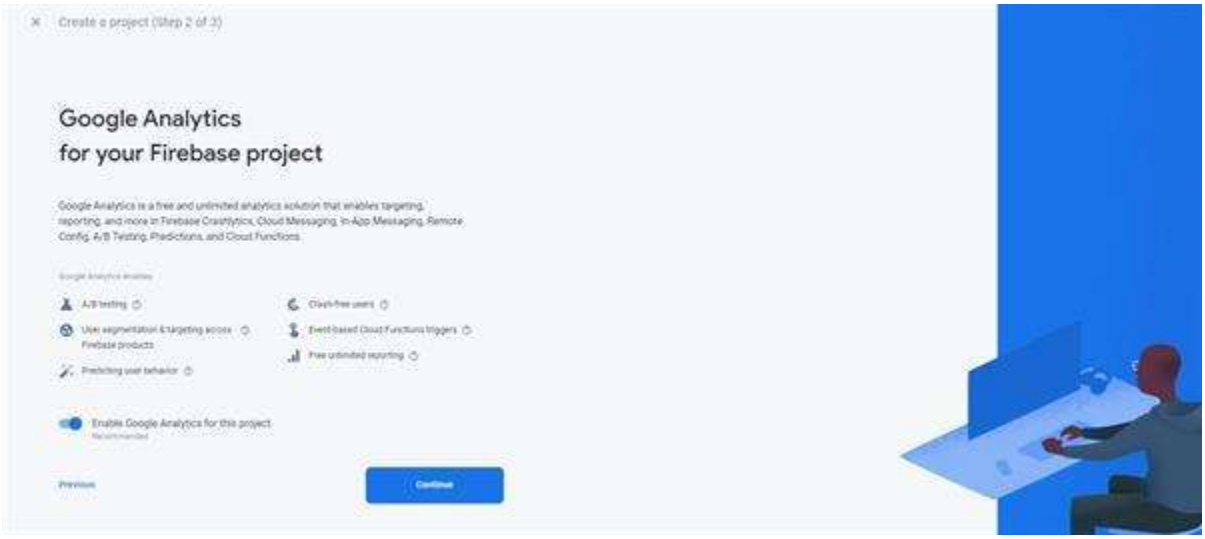
To connect the project with the firebase:
Connect with console.firebase.google.com from home.
Open the console firebase



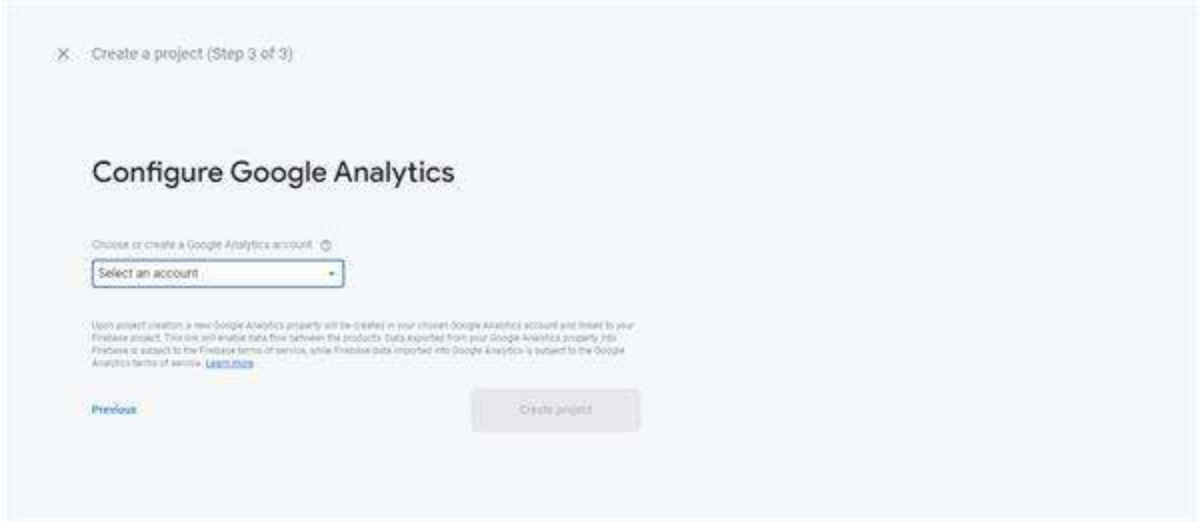
Enter the name of the project->continue



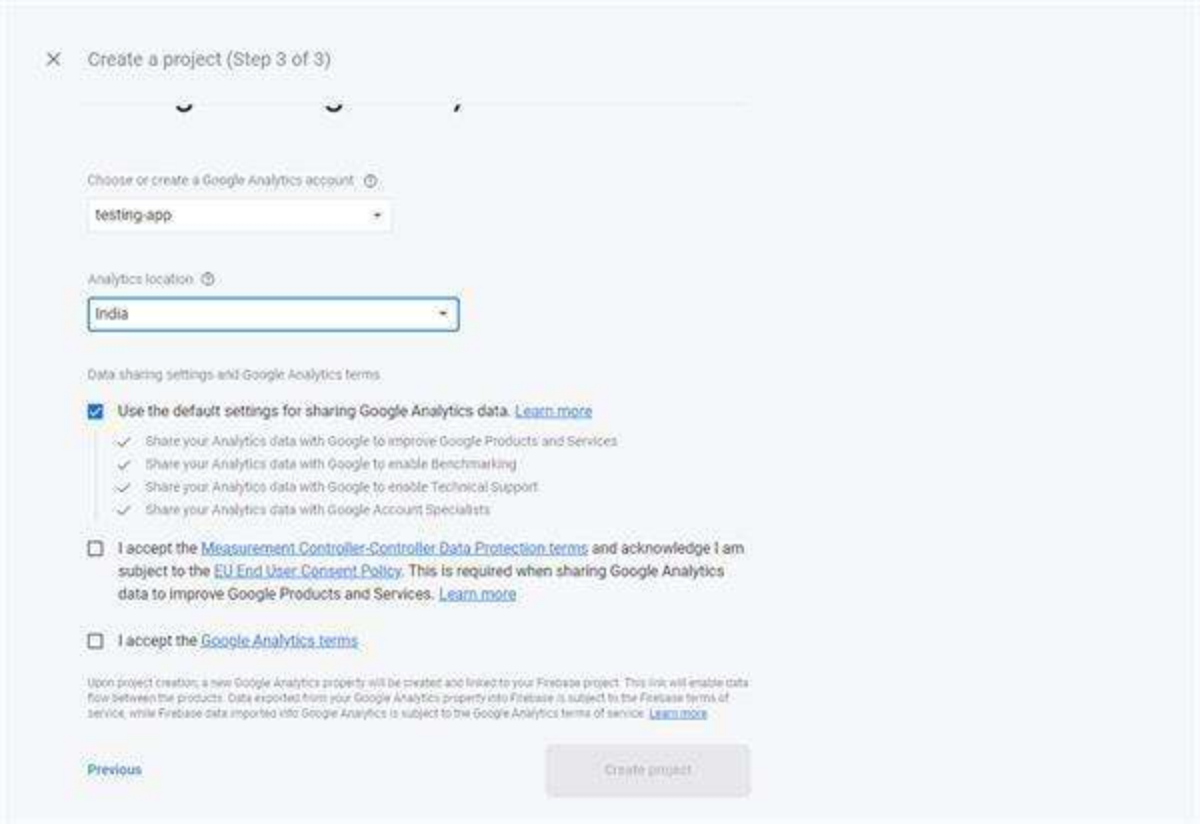
Click continue



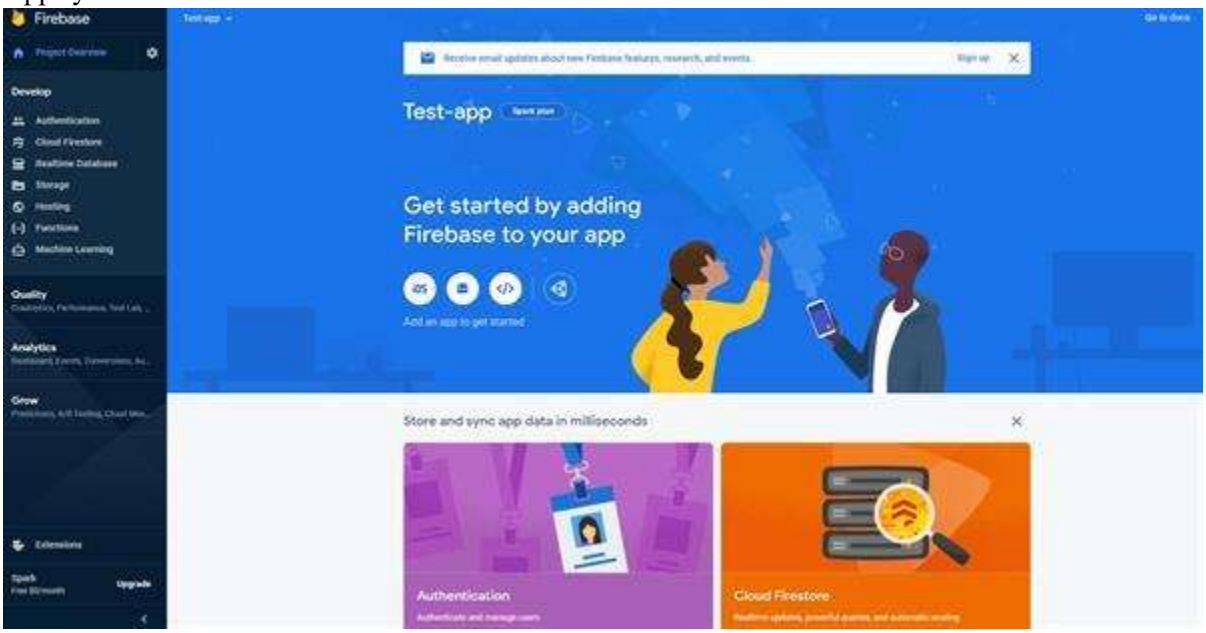
Configure google analytic account-> Use odd and create new->accept all the acknowledge->continue



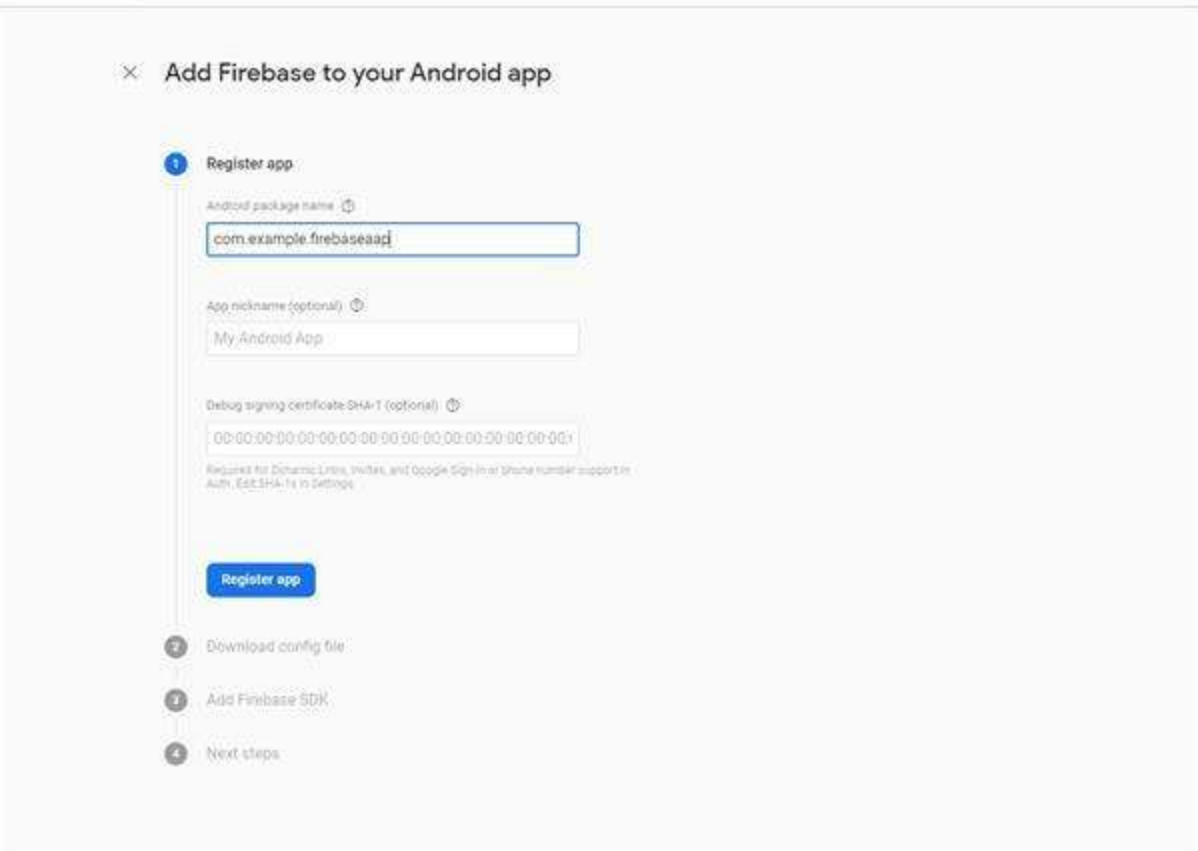
Click on create your project.



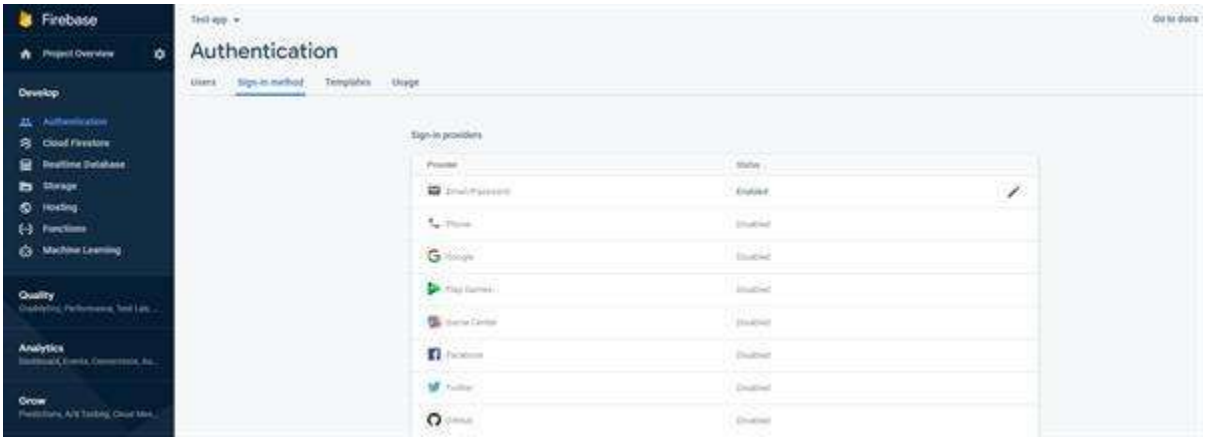
App symbols are visible



Click on the android symbol and add the name of your project



Download the JSON file and add it to your project in the app module.
Add all the files on Gradle.
Click create.
Enable the status in authentication on the firebase console.



What do we do in this android app?

We create a login and registration application and connect both the pages with the firebase for authentication purposes. The information of the user gets register when the user does the registration. Only the registered user can log in other it will show an error message.

XML file of the Registration 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:gravity="center"
    tools:context=".Register">
    <EditText
        android:id="@+id/username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginRight="4pt"
        android:layout_marginLeft="4pt"
        android:layout_marginTop="10pt"
        android:hint="Username"/>
    <EditText
        android:id="@+id/password1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10pt"
        android:layout_marginLeft="4pt"
        android:layout_marginRight="4pt"
        android:hint="Password"/>
    <Button
        android:id="@+id/sign"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginRight="4pt"
        android:layout_marginLeft="4pt"
        android:layout_marginTop="10pt"
        android:text="SIGN UP"/>


</LinearLayout>
```

XML file of the 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"
    android:orientation="vertical"
```

```
    android:gravity="center"
    tools:context=".login">
    <EditText
        android:id="@+id/email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginRight="4pt"
        android:layout_marginLeft="4pt"
        android:layout_marginTop="10pt"
        android:hint="Username"/>
    <EditText
        android:id="@+id/password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10pt"
        android:layout_marginLeft="4pt"
        android:layout_marginRight="4pt"
        android:hint="Password"/>
    <Button
        android:id="@+id/btn_login"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginRight="4pt"
        android:layout_marginLeft="4pt"
        android:layout_marginTop="10pt"
        android:text="LOG IN"/>
    <Button
        android:id="@+id/btn_signup"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginRight="4pt"
        android:layout_marginLeft="4pt"
        android:layout_marginTop="10pt"
        android:text="SIGN UP"/>


</LinearLayout>
```

Java code of Registration page

```
package com.example.firebaseaap;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.util.Patterns;
```

```
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
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 {
    Button btn2_signup;
    EditText user_name, pass_word;
    FirebaseAuth mAuth;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_register);
        user_name=findViewById(R.id.username);
        pass_word=findViewById(R.id.password1);
        btn2_signup=findViewById(R.id.sign);
        mAuth=FirebaseAuth.getInstance();
        btn2_signup.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = user_name.getText().toString().trim();
                String password= pass_word.getText().toString().trim();
                if(email.isEmpty())
                {
                    user_name.setError("Email is empty");
                    user_name.requestFocus();
                    return;
                }
                if(!Patterns.EMAIL_ADDRESS.matcher(email).matches())
                {
                    user_name.setError("Enter the valid email address");
                    user_name.requestFocus();
                    return;
                }
                if(password.isEmpty())
                {
                    pass_word.setError("Enter the password");
                    pass_word.requestFocus();
                    return;
                }
                if(password.length()<6)
```

```
            {
                pass_word.setError("Length of the password should be more than 6");
                pass_word.requestFocus();
                return;
            }
            mAuth.createUserWithEmailAndPassword(email,password).addOnCompleteListener(new
OnCompleteListener<AuthResult>() {
                @Override
                public void onComplete(@NonNull Task<AuthResult> task) {
                    if(task.isSuccessful())
                    {
                        Toast.makeText(Register.this,"You are successfully Registered",
Toast.LENGTH_SHORT).show();
                    }
                    else
                    {
                        Toast.makeText(Register.this,"You are not Registered! Try
again",Toast.LENGTH_SHORT).show();
                    }
                }
            });

        }
    });

  }
}
```

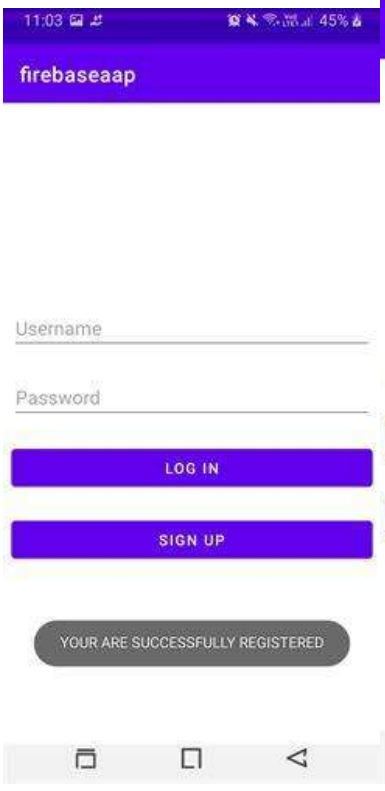
Java code of Login Page

```
package com.example.firebaseaap;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.util.Patterns;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import com.google.firebase.auth.FirebaseAuth;

public class login extends AppCompatActivity {
  private EditText user_name, pass_word;
  FirebaseAuth mAuth;

  @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_login);
    user_name=findViewById(R.id.email);
    pass_word=findViewById(R.id.password);
    Button btn_login = findViewById(R.id.btn_login);
    Button btn_sign = findViewById(R.id.btn_signup);
    mAuth=FirebaseAuth.getInstance();
    btn_login.setOnClickListener(v -> {
        String email= user_name.getText().toString().trim();
        String password=pass_word.getText().toString().trim();
        if(email.isEmpty())
        {
            user_name.setError("Email is empty");
            user_name.requestFocus();
            return;
        }
        if(!Patterns.EMAIL_ADDRESS.matcher(email).matches())
        {
            user_name.setError("Enter the valid email");
            user_name.requestFocus();
            return;
        }
        if(password.isEmpty())
        {
            pass_word.setError("Password is empty");
            pass_word.requestFocus();
            return;
        }
        if(password.length()<6)
        {
            pass_word.setError("Length of password is more than 6");
            pass_word.requestFocus();
            return;
        }
        mAuth.signInWithEmailAndPassword(email,password).addOnCompleteListener(task -> {
            if(task.isSuccessful())
            {
                startActivity(new Intent(login.this, MainActivity.class));
            }
            else
            {
                Toast.makeText(login.this,
                        "Please Check Your login Credentials",
                        Toast.LENGTH_SHORT).show();
            }
```

```
            });
        });
        btn_sign.setOnClickListener(v -> startActivity(new Intent(login.this,Register.class )));
    }

}
```
OUTPUT:


11:02
45%
firebaseaap
yamini24@gmail.com
yaminipassword
SIGN UP


11:03
45%
firebaseaap
Username
Password
LOG IN
SIGN UP
YOUR ARE SUCCESSFULLY REGISTERED


11:03
45%
firebaseaap
yamini24@gmail.com
yaminipassword
LOG IN
SIGN UP


11:03
45%
firebaseaap
Hello World!

Practical 6

Installation of Ionic and required Components.

Step 1: Make sure you have an up-to-date version of Node.js installed on your system.

Step 2: Open the command prompt and verify the Node.js version by using the command node -v.

```
C:\Users\Hamza>node -v
v16.13.0
```

Step 3: To install the Ionic CLI globally with the NPM, enter the following command in the terminal window.

npm install -g ionic

```
C:\Users\Hamza>npm install -g ionic
npm WARN deprecated formidable@1.2.6: Please upgrade to latest, formidable@v2 or formidable@v3! Check these notes: https://bit.ly/2ZEqIau
npm WARN deprecated uuid@3.4.0: Please upgrade  to version 7 or higher.  Older versions may use Math.random() in certain circumstances, which is known to be problematic.  S
ee https://v8.dev/blog/math-random for details.
npm WARN deprecated ionic@5.4.16: The Ionic CLI now uses @ionic/cli for its package name!  https://twitter.com/ionicframework/status/1223268498362851330

added 232 packages, and audited 233 packages in 24s

21 packages are looking for funding
  run `npm fund` for details

12 vulnerabilities (6 moderate, 4 high, 2 critical)

To address all issues possible (including breaking changes), run:
  npm audit fix --force

Some issues need review, and may require choosing
a different dependency.

Run `npm audit` for details.
```

Step 4: To create a new app open your command prompt, and enter the following command:

C:\Users\Username> cd Desktop

C:\Users\Usermame\Desktop> ionic start

```
C:\Users\Hamza>cd Desktop

C:\Users\Hamza\Desktop>ionic start

Every great app needs a name!

Please enter the full name of your app. You can change this at any time. To bypass this prompt next time, supply name,
the first argument to ionic start.

? Project name: practical 6

Pick a framework!

Please select the JavaScript framework to use for your new app. To bypass this prompt next time, supply a value for the
--type option.

? Framework: (Use arrow keys)
> Angular | https://angular.io
  React   | https://reactjs.org
```

Step 5: To start the blank Ionic app, execute the following command in the terminal window.

C:\Users\Username\Desktop> ionic start myIonicApp blank

```
C:\Users\Hamza>\Desktop> ionic start myIonicApp blank
'\Desktop' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Hamza>ionic start myIonicApp blank

Pick a framework!

Please select the JavaScript framework to use for your new app. To bypass this prompt next time, supply a value for the
--type option.

? Framework: Angular
√ Preparing directory .\myIonicApp - done!
√ Downloading and extracting blank starter - done!

Installing dependencies may take several minutes.

  ---------------------------------------------------------


       Ionic Appflow, the mobile DevOps solution by Ionic

          Continuously build, deploy, and ship apps
       Focus on building apps while we automate the rest

       Learn more: https://ion.link/appflow

  ---------------------------------------------------------
```

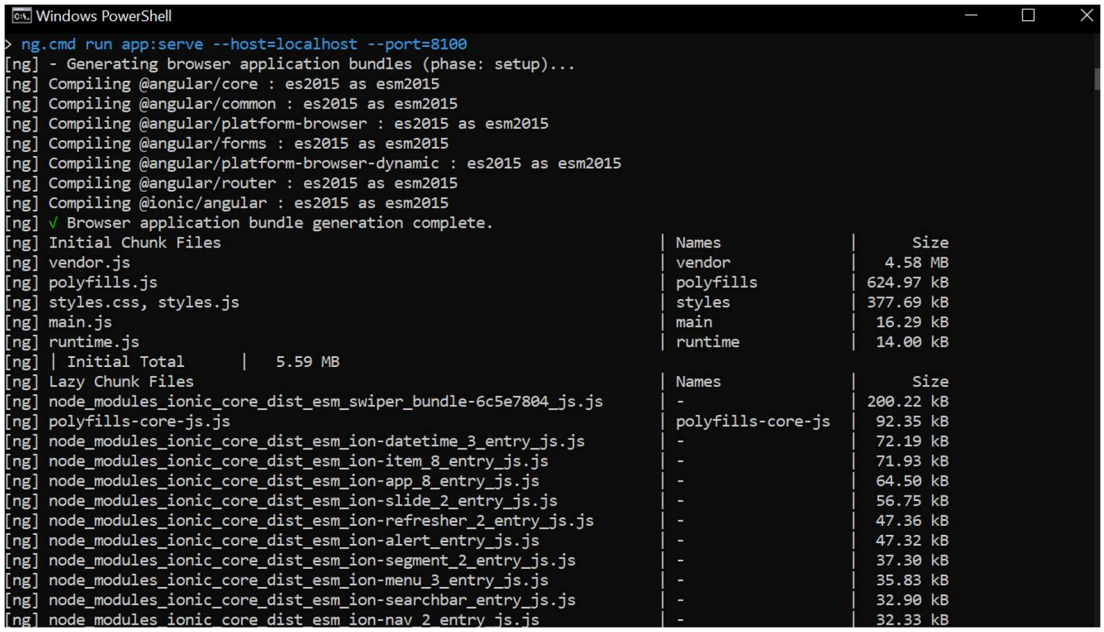
Step 6: Now, you need to navigate to your newly created project and run it with the following command.

C:\Users\Username\Desktop> cd myIonicApp

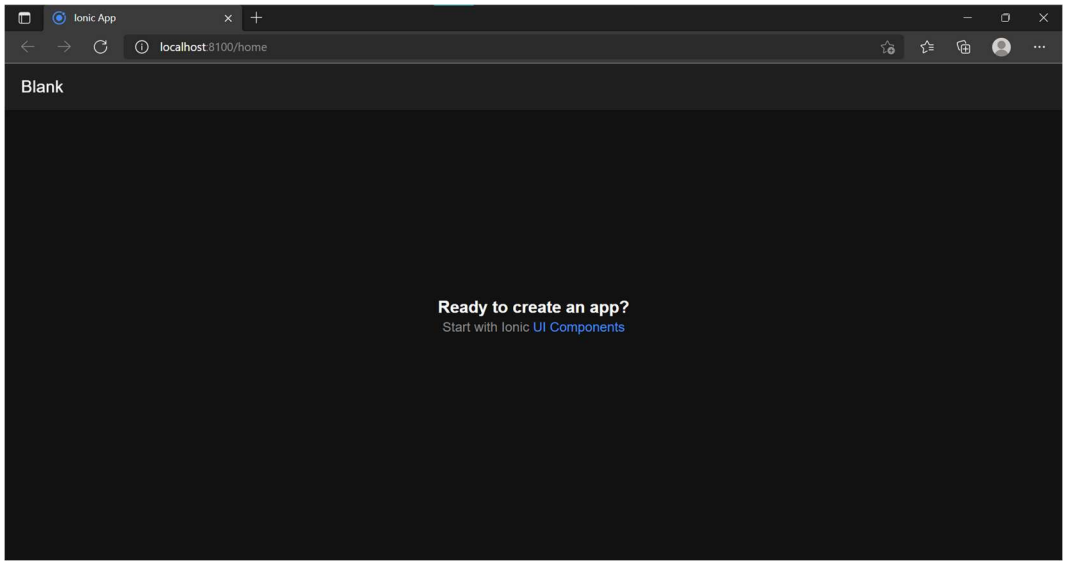
C:\Users\Username\Desktop> ionic serve

```
C:\Users\Hamza>cd myIonicApp

C:\Users\Hamza\myIonicApp>ionic serve
> ng.cmd run app:serve --host=localhost --port=8100
[ng] - Generating browser application bundles (phase: setup)...
[ng] Compiling @angular/core : es2015 as esm2015
[ng] Compiling @angular/common : es2015 as esm2015
[ng] Compiling @angular/platform-browser : es2015 as esm2015
[ng] Compiling @angular/forms : es2015 as esm2015
[ng] Compiling @angular/platform-browser-dynamic : es2015 as esm2015
[ng] Compiling @angular/router : es2015 as esm2015
[ng] Compiling @ionic/angular : es2015 as esm2015
[ng] √ Browser application bundle generation complete.
[ng] Initial Chunk Files                                    | Names           |      Size
[ng] vendor.js                                              | vendor          |    4.58 MB
[ng] polyfills.js                                           | polyfills       |  624.97 kB
[ng] styles.css, styles.js                                  | styles          |  377.69 kB
[ng] main.js                                                | main            |   16.29 kB
[ng] runtime.js                                             | runtime         |   14.00 kB
```

Step 7: When you run the above command, your terminal window looks like the below image.



Step 8: After completing all the steps, you will get the output in the browser, which you can see in the below image.



Practical 7

a. Creating First Application in Cordova
b. Creating Mobile Friendly CSS Layout
c. First AJAX page
d. Using a CSS Framework

Step 1 - Creating App:
Open the directory where you want the app to be installed in command prompt. We will create it on desktop.

CordovaProject is the directory name where the app is created.
io.cordova.hellocordova is the default reverse domain value. You should use your own domain value if possible.
CordovaApp is the title of your app.

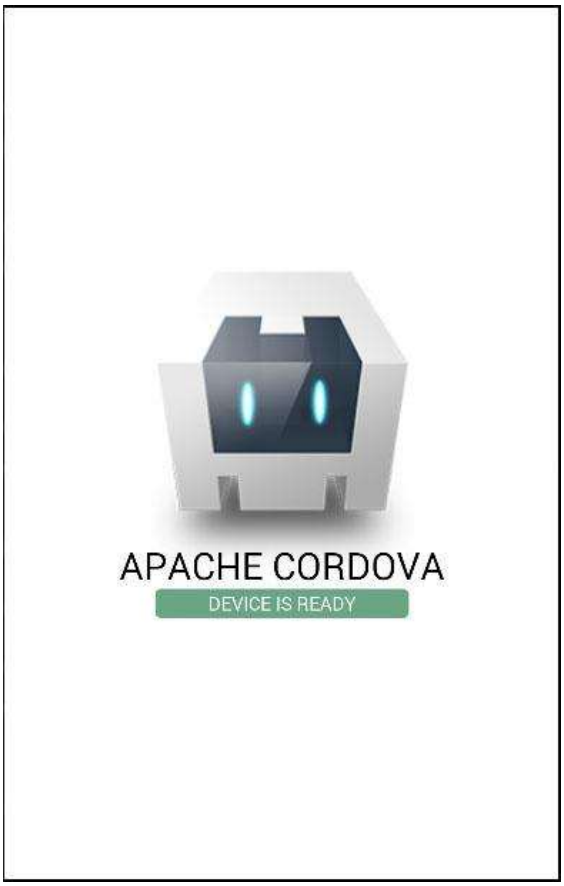
Step 2 - Adding Platforms:
You need to open your project directory in the command prompt. In our example, it is the CordovaProject. You should only choose platforms that you need. To be able to use the specified platform, you need to have installed the specific platform SDK. Since we are developing on windows, we can use the following platforms. We have already installed Android SDK, so we will only install android platform for this tutorial.

Step 3 - Building and Running:
In this step we will build the app for a specified platform so we can run it on mobile device or emulator.
C:\Users\username\Desktop\CordovaProject>cordova build android

Now we can run our app. If you are using the default emulator you should use –
C:\Users\username\Desktop\CordovaProject>cordova emulate android

If you want to use the external emulator or real device you should use –
C:\Users\username\Desktop\CordovaProject>cordova run android

Once we run the app, it will install it on the platform we specified. If everything is finished without errors, the output should show the default start screen of the app



Create Mobile Friendly CSS Layout:

In this example, I simply wrote some screen measurements to the page when the events fire.

To see all of this in action, I've created Example 2.7 shown in Listing 2.10. This application implements both the CSS queries and JavaScript events to create a web application that reacts to changes that occur while the application is running.

Listing 2.10 Example 2.7 Application index.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Example 2.7</title>
  <meta charset="utf-8" />
  <meta name="format-detection" content="telephone=no" />
  <meta name="viewport" content="user-scalable=no, initial-scale=1,
    maximum-scale=1, minimum-scale=1, width=device-width,
    height=device-height" />
  <style>
    /* portrait */
    @media screen and (orientation: portrait) {
```

```
    /* portrait-specific styles */
    body {
      background-color: blue;
      color: white;
    }
  }
  /* landscape */
  @media screen and (orientation: landscape) {
    /* landscape-specific styles */
    body {
      background-color: red;
      color: black;
    }
  }
</style>
<script src="cordova.js"></script>
<script>
  br = "<br />";

  function onBodyLoad() {
    alert("Body Load");
    document.addEventListener("deviceready", onDeviceReady, false);
    //set the orientationchange event listener
    window.addEventListener('orientationchange',
      onOrientationChange);
    //for devices that don't fire orientationchange
    window.addEventListener("resize", onResize, false);
    //Fire this at the start to set the initial orientation on
    //the page
    updatePage();
  }

  function onDeviceReady() {
    navigator.notification.alert("Cordova is ready!");

  }

  function updatePage(msg) {
    //Build an output string consisting of the different screen
    //measurement values
    var strongStart = "<strong>";
    var strongEnd = "</strong>";
    //var StrRes, or, sw, sh, ww, wh;
    or = strongStart + "Orientation: " + strongEnd +
      window.orientation + " degrees";
    console.log(or);
    strRes = or + br;
```

```
    sw = strongStart + "Width: " + strongEnd + screen.width;
    console.log(sw);
    strRes += sw + br;
    sh = strongStart + "Height: " + strongEnd + screen.height;
    console.log(sh);
    strRes += sh + br;
    ww = strongStart + "Inner width: " + strongEnd +
      window.innerWidth;
    console.log(ww);
    strRes += ww + br;
    wh = strongStart + "Inner height: " + strongEnd +
      window.innerHeight;
    console.log(wh);
    strRes += wh + br;
    document.getElementById('appInfo').innerHTML = strRes;
   }

   function onOrientationChange() {
    var msg;
    console.log("Orientation has changed");
    switch (abs(window.orientation)) {
    case 90:
      console.log("Device is in Landscape mode");
      break;
    default:
      console.log("Device is in Portrait mode");
      break;
    }
    updatePage();
   }

   function onResize() {
    console.log("Resize event fired");
    updatePage();
   }
  </script>
</head>
<body onload="onBodyLoad()">
  <h1>Example 2.7</h1>
  <p>This is a Cordova application that responds to device
    orientation and resize events.</p>
  <p id="appInfo">Waiting for Cordova Initialization to complete.</p>
</body>
</html>
```

Figure 2.7 shows the application running on an Android device in portrait orientation.

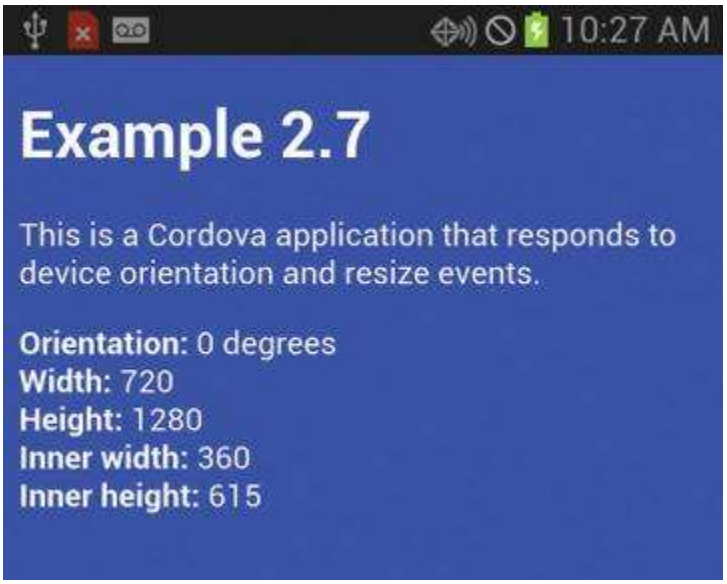


Figure 2.7

Figure 2.8 shows the application running on an Android device in landscape orientation.

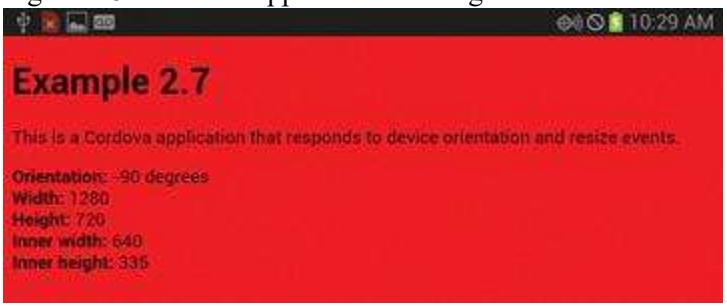


Figure 2.8

By Proivding Values of screen-size in @media screen…… you can create mobile friendly application using css and you can also use bootstrap to create responsive application.

First AJAX Page:
Let us suppose we want to make a dynamic cordova based application where user needs to exchange data with server, say login credential verification, so we can use AJAX to send the data to the server and through the same gateway server, send the result back to the user.

Ajax basic code: We will use jquery.

$.ajax is a jQuery function to make http POST, GET etc request to the server and receive results without the page being refreshed or reloaded.

```
$.ajax({
   type : 'get',     //Request method: GET, POST
   url : 'http://studytonight.php/login.php',  //Where to send the data
   data: {name, password},  //What data you want to send
   success:function(data) {
```

```
        //Here you will receive data from server
        //Do what you want to do with data
        console.log(data)     //This is a example, like we want to print the result
    }
})
```

Using a CSS Framework:

index.html

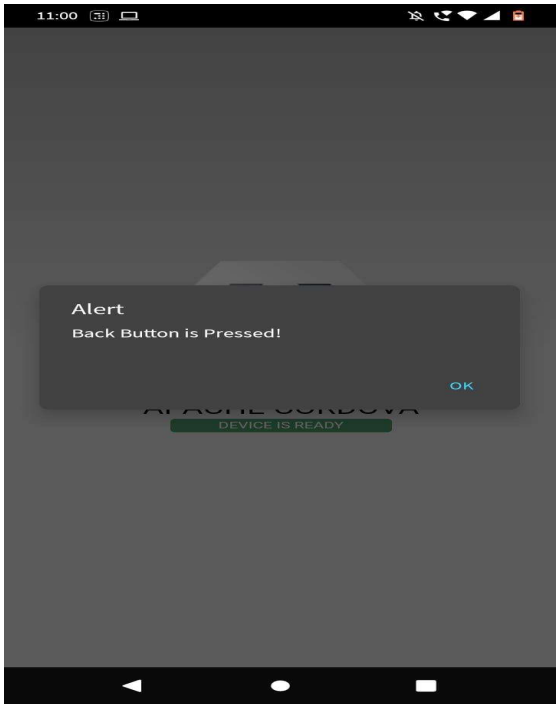
```
<!DOCTYPE html>
<html>
    <head>
        <title>Hello World</title>
        <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css"
integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    </head>
    <body>
        <div class="app">
            <div class="container">
                <div class="row">
                    <div class="bg-primary col-md"> </div>
                    <div class="bg-secondary col-md"> </div>
                    <div class="bg-primary col-md"> </div>
                    <div class="bg-secondary col-md"> </div>
                    <div class="bg-primary col-md"> </div>
                    <div class="bg-secondary col-md"> </div>
                    <div class="bg-primary col-md"> </div>
                </div>
            </div>
            <div class="row">
```

```
    <div class="colmd">
       
    </div>
  </div>
  <div class="row">
    <div class="colmd">
       
    </div>
  </div>
  <div class="row">
    <div class="colmd">
       
    </div>
  </div>
  <div class="row">
    <div class="colmd">
       
    </div>
  </div>
  <h1 class="text-center">
    Using The Bootstrap Framework in Cordova
  </h1>

  <div class="text-center " >

  <img src="https://external-
content.duckduckgo.com/iu/?u=https%3A%2F%2Fsdtimes.com%2Fwp-
content%2Fuploads%2F2018%2F01%2Fbootstrap-stack.png"
  class="img-fluid max-width rounded w-25">
```

```
</div>

<div class="container">

    <div class="row">
        <div class="colmd">
             
        </div>
    </div>
    <div class="row">
        <div class="colmd">
             
        </div>
    </div>
    <div class="row">
        <div class="colmd">
             
        </div>
    </div>
    <div class="row">
        <div class="colmd">
             
        </div>
    </div>

</div>
```

```
        <div class="container">
            <div class="row">
                <div class="bg-dark text-light col-md   ">
                    <br> Bootstrap is a free and open-source CSS framework directed at responsive,
                    mobile-first front-end web development. It contains CSS- and JavaScript-based
design templates for typography,
                    forms, buttons, navigation, and other interface components.<br><br>
                </div>
            </div>
        </div>


    </div>
  </body>
</html>
```

Practical 8



Button Overriding, Battery Status

Button Overriding :

Handling Back Button

```
document.addEventListener("backbutton", onBackKeyDown, false);
function onBackKeyDown(e) {
e.preventDefault();
alert('Back Button is Pressed!');
}
```

Output:

Battery status :

This Cordova plugin is used for monitoring device's battery status. The plugin will monitor every change that happens to device's battery.

Step 1 - Installing Battery Plugin

To install this plugin we need to open command prompt window and run the following code.

C:\Users\username\Desktop\CordovaProject>cordova plugin add cordova-plugin-battery-status.

Step 2 - Add Event Listener

When you open index.js file, you will find onDeviceReady function. This is where the event listener should be added.

```
window.addEventListener("batterystatus", onBatteryStatus, false);
```

Step 3 - Create Callback Function

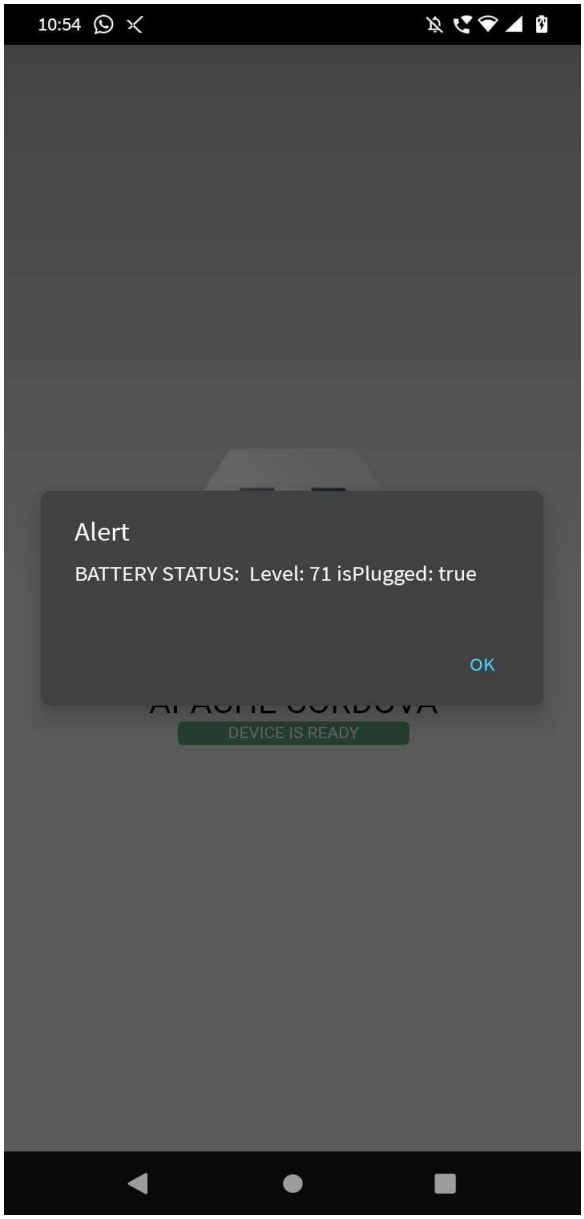
We will create onBatteryStatus callback function at the bottom of index.js file.

```
function onBatteryStatus(info) {
alert("BATTERY STATUS:  Level: " + info.level + " isPlugged: " + info.isPlugged);
}
```

When we run the app, alert will be triggered. At the moment battery is 100% charged.

When status is changed, the new alert will inform us. The battery status is now 99% charged.

Output:



b. Camera, Device Orientation

Camera :

This plugin is used for taking photos or using files from image gallery.

Step 1 - Install Camera Plugin

Run the following code in command prompt window to install this plugin.

C:\Users\username\Desktop\CordovaProject>cordova plugin add cordova-plugin-camera

Step 2 - Adding Button and Image

In this step we will create button for calling the camera and img where the image will be displayed once taken. This will be added to index.html inside div class = "app" element.

<button id = "cameraTakePicture">TAKE PICTURE</button>

<img id = "myImage"></img>

<button id = "cameraTakePicture">TAKE PICTURE</button>

<img id = "myImage"></img>

Step 3 - Adding Event Listener

The event listener is added inside onDeviceReady function to ensure that Cordova is loaded before we start using it.

document.getElementById("cameraTakePicture").addEventListener

("click", cameraTakePicture);

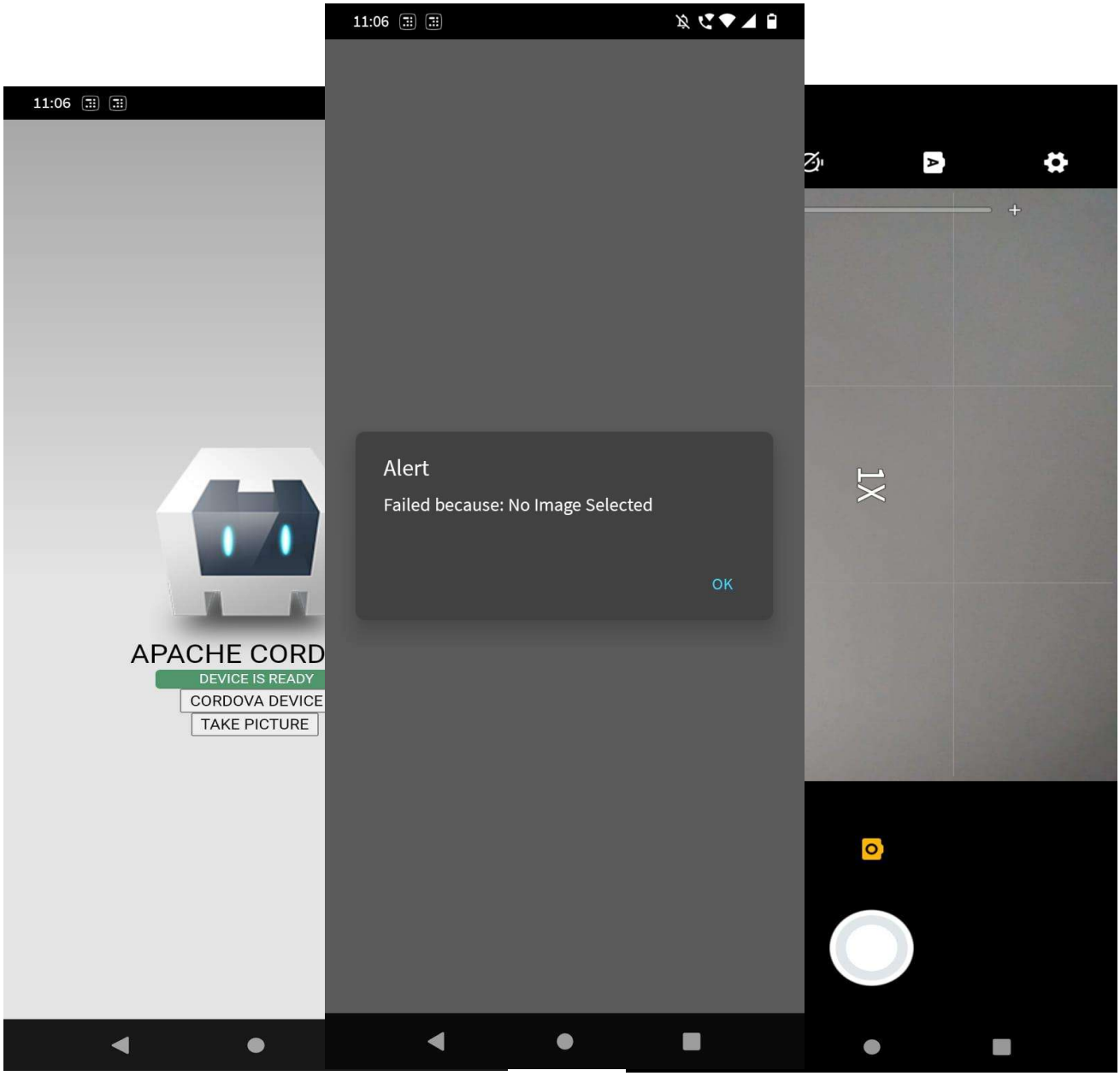
Step 4 - Adding Functions (taking photo)

We are creating cameraTakePicture function that is passed as a callback to our event listener. It will be fired when the button is tapped. Inside this function we are calling navigator.camera global object provided by the plugin API. If taking picture is successful, the data will be sent to onSuccess callback function, if not, the alert with error message will be shown. We will place this code at the bottom of index.js

function cameraTakePicture() {

```
navigator.camera.getPicture(onSuccess, onFail, {
quality: 50,
destinationType: Camera.DestinationType.DATA_URL
});
function onSuccess(imageData) {
var image = document.getElementById('myImage');
image.src = "" + imageData;
}
function onFail(message) {
alert('Failed because: ' + message);
}
}
```

Output:


11:06
APACHE CORD
DEVICE IS READY
CORDOVA DEVICE
TAKE PICTURE
11:06
Alert
Failed because: No Image Selected
OK
1X

Device Orientation

Compass is used to show direction relative to geographic north cardinal point.

Step 1 - Install Device Orientation plugin

Open the command prompt window and run the following.

```
C:\Users\username\Desktop\CordovaProject>cordova plugin
  add cordova-plugindevice-orientation
```

Step 2 - Add Buttons

This plugin is similar to the acceleration plugin. Let us now create two buttons in index.html.

```
<button id = "getOrientation">GET ORIENTATION</button>
<button id = "watchOrientation">WATCH ORIENTATION</button>
```

Step 3 - Add Event Listeners

Now, we will add event listeners inside the onDeviceReady function in index.js.

```
document.getElementById("getOrientation").addEventListener("click", getOrientation);
document.getElementById("watchOrientation").addEventListener("click",
watchOrientation);
```

Step 4 - Creating Functions

We will create two functions; the first function will generate the current acceleration and the other will check on the orientation changes. You can see that we are using the frequency option again to keep a watch on changes that occur every three seconds.

```
function getOrientation() {
  navigator.compass.getCurrentHeading(compassSuccess, compassError);

  function compassSuccess(heading) {
    alert('Heading: ' + heading.magneticHeading);
  };

  function compassError(error) {
    alert('CompassError: ' + error.code);
  };
}

function watchOrientation(){
  var compassOptions = {
    frequency: 3000
  }
  var watchID = navigator.compass.watchHeading(compassSuccess,
    compassError, compassOptions);

  function compassSuccess(heading) {
    alert('Heading: ' + heading.magneticHeading);

    setTimeout(function() {
      navigator.compass.clearWatch(watchID);
    }, 10000);
  };
```

```
  function compassError(error) {
    alert('CompassError: ' + error.code);
  };
}
```

Since the compass plugin is almost the same as the acceleration plugin, we will show you an error code this time. Some devices do not have the magnetic sensor that is needed for the compass to work. If your device doesn't have it, the following error will be displayed.

Output:

c. File System, Globalization

File System:

This plugin is used for manipulating the native file system on the user's device.

Step 1 - Installing File Plugin

We need to run the following code in the command prompt to install this plugin.

```
C:\Users\username\Desktop\CordovaProject>cordova plugin add cordova-plugin-file
```

Step 2 - Add Buttons

In this example, we will show you how to create file, write to file, read it and delete it. For this reason, we will create four buttons in index.html. We will also add textarea wherein, the content of our file will be shown.

```
<button id = "createFile">CREATE FILE</button>

<button id = "writeFile">WRITE FILE</button>

<button id = "readFile">READ FILE</button>

<button id = "removeFile">DELETE FILE</button>

<textarea id = "textarea"></textarea>
```

Step 3 - Add Event Listeners

We will add event listeners in index.js inside the onDeviceReady function to ensure that everything has started before the plugin is used.

```
document.getElementById("createFile").addEventListener("click", createFile);

document.getElementById("writeFile").addEventListener("click", writeFile);

document.getElementById("readFile").addEventListener("click", readFile);
```

document.getElementById("removeFile").addEventListener("click", removeFile);

We will create the functions as well in the index.js file for each.

Output:

Globalization:

This plugin is used for getting information about users locale language, date and time zone, currency etc.

Step 1 - Installing Globalization Plugin

Open command prompt and install the plugin by typing the code shown below.

C:\Users\username\Desktop\CordovaProject>cordova plugin add cordova-plugin-globalization

Step 2 - Add Buttons

We will add several buttons to index.html to be able to call different methods that we will create later.

```
<button id = "getLanguage">LANGUAGE</button>
<button id = "getLocaleName">LOCALE NAME</button>
<button id = "getDate">DATE</button>
<button id = "getCurrency">CURRENCY</button>
```

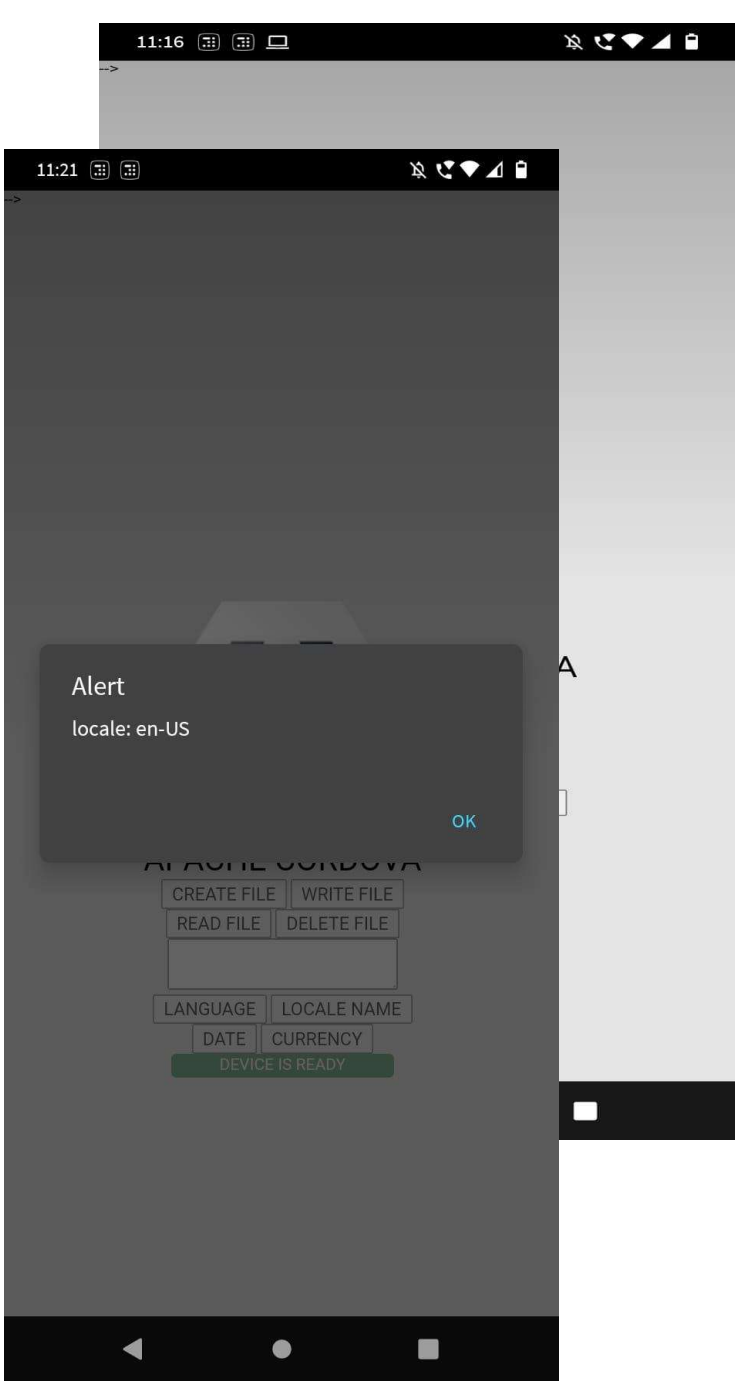
Step 3 - Add Event Listeners

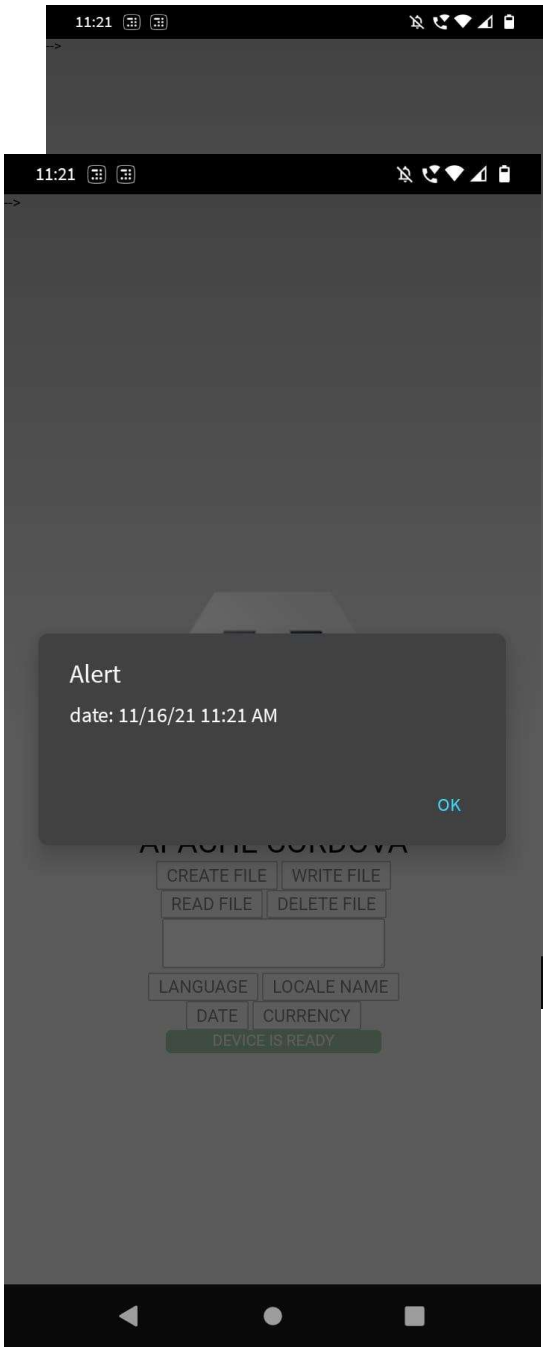
Event listeners will be added inside GetDeviceReady function in index.js file to ensure that our app and Cordova are loaded before we start using it.

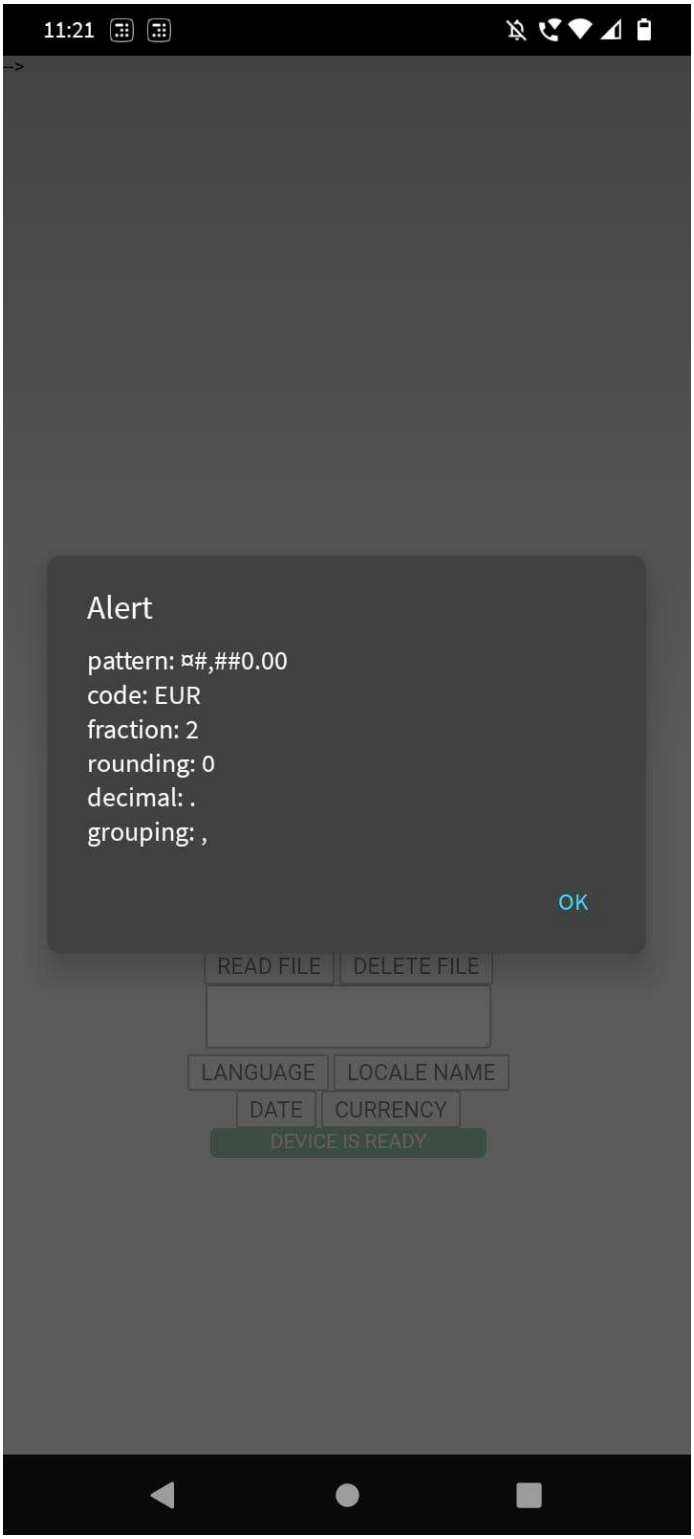
```
document.getElementById("getLanguage").addEventListener("click", getLanguage);
document.getElementById("getLocaleName").addEventListener("click", getLocaleName);
document.getElementById("getDate").addEventListener("click", getDate);
document.getElementById("getCurrency").addEventListener("click", getCurrency);
```

Output:

Output of local name and date currency:






11:21
Alert
pattern: ¤#,##0.00
code: EUR
fraction: 2
rounding: 0
decimal: .
grouping: ,
OK
READ FILE
DELETE FILE
LANGUAGE
LOCALE NAME
DATE
CURRENCY
DEVICE IS READY

Media Plugin

Cordova media plugin is used for recording and playing audio sounds in Cordova apps.

Step 1 - Installing Media Plugin

Media plugin can be installed by running the following code in command prompt window.

```
C:\Users\username\Desktop\CordovaProject>cordova plugin add cordova-plugin-media
```

Step 2 - Add Buttons

In this tutorial, we will create simple audio player. Let's create buttons that we need in index.html.

```
<button id = "playAudio">PLAY</button>

<button id = "pauseAudio">PAUSE</button>

<button id = "stopAudio">STOP</button>

<button id = "volumeUp">VOLUME UP</button>

<button id = "volumeDown">VOLUME DOWN</button>
```

Step 3 - Add Event Listeners

Now we need to add event listeners for our buttons inside onDeviceReady function inside index.js.

```
document.getElementById("playAudio").addEventListener("click", playAudio);

document.getElementById("pauseAudio").addEventListener("click", pauseAudio);

document.getElementById("stopAudio").addEventListener("click", stopAudio);

document.getElementById("volumeUp").addEventListener("click", volumeUp);

document.getElementById("volumeDown").addEventListener("click", volumeDown);
```

Output:


11:28
-->
APACHE CORDOVA
DEVICE IS READY
PLAY
PAUSE
STOP
VOLUME UP
VOLUME DOWN

Practical 9

a. Multi Page Application

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="10dp"
    android:background="@drawable/bg"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imageview"
        android:layout_width="match_parent"
        android:layout_height="150dp"
        android:scaleType="centerCrop"
        android:src="@drawable/b_app" />

    <EditText
        android:id="@+id/username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
    android:layout_marginTop="40dp"
    android:layout_below="@+id/imageview"
    android:hint="Username"
    android:textSize="25dp" />

<EditText
    android:id="@+id/password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Password"
    android:layout_marginTop="30dp"
    android:textSize="25dp"
    android:layout_below="@+id/username"/>

<EditText
    android:id="@+id/repassword"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Renter Password"
    android:layout_marginTop="30dp"
    android:textSize="25dp"
    android:layout_below="@+id/password"/>

<Button
    android:id="@+id/btnSignUp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/repassword"
```

```
        android:layout_marginTop="30dp"
        android:backgroundTint="@color/black"
        android:text="Register"
        android:textAllCaps="false"
        android:textColor="#D4AF37"
        android:textSize="25dp" />

    <Button
        android:id="@+id/btnSignIn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/btnSignUp"
        android:layout_marginTop="15dp"
        android:backgroundTint="@color/black"
        android:text="Existing User!\n Go to Sign in Page"
        android:textAllCaps="false"
        android:textColor="#D4AF37"
        android:textSize="25dp" />

  </RelativeLayout>
```

activity_login.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"
```

```
android:padding="10dp"

android:background="@drawable/bg"

tools:context=".LoginActivity">


<ImageView

    android:id="@+id/imageview"

    android:src="@drawable/b_app"

    android:layout_width="match_parent"

    android:layout_height="150dp"

    android:scaleType="centerCrop"/>


<EditText

    android:id="@+id/usernameLogin"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="Username"

    android:layout_marginTop="100dp"

    android:layout_below="@+id/imageview"

    android:textSize="25dp" />


<EditText

    android:id="@+id/passwordLogin"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="Password"

    android:layout_marginTop="50dp"

    android:layout_below="@+id/usernameLogin"

    android:textSize="25dp" />
```

```
    <Button
        android:id="@+id/btnLogin"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/passwordLogin"
        android:layout_marginTop="25dp"
        android:backgroundTint="@color/black"
        android:text="Login"
        android:textAllCaps="false"
        android:textSize="25sp"
        android:textColor="#D4AF37"/>

</RelativeLayout>
```

activity_home.xml

```
<?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:gravity="center"
    android:background="@drawable/bg"
    tools:context=".HomeActivity">
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:text=""
    android:textColor="@color/cardview_dark_background" />

<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    >

</LinearLayout>

<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Product Name : " />

    <EditText
        android:id="@+id/ed1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
            android:ems="10"

tools:ignore="TouchTargetSizeCheck,TouchTargetSizeCheck,SpeakableTextPresentC
heck,SpeakableTextPresentCheck" />

    </LinearLayout>


    <LinearLayout

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:orientation="horizontal">

        <TextView

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:text="Price : " />


        <EditText

            android:id="@+id/ed2"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:ems="10"

tools:ignore="TouchTargetSizeCheck,SpeakableTextPresentCheck,SpeakableTextPre
sentCheck" />

    </LinearLayout>


    <LinearLayout

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:orientation="horizontal">

        <TextView
```

```
            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:text="Quantity : " />


        <EditText

            android:id="@+id/ed3"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:ems="10"

tools:ignore="SpeakableTextPresentCheck,SpeakableTextPresentCheck,TouchTarget
SizeCheck,TouchTargetSizeCheck" />

    </LinearLayout>


    <LinearLayout

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:orientation="horizontal">

        <TextView

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:text="Subtotal" />


        <EditText

            android:id="@+id/txtsub"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_margin="10sp"

            android:background="@color/cardview_light_background"
```

```
            android:ems="10"

            android:enabled="false"

            android:textColor="#000000"


tools:ignore="TouchTargetSizeCheck,TouchTargetSizeCheck,TouchTargetSizeCheck,
SpeakableTextPresentCheck" />

    </LinearLayout>


    <LinearLayout

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:orientation="horizontal">

        <TextView

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:text="Payment" />


        <EditText

            android:id="@+id/txtpay"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_margin="10sp"

            android:background="@color/cardview_light_background"

            android:ems="10"

            android:textColor="#000000"


tools:ignore="SpeakableTextPresentCheck,TouchTargetSizeCheck,TouchTargetSizeC
heck" />

    </LinearLayout>
```

```
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Balance" />

        <EditText
            android:id="@+id/txtbal"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="10sp"
            android:background="@color/cardview_light_background"
            android:ems="10"
            android:enabled="false"
            android:textColor="#000000"

tools:ignore="SpeakableTextPresentCheck,TouchTargetSizeCheck,TouchTargetSizeC
heck,TouchTargetSizeCheck" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        <Button
            android:layout_width="wrap_content"
```

```
            android:layout_height="wrap_content"
            android:id="@+id/btn1"
            android:text="Add"
            android:textColor="#D4AF37"
            android:backgroundTint="@color/black"
            />
    </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical">
        <TableLayout
            android:layout_width="match_parent"
            android:layout_height="360dp"
            android:id="@+id/tb1"
            android:stretchColumns="*">
            <TableRow
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:id="@+id/tbrow1">
                <TextView
                    android:id="@+id/t1"
                    android:layout_width="wrap_content"
                    android:layout_height="wrap_content"
                    android:text="Product Name" />
                <TextView
                    android:id="@+id/t2"
```

```
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Price"/>
            <TextView
                android:id="@+id/t3"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Quantity"/>
            <TextView
                android:id="@+id/t4"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Total"/>

        </TableRow>
    </TableLayout>>
</LinearLayout>


</LinearLayout>
```

MainActivity.java

```
package com.example.billingapplication;


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.Toast;


import com.DBHelper;


public class MainActivity extends AppCompatActivity {


    EditText username,password,repassword;
    Button btnSignUP,btnSignIn;
    DBHelper myDB;


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


        username = (EditText)findViewById(R.id.username);
        password = (EditText)findViewById(R.id.password);
        repassword = (EditText)findViewById(R.id.repassword);
```

```
btnSignUP = (Button) findViewById(R.id.btnSignUp);
btnSignIn = (Button) findViewById(R.id.btnSignIn);

myDB = new DBHelper(this);

btnSignUP.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String user = username.getText().toString();
        String pass = password.getText().toString();
        String repass = repassword.getText().toString();

        if(user.equals("") || pass.equals("") || repass.equals(""))
        {
            Toast.makeText(MainActivity.this, "Fill all the fields",
                    Toast.LENGTH_SHORT).show();
        }
        else
        {
            if(pass.equals(repass))
            {
                Boolean usercheckResult = myDB.checkusername(user);
                if(usercheckResult==false)
                {
                    Boolean regResult = myDB.insertData(user,pass);
                    if(regResult==true)
                    {
```

```
Toast.makeText(MainActivity.this,"Registration Successfull",
                                        Toast.LENGTH_SHORT).show();
                                Intent intent = new
Intent(getApplicationContext(),LoginActivity.class);
                                startActivity(intent);
                            }
                            else {

Toast.makeText(MainActivity.this,"Registration Failed",
                                        Toast.LENGTH_SHORT).show(); }
                        }
                        else {
                            Toast.makeText(MainActivity.this,"User Already
Exists. \n Please Sign In",
                                    Toast.LENGTH_SHORT).show(); }
                    }
                    else {
                        Toast.makeText(MainActivity.this,"Password not
Matching",
                                Toast.LENGTH_SHORT).show(); }
                }
            }
        });
        btnSignIn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent = new
Intent(getApplicationContext(),LoginActivity.class);
                startActivity(intent);
            }
```

```
        });
    }
}
```

LoginActivity.java

```
package com.example.billingapplication;

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.Toast;
import com.DBHelper;

public class LoginActivity extends AppCompatActivity {

    EditText username, password;
    Button btnLogin;
    DBHelper myDB;

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

```
        username = (EditText) findViewById(R.id.usernameLogin);
        password = (EditText) findViewById(R.id.passwordLogin);
        btnLogin = (Button) findViewById(R.id.btnLogin);
        myDB = new DBHelper(this);

        btnLogin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String user = username.getText().toString();
                String pass = password.getText().toString();

                if (user.equals("") || pass.equals("")) {
                    Toast.makeText(LoginActivity.this, "Please enter the
Credentials.",
                            Toast.LENGTH_SHORT).show();
                } else {
                    Boolean result = myDB.checkusernamepassword(user, pass);
                    if (result == true) {
                        Intent intent = new Intent(getApplicationContext(),
HomeActivity.class);
                        startActivity(intent);
                    } else {
                        Toast.makeText(LoginActivity.this, "Invalid
Crediantials.",
                                Toast.LENGTH_SHORT).show();
                    }
                }
            }
        });
    }
```

```
}
```

HomeActivity.java

```
package com.example.billingapplication;


import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.text.Editable;

import android.text.TextWatcher;

import android.view.View;

import android.widget.EditText;

import android.widget.TableLayout;

import android.widget.TableRow;

import android.widget.TextView;

import java.util.ArrayList;


public class HomeActivity extends AppCompatActivity {

    private ArrayList<String> data = new ArrayList<String>();

    private ArrayList<String> data1 = new ArrayList<String>();

    private ArrayList<String> data2 = new ArrayList<String>();

    private ArrayList<String> data3 = new ArrayList<String>();


    private TableLayout table;

    EditText ed1,ed2,ed3,ed4,ed5,ed6;

    View b1;


    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_home);

        ed1= (EditText) findViewById(R.id.ed1);
        ed2=(EditText) findViewById(R.id.ed2);
        ed3=(EditText) findViewById(R.id.ed3);
        ed4 = (EditText)findViewById(R.id.txtsub);
        ed5 =(EditText)findViewById(R.id.txtpay);
        ed6 = (EditText)findViewById(R.id.txtbal);
        b1 = findViewById(R.id.btn1);

        ed5.addTextChangedListener(new TextWatcher() {
            @Override
            public void beforeTextChanged(CharSequence s, int start, int
count, int after) {
            }

            @Override
            public void onTextChanged(CharSequence s, int start, int before,
int count) {
            }

            @Override
            public void afterTextChanged(Editable s) {
                int subtotal=Integer.parseInt(ed4.getText().toString());
                int pay=Integer.parseInt(ed5.getText().toString());
                int bal=pay-subtotal;
                ed6.setText(String.valueOf(bal));
```

```
        }
    });

    b1.setOnClickListener(new View.OnClickListener(){
        @Override
        public void onClick(View v){
            add();
        }
    });
} public void add() {
    int tot;

    String prodname = ed1.getText().toString();
    int price = Integer.parseInt(ed2.getText().toString());
    int quantity = Integer.parseInt(ed3.getText().toString());
    tot = price * quantity;

    data.add(prodname);
    data1.add(String.valueOf(price));
    data2.add(String.valueOf(quantity));
    data3.add(String.valueOf(tot));

    TableLayout table = (TableLayout) findViewById(R.id.tb1);

    TableRow row = new TableRow(this);
    TextView t1 = new TextView(this);
    TextView t2 = new TextView(this);
    TextView t3 = new TextView(this);
```

```
TextView t4 = new TextView(this);


String total;
int sum = 0;
for(int i = 0; i<data.size(); i ++)
{
    String pname = data.get(i);
    String prc = data1.get(i);
    String qtyy = data2.get(i);
    total = data3.get(i);


    t1.setText(pname);
    t2.setText(prc);
    t3.setText(qtyy);
    t4.setText(total);


    sum = sum + Integer.parseInt(data3.get(i).toString());
}
row.addView(t1);
row.addView(t2);
row.addView(t3);
row.addView(t4);
table.addView(row);


ed4.setText(String.valueOf(sum));
ed1.setText("");
ed2.setText("");
ed3.setText("");
```

```
        ed1.requestFocus();
    }
}
```

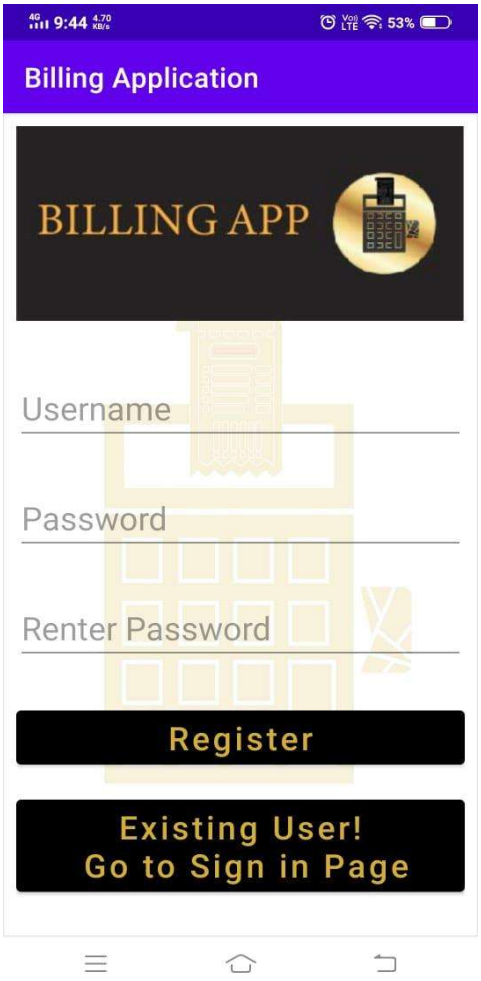
b. Connecting to MySQL Database

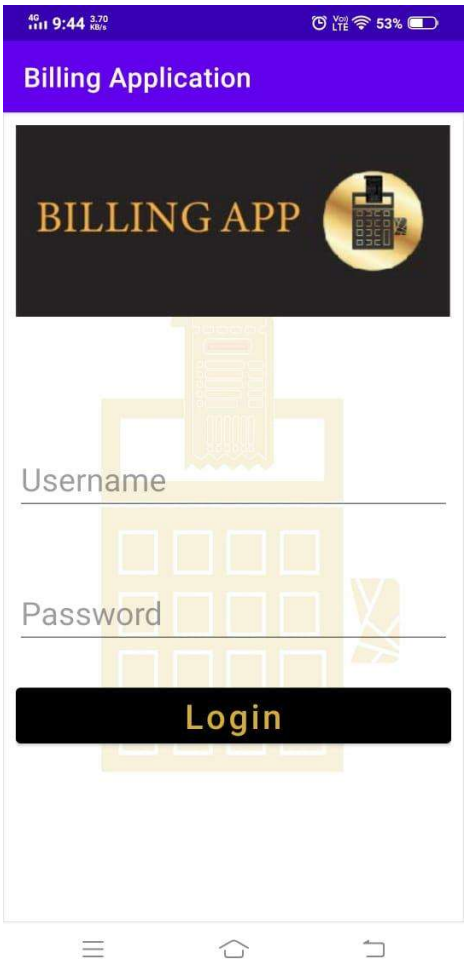
```
1. package com;
2.
3. import android.content.ContentValues;
4. import android.content.Context;
5. import android.database.Cursor;
6. import android.database.sqlite.SQLiteDatabase;
7. import android.database.sqlite.SQLiteOpenHelper;
8. import androidx.annotation.Nullable;
9.
10.  public class DBHelper extends SQLiteOpenHelper {
11.      public DBHelper(Context context) {
12.          super(context,"login.db", null, 1);
13.      }
14.
15.      @Override
16.      public void onCreate(SQLiteDatabase myDB) {
17.          myDB.execSQL("create Table users(username Text primary
    key,password Text)");
18.      }
19.
20.      @Override
21.      public void onUpgrade(SQLiteDatabase myDB, int oldVersion, int
    newVersion) {
```

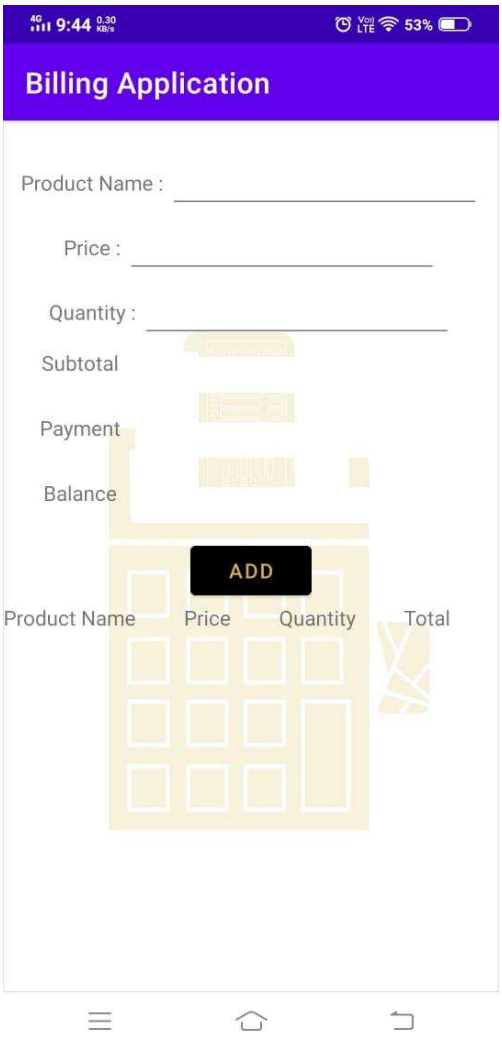
```
22.          myDB.execSQL("drop Table if exists users");
23.      }
24.
25.      public Boolean insertData(String username,String password){
26.          SQLiteDatabase myDB = this.getWritableDatabase();
27.          ContentValues contentValues= new ContentValues();
28.          contentValues.put("username",username);
29.          contentValues.put("password",password);
30.          long result = myDB.insert("users",null,contentValues);
31.
32.          if (result == -1)
33.              { return false; }
34.          else
35.              { return true; }
36.      }
37.
38.      public Boolean checkusername(String username)
39.      {
40.          SQLiteDatabase myDB =getWritableDatabase();
41.          Cursor cursor = myDB.rawQuery("select* from users where
   username= ?",new String[] {username});
42.          if (cursor.getCount()>0)
43.              { return true; }
44.          else
45.              { return false;}
46.      }
47.
48.      public Boolean checkusernamepassword(String username, String
   password){
```

```
49.          SQLiteDatabase myDB =getWritableDatabase();
50.          Cursor cursor = myDB.rawQuery("select* from users where
   username= ? and password= ?",
51.                  new String[] {username,password});
52.          if (cursor.getCount()>0)
53.              { return true; }
54.          else
55.              { return false; }
56.      }
57.  }
```

Output:

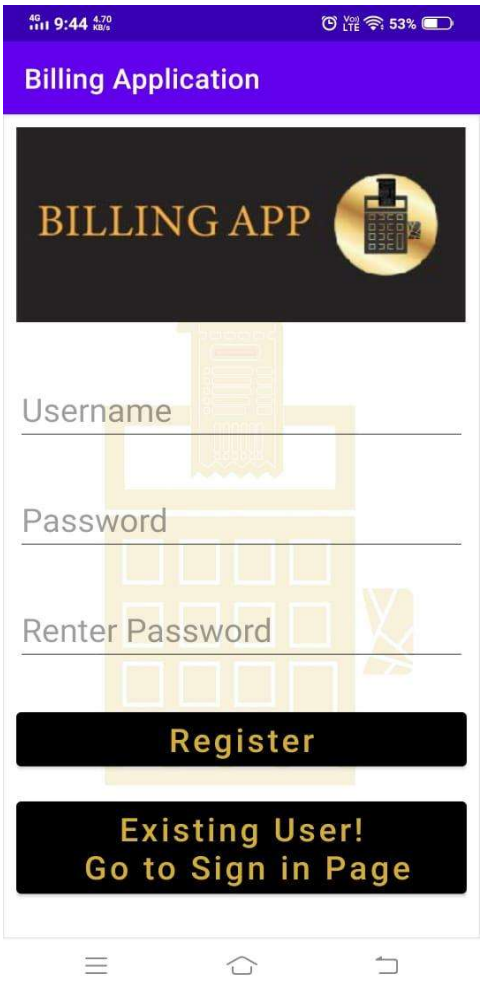


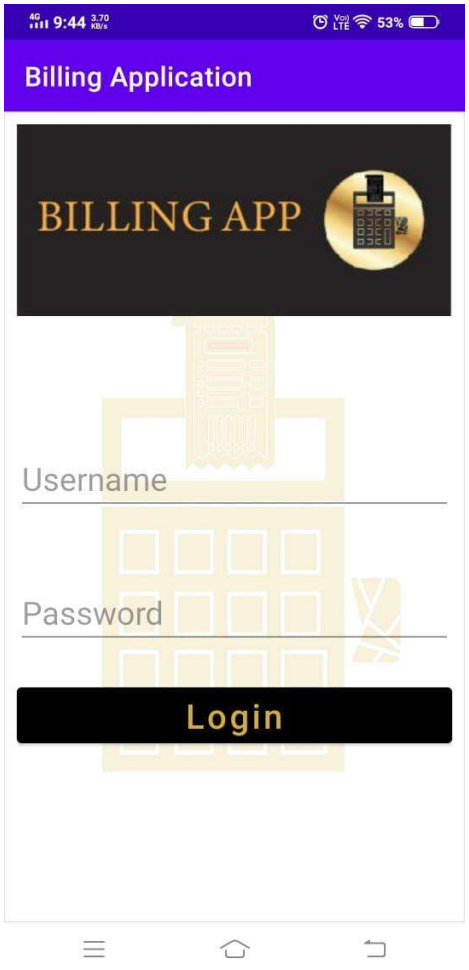


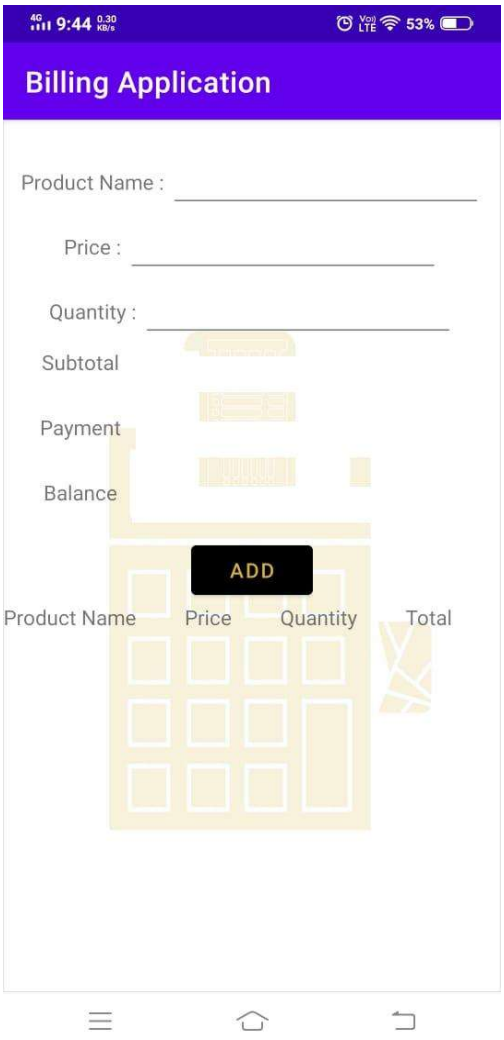

9:44
53%
Billing Application
Product Name :
Price :
Quantity :
Subtotal
Payment
Balance
ADD
Product Name
Price
Quantity
Total

Practical 10

Project






9:44
53%
Billing Application
Product Name :
Price :
Quantity :
Subtotal
Payment
Balance
ADD
Product Name
Price
Quantity
Total