PRACTICAL-1.1

AIM: Installation & Configuration of Android Studio. Along with its all major Gradle, SDK, AVD etc.

THEORY:

1. **Android Studio**
   - As we know Android world is increasing day by day. Billions of Android apps has been published on Google Play store. So it is the need of time that we should learn some basics of Android development. Android Studio is an IDE (Integrated Development Environment) for Android application development.

2. **Features of Android Studio**
   - Following are some interesting features of Android Studio:
   - It provides a flexible Gradle-based build system.
   - It also support C++ and NDK
   - Run your app without building a new APK.
   - Provides a virtual device to run and test your app

3. **Installation**
   - Follow steps below for complete installation and configuration of Android Studio.

   Step 1) Download Android Studio

   You can download Android Studio from this link or go to developer.android.com homepage and search for downloads. Choose appropriate platform either for Windows, Mac or Linux. Following are the pre requirements for windows operating system.
   ->Pre-requirements
   Microsoft windows 7/8/10 (32 or 64
   bits) Minimum 3GB RAM
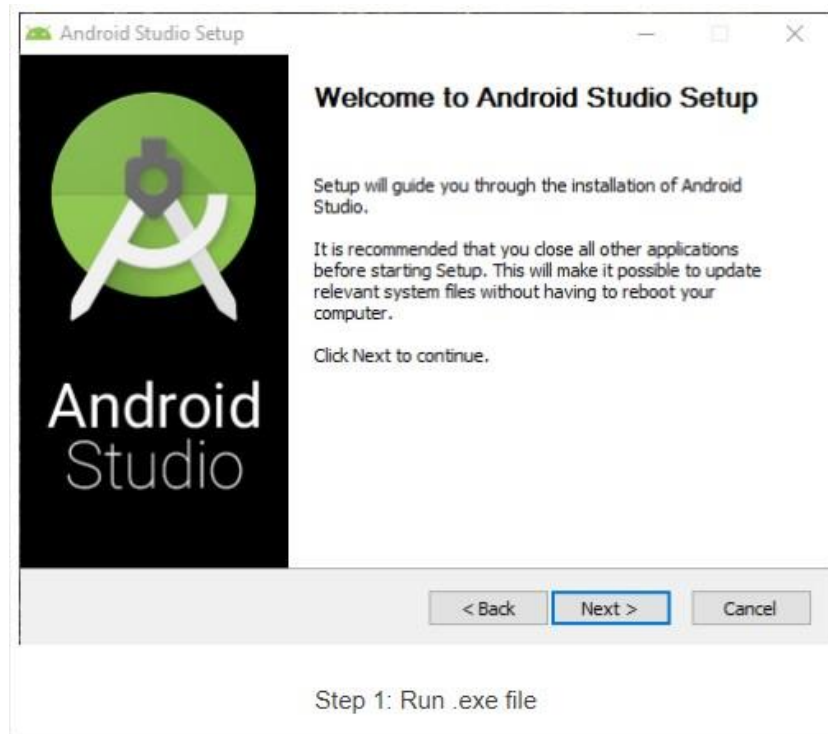   (recommended 8GB) 2GB disk
   space
   1280 x 800 minimum screen
   resolution size Intel processor for
   accelerated emulator Android SDK

   Step 2) Run .exe file

   Now the next step is to launch .exe file you just download. Following screen will appear

Step 1: Run .exe file

Click next and select Android SDK checked if you dont have it already. Better is to leave the default settings.
Make sure Android virtual device is also checked.

Step 2: Choose components
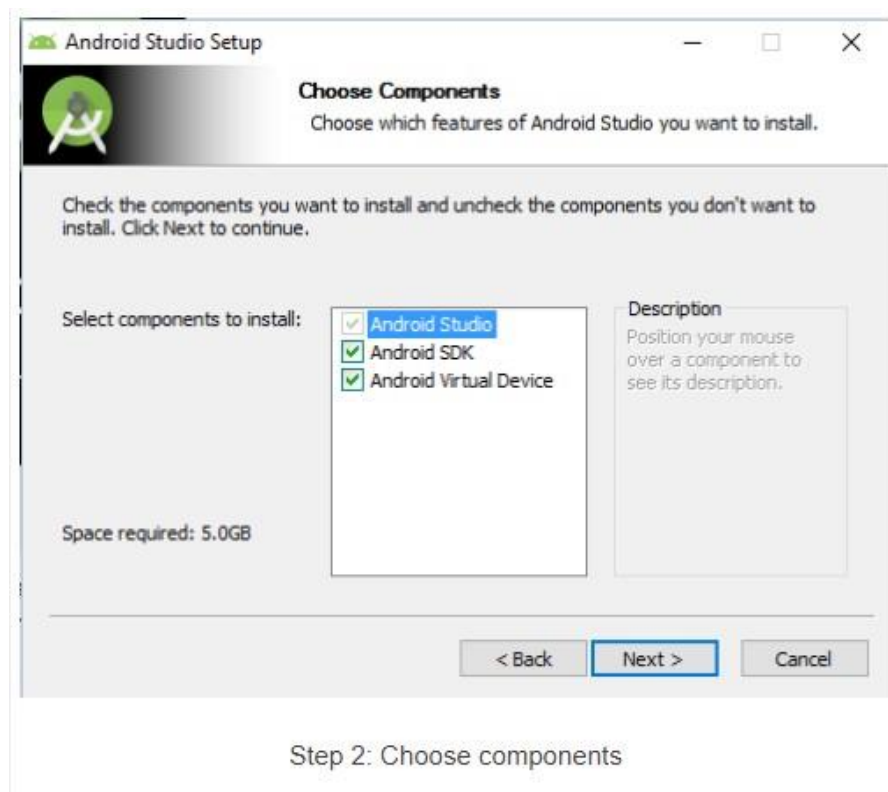
Next step is to accept license and agreement. Click on I Agree

Step 3: Accept license
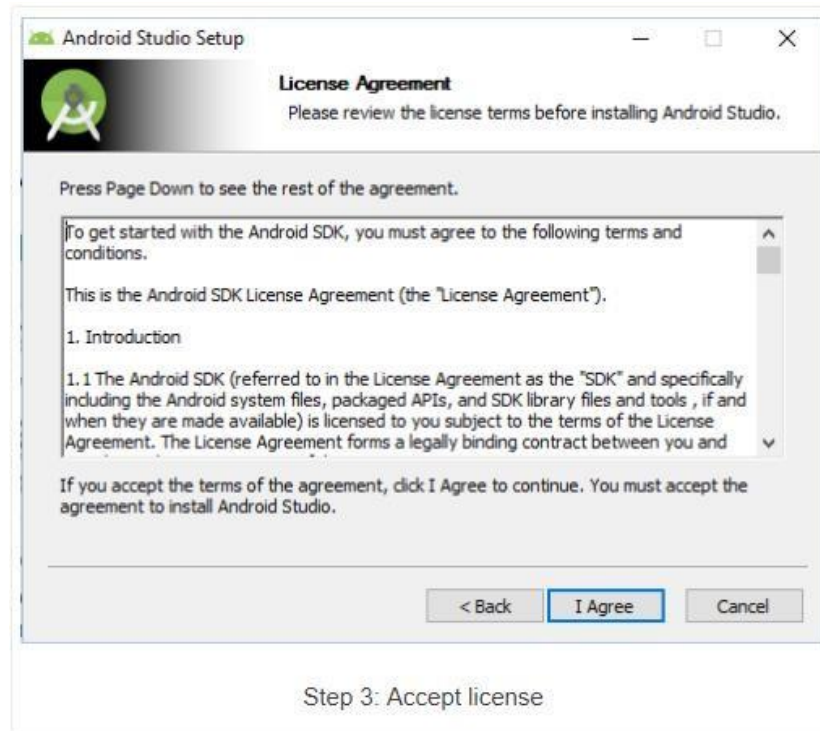
Next step is to set location of installation. Please make sure your disk has minimum required space before clicking on Next. For Android Studio installation location must have at least 500MB free space. For Android SDK installation, selected location must have at least 3.25GB free space.

Step 4: Install location
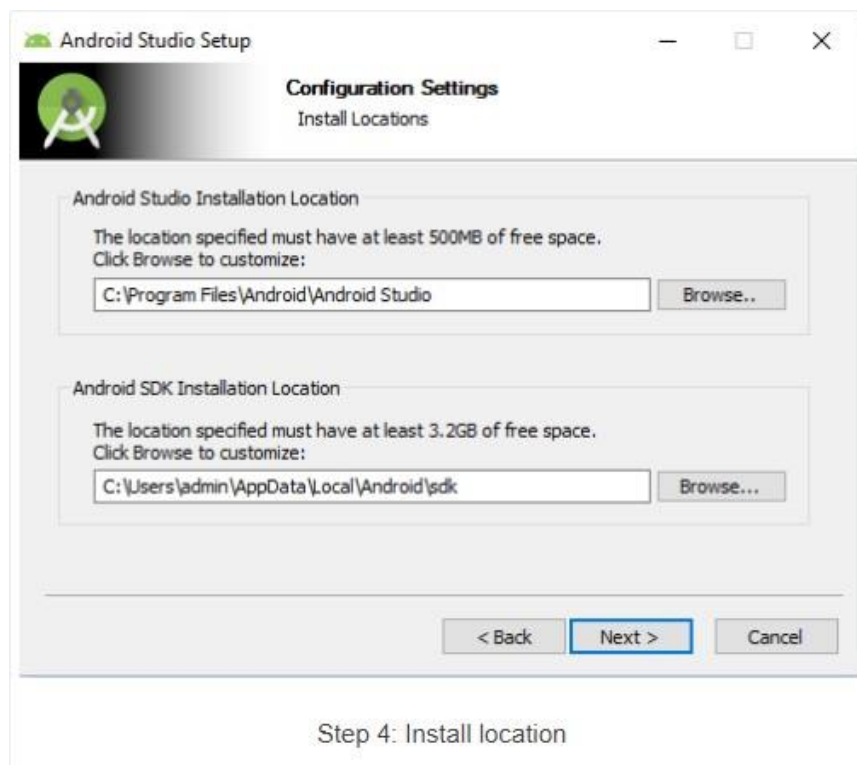
Next step is to choose the start menu folder, where you want to create shortcut. If you don't want to create a shortcut just mark Do not create shortcut.
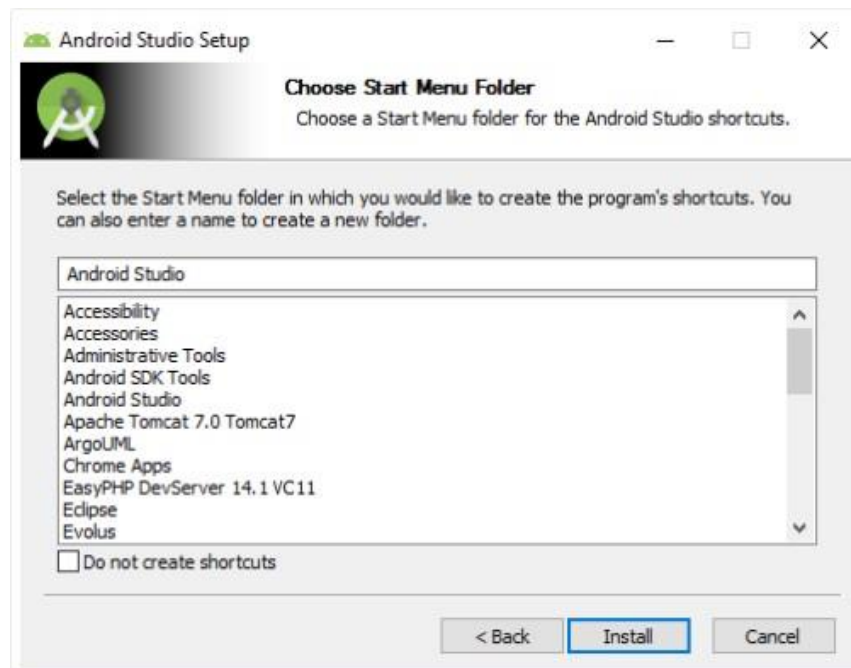
Step 5: Choose start menu folder

And hit Install button.
It will start installation. Once its done following window will appear.

Step 6: Finish

This informs you installation has completed. Click Finish. Make sure Start Android Studio is checked. Following splash screen of Android Studio will appear.
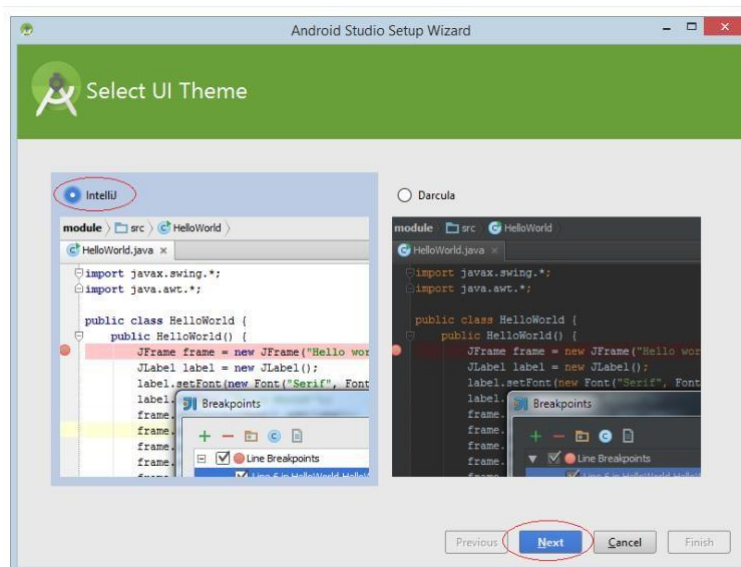

Step 7: Android Studio Splash Screen

Step 3) Configure Android Studio

When you run it for the first time it will ask for Android Studio settings.
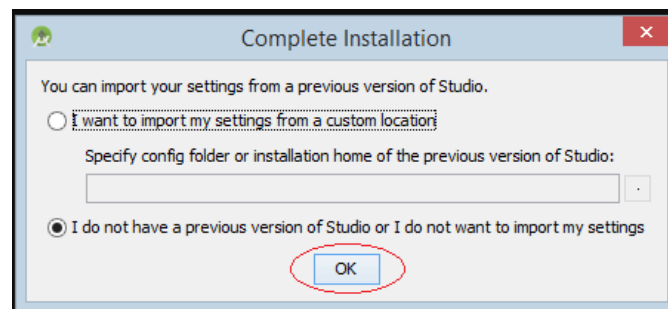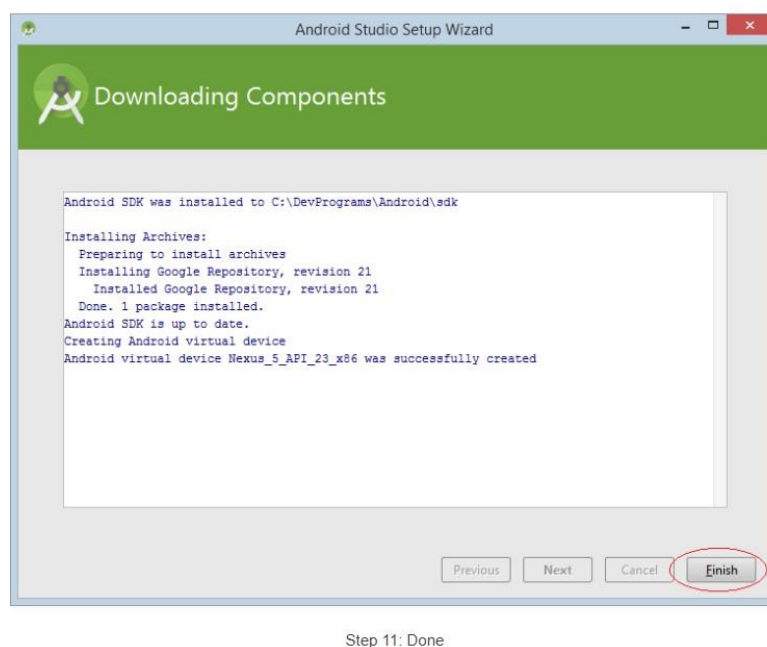

If you don't have any previous settings click on the second option Select a theme and click next.

Step 9: Select theme

At the very first run it needs to download some necessary components, wait till it completes. And its all done.

Step 10: Download components

Step 11: Done
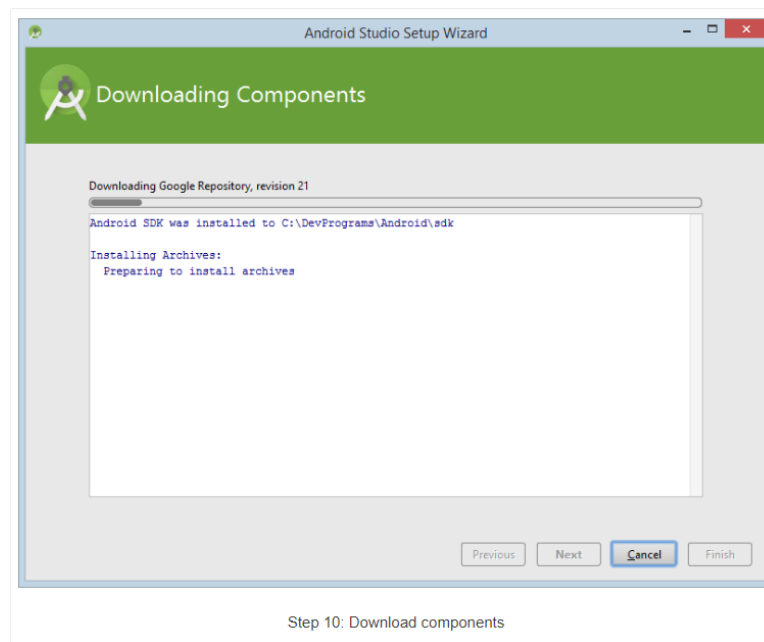
Click on Finish and start building your Android apps.

4. Gradle
   - Gradle implements a concept referred to as convention over configuration. This simply means that Gradle has a pre-defined set of sensible default configuration settings that will be used unless they are overridden by settings in the build files. This means that builds can be performed with the minimum of configuration required by the developer. Changes to the build files are only needed when the default configuration does not meet your build needs.

5. SDK
   - The Android SDK (software development kit) is a set of development tools used to develop applications for Android platform. The Android SDK includes the following:
     - Required libraries
     - Debugger
     - An emulator
     - Relevant documentation for the Android application program interfaces (APIs)
     - Sample source code
     - Tutorials for the Android OS
6. AVD

An Android Virtual Device (AVD) is a configuration that defines the characteristics of an Android phone, tablet, Wear OS, Android TV, or Automotive OS device that you want to simulate in the Android Emulator. The AVD Manager is an interface you can launch from Android Studio that helps you create and manage AVDs.
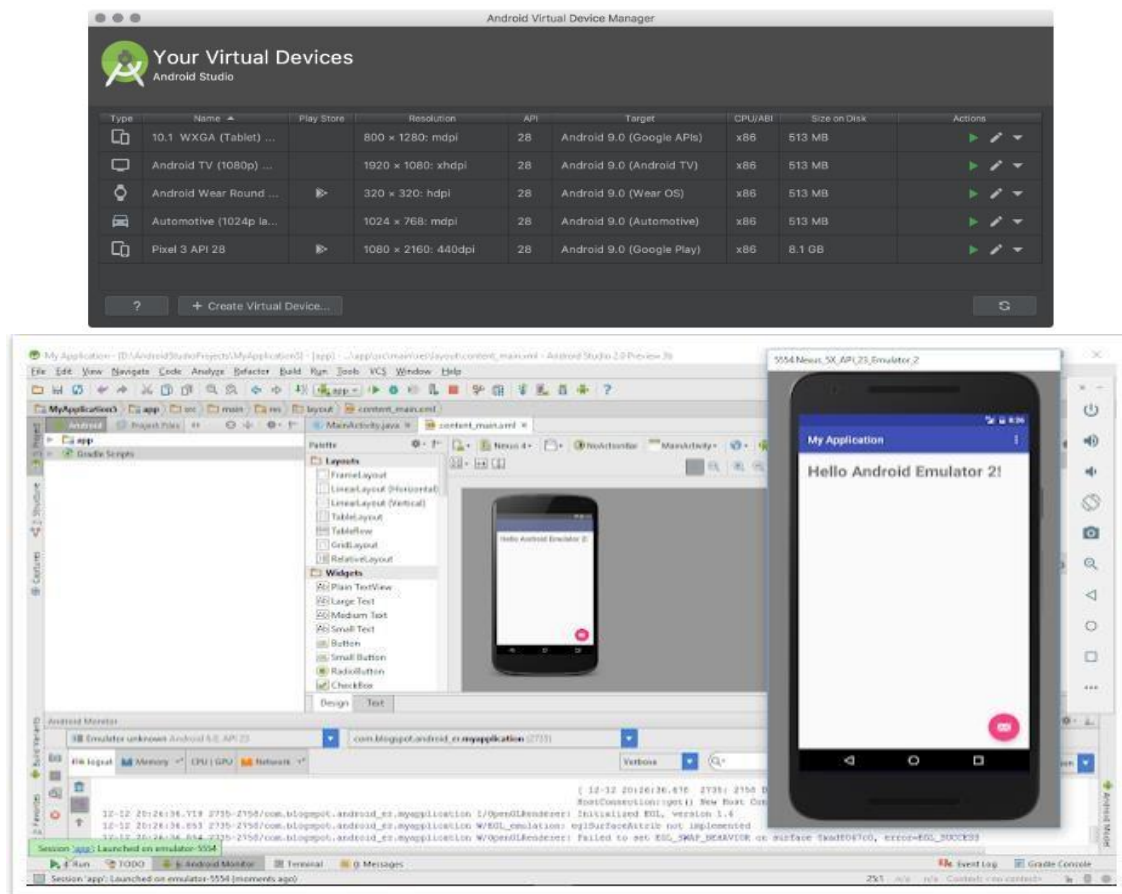
PRACTICAL-1.2

AIM: Introduction to Android and Create "Custom Message" application. That will display "Custom Message" in the middle of the screen in the Black color with the Yellow background.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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"
   android:background="#ffff00"
   tools:context=".MainActivity">

   <TextView
      android:id="@+id/textView3"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="@string/cstmsg"
      android:textColor="@color/black"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <TextView
      android:id="@+id/textView2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginBottom="69dp"
      android:text="VRUSHANG (19DCE089)"
      android:textSize="20sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
```

app:layout_constraintStart_toStartOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java File:-

package com.example.custommessage;

import androidx.appcompat.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);
    }
}
```

strings.xml File:-

```
<resources>
    <string name="app_name">Custom Message</string>
    <string name="cstmsg">Custom Message</string>
    <string name="black">#000000</string>
</resources>
```

Output:-
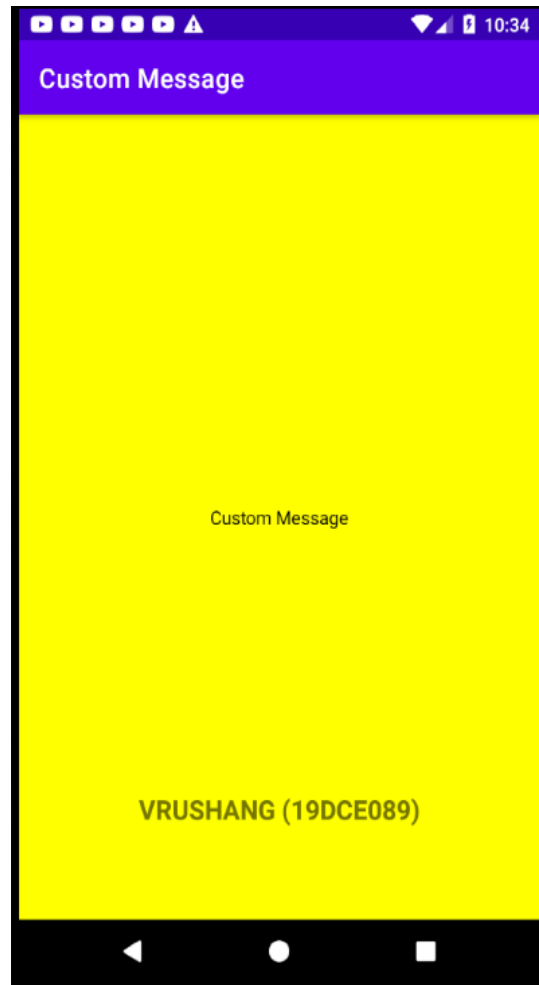
Conclusion:- In this practical, I learned how to change background color & add a new color to the project, also learned to edit layout a bit.

PRACTICAL-2.1

AIM: Design an application representing a simple calculator.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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"
    android:background="@color/cerise"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="327dp"
        android:layout_height="48dp"
        android:layout_marginStart="42dp"
        android:layout_marginLeft="42dp"
        android:layout_marginTop="4dp"
        android:layout_marginEnd="42dp"
        android:layout_marginRight="42dp"
        android:gravity="center_horizontal"
        android:text="A Calculator App By VRUSHANG (19DCE089)"
        android:textAlignment="center"
        android:textColor="@color/white"
        android:textSize="20sp"
        android:textStyle="bold|italic"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/editText"
        android:layout_width="340dp"
```

```xml
android:layout_height="55dp"
android:layout_marginStart="42dp"
android:layout_marginLeft="42dp"
android:layout_marginTop="20dp"
android:layout_marginEnd="42dp"
android:layout_marginRight="42dp"
android:background="@color/pink"
android:ems="10"
android:textSize="40sp"
android:inputType="textPersonName"
android:textAlignment="textEnd"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.538"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView" />

<Button
    android:id="@+id/button1"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="36dp"
    android:backgroundTint="@color/teal_200"
    android:text="1"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/button2"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText" />

<Button
    android:id="@+id/button2"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="36dp"
    android:backgroundTint="@color/teal_200"
    android:text="2"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/button3"
```

```
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button1"
    app:layout_constraintTop_toBottomOf="@+id/editText" />

<Button
    android:id="@+id/button3"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="36dp"
    android:backgroundTint="@color/teal_200"
    android:text="3"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/buttonAdd"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button2"
    app:layout_constraintTop_toBottomOf="@+id/editText" />

<Button
    android:id="@+id/buttonAdd"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="36dp"
    android:backgroundTint="@color/design_default_color_primary_variant"
    android:text="+"
    android:textSize="24dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button3"
    app:layout_constraintTop_toBottomOf="@+id/editText" />

<Button
    android:id="@+id/button4"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/teal_200"
    android:text="4"
    android:textSize="24dp"
```

```
        app:layout_constraintEnd_toStartOf="@+id/button5"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button1" />

    <Button
        android:id="@+id/button5"
        android:layout_width="100dp"
        android:layout_height="70dp"
        android:layout_marginTop="20dp"
        android:backgroundTint="@color/teal_200"
        android:text="5"
        android:textSize="24dp"
        app:layout_constraintEnd_toStartOf="@+id/button6"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/button4"
        app:layout_constraintTop_toBottomOf="@+id/button2" />

    <Button
        android:id="@+id/button6"
        android:layout_width="100dp"
        android:layout_height="70dp"
        android:layout_marginTop="20dp"
        android:backgroundTint="@color/teal_200"
        android:text="6"
        android:textSize="24dp"
        app:layout_constraintEnd_toStartOf="@+id/buttonSub"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/button5"
        app:layout_constraintTop_toBottomOf="@+id/button3" />

    <Button
        android:id="@+id/buttonSub"
        android:layout_width="100dp"
        android:layout_height="70dp"
        android:layout_marginTop="20dp"
        android:backgroundTint="@color/design_default_color_primary_variant"
        android:text="-"
```

```xml
    android:textSize="24dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button6"
    app:layout_constraintTop_toBottomOf="@+id/buttonAdd" />

<Button
    android:id="@+id/button7"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/teal_200"
    android:text="7"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/button8"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button4" />

<Button
    android:id="@+id/button8"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/teal_200"
    android:text="8"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/button9"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button7"
    app:layout_constraintTop_toBottomOf="@+id/button5" />

<Button
    android:id="@+id/button9"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/teal_200"
```

```xml
    android:text="9"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/buttonMul"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button8"
    app:layout_constraintTop_toBottomOf="@+id/button6" />

<Button
    android:id="@+id/buttonMul"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/design_default_color_primary_variant"
    android:text="*"
    android:textSize="24dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button9"
    app:layout_constraintTop_toBottomOf="@+id/buttonSub" />

<Button
    android:id="@+id/buttonDot"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="#00b7eb"
    android:text="."
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/button0"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button7" />

<Button
    android:id="@+id/button0"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
```

```xml
    android:backgroundTint="@color/teal_200"
    android:text="0"
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/buttonEqual"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/buttonDot"
    app:layout_constraintTop_toBottomOf="@+id/button8" />

<Button
    android:id="@+id/buttonEqual"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="#00b7eb"
    android:text="="
    android:textSize="24dp"
    app:layout_constraintEnd_toStartOf="@+id/buttonDiv"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/button0"
    app:layout_constraintTop_toBottomOf="@+id/button9" />

<Button
    android:id="@+id/buttonDiv"
    android:layout_width="100dp"
    android:layout_height="70dp"
    android:layout_marginTop="20dp"
    android:backgroundTint="@color/design_default_color_primary_variant"
    android:text="/"
    android:textSize="24dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toEndOf="@+id/buttonEqual"
    app:layout_constraintTop_toBottomOf="@+id/buttonMul" />

<Button
    android:id="@+id/buttonClear"
    android:layout_width="303dp"
    android:layout_height="69dp"
```

```xml
        android:layout_marginStart="4dp"
        android:layout_marginLeft="4dp"
        android:layout_marginTop="8dp"
        android:backgroundTint="#00b7eb"
        android:text="C"
        android:textSize="24dp"
        app:layout_constraintEnd_toStartOf="@+id/buttonModulo"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/buttonDot" />

    <Button
        android:id="@+id/buttonModulo"
        android:layout_width="100dp"
        android:layout_height="70dp"
        android:layout_marginStart="4dp"
        android:layout_marginLeft="4dp"
        android:layout_marginTop="7dp"
        android:layout_marginEnd="2dp"
        android:layout_marginRight="2dp"
        android:backgroundTint="@color/design_default_color_primary_variant"
        android:text="%"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/buttonClear"
        app:layout_constraintTop_toBottomOf="@+id/buttonDiv" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.calculatorapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```java
public class MainActivity extends AppCompatActivity {

  Button button1,button2,button3,button4,button5,button6,button7,button8,
      button9,button0,buttonClear,buttonAdd,buttonMul,buttonSub,buttonDiv,
      buttonEqual,buttonDot,buttonModulo;

  EditText editText;
  float result1,result2;
  boolean Add,Sub,Mul,Div,Modulo;

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

    button1=(Button)findViewById(R.id.button1);
    button2=(Button)findViewById(R.id.button2);
    button3=(Button)findViewById(R.id.button3);
    button4=(Button)findViewById(R.id.button4);
    button5=(Button)findViewById(R.id.button5);
    button6=(Button)findViewById(R.id.button6);
    button7=(Button)findViewById(R.id.button7);
    button8=(Button)findViewById(R.id.button8);
    button9=(Button)findViewById(R.id.button9);
    button0=(Button)findViewById(R.id.button0);

    buttonAdd=(Button)findViewById(R.id.buttonAdd);
    buttonSub=(Button)findViewById(R.id.buttonSub);
    buttonMul=(Button)findViewById(R.id.buttonMul);
    buttonDiv=(Button)findViewById(R.id.buttonDiv);
    buttonModulo=(Button)findViewById(R.id.buttonModulo);
    buttonDot=(Button)findViewById(R.id.buttonDot);
    buttonEqual=(Button)findViewById(R.id.buttonEqual);
    buttonClear=(Button)findViewById(R.id.buttonClear);

    editText=(EditText)findViewById(R.id.editText);
```

```java
button1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"1");
    }
});
button2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"2");
    }
});
button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"3");
    }
});
button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"4");
    }
});
button5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"5");
    }
});
button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText(editText.getText()+"6");
    }
});
button7.setOnClickListener(new View.OnClickListener() {
    @Override
```

```java
        public void onClick(View view) {
            editText.setText(editText.getText()+"7");
        }
    });
    button8.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            editText.setText(editText.getText()+"8");
        }
    });
    button9.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            editText.setText(editText.getText()+"9");
        }
    });
    button0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            editText.setText(editText.getText()+"0");
        }
    });
    buttonDot.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            editText.setText(editText.getText()+".");
        }
    });
    buttonAdd.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            if(editText==null){
                editText.setText("");
            }
            else{
                result1=Float.parseFloat(editText.getText().toString());
                Add=true;
                editText.setText(null);
```

```java
        }
      }
    });
    buttonSub.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        if(editText==null){
          editText.setText("");
        }
        else{
          result1=Float.parseFloat(editText.getText().toString());
          Sub=true;
          editText.setText(null);
        }
      }
    });
    buttonMul.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        if(editText==null){
          editText.setText("");
        }
        else{
          result1=Float.parseFloat(editText.getText().toString());
          Mul=true;
          editText.setText(null);
        }
      }
    });
    buttonDiv.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        if(editText==null){
          editText.setText("");
        }
        else{
          result1=Float.parseFloat(editText.getText().toString());
          Div=true;
```

```java
            editText.setText(null);
        }
    }
});
buttonModulo.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(editText==null){
            editText.setText("");
        }
        else{
            result1=Float.parseFloat(editText.getText().toString());
            Modulo=true;
            editText.setText(null);
        }
    }
});
buttonEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        result2=Float.parseFloat(editText.getText().toString());
        if(Add==true)
        {
            editText.setText(result1+result2+"");
            Add=false;
        }
        if(Sub==true)
        {
            editText.setText(result1-result2+"");
            Sub=false;
        }
        if(Mul==true)
        {
            editText.setText(result1*result2+"");
            Mul=false;
        }
        if(Div==true)
        {
```

```java
            editText.setText(result1/result2+"");
            Div=false;
        }
        if(Modulo==true)
        {
            editText.setText(result1%result2+"");
            Modulo=false;
        }
    }
});
buttonClear.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        editText.setText("");
    }
});
    }
}
```
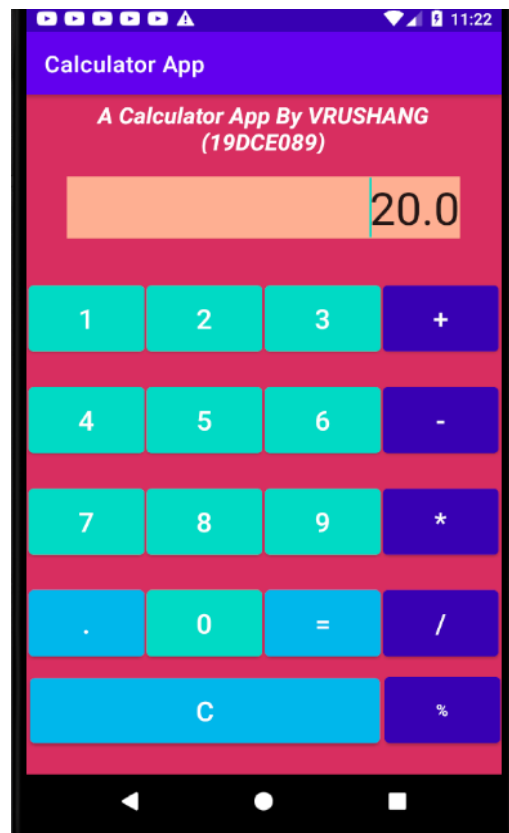
colors.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="cerise">#D83060</color>
    <color name="green">#ecebbd</color>
    <color name="pink">#feaf92</color>
</resources>
```
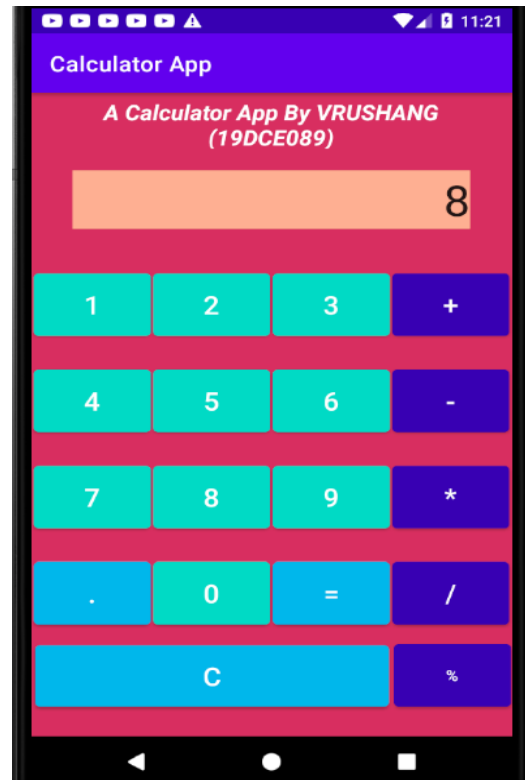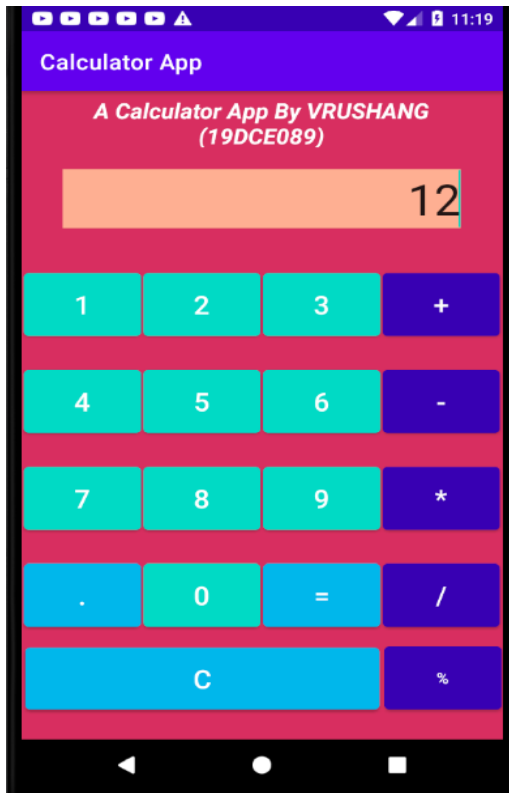
Output:-

Conclusion:- In this practical, I learned how to make a basic calculator and also to make it appear on the screen on the click of a button.

PRACTICAL-2.2

AIM: Create a login application with following features:

1. Successful Login message in TextView with Green background if Username & password is correct.

2. Failure message in TextView with Red background if Username or password is incorrect.

3. Disable Login Button after three wrong login attempts.

4. Close application if user selects Cancel Button.

activity_main.xml File:-

```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=".MainActivity">

   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      android:orientation="vertical">

      <TextView
         android:id="@+id/textview1"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:layout_gravity="center"
         android:layout_marginRight="10dp"
         android:layout_marginLeft="10dp"
         android:layout_marginTop="10dp"
         android:textSize="20sp"
         android:text="By VRUSHANG (19DCE089)"
         android:textStyle="bold"/>
```

```xml
<ImageView
    android:id="@+id/imageview"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:layout_gravity="center"
    android:layout_marginTop="40dp"
    app:srcCompat="@drawable/my_icon" />

<EditText
    android:id="@+id/username"
    android:layout_width="285dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="10dp"
    android:ems="10"
    android:gravity="center|center_vertical"
    android:hint="Username"
    android:inputType="textPersonName"
    android:paddingLeft="20dp"
    android:paddingTop="15dp"
    android:paddingBottom="15dp" />

<EditText
    android:id="@+id/password"
    android:layout_width="285dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="10dp"
    android:layout_marginBottom="20dp"
    android:ems="10"
    android:gravity="center"
    android:hint="Password"
    android:inputType="textPassword"
    android:paddingLeft="20dp"
    android:paddingTop="15dp"
    android:paddingBottom="15dp" />
```

```xml
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="108dp"
    android:gravity="center"
    android:orientation="horizontal">

    <Button
        android:id="@+id/login"
        android:layout_width="100dp"
        android:layout_height="38dp"
        android:layout_gravity="center"
        android:layout_marginRight="25dp"
        android:background="@color/pink"
        android:gravity="center"
        android:text="Login"
        app:backgroundTint="@null" />

    <Button
        android:id="@+id/cancel"
        android:layout_width="110dp"
        android:layout_height="38dp"
        android:layout_gravity="center"
        android:layout_marginLeft="25dp"
        app:backgroundTint="@null"
        android:background="@color/teal_200"
        android:gravity="center"
        android:text="Cancel" />
</LinearLayout>

<TextView
    android:id="@+id/textview"
    android:layout_width="250dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="6dp"
    android:fontFamily="sans-serif-black"
    android:gravity="center"
    android:paddingLeft="10dp"
```

```
            android:paddingTop="10dp"
            android:paddingRight="10dp"
            android:paddingBottom="10dp"
            android:textColor="@color/white"
            android:textSize="20sp" />
    </LinearLayout>
</RelativeLayout>
```

MainActivity.java File:-

```java
package com.example.loginapp;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText username,password;
    Button login,cancel;
    TextView textview;
    int count=3;

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

        login = (Button)findViewById(R.id.login);
        cancel = (Button)findViewById(R.id.cancel);
        textview = (TextView)findViewById(R.id.textview);

        login.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View v) {


            username = findViewById(R.id.username);
            password = findViewById(R.id.password);

            if(username.getText().toString().equals("vrushang") &&
password.getText().toString().equals("admin")){
                textview.setText("Successful Login");
                textview.setBackgroundColor(Color.GREEN);
            }

            else {
                textview.setText("Login failed");
                textview.setBackgroundColor(Color.RED);
                count--;

                if(count == 0){
                    login.setEnabled(false);
                    Toast.makeText(getApplicationContext(), "Too many failed
attempts !!", Toast.LENGTH_SHORT).show();
                }

                else {
                    Toast.makeText(getApplicationContext(), "You have only
"+count+" attempts left !", Toast.LENGTH_SHORT).show();
                }
            }
        }
    });

    cancel.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            finish();
        }
    });
  }
}
```
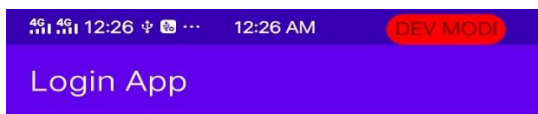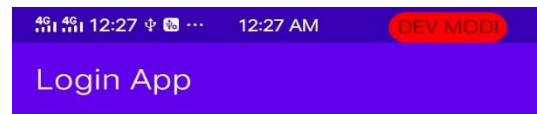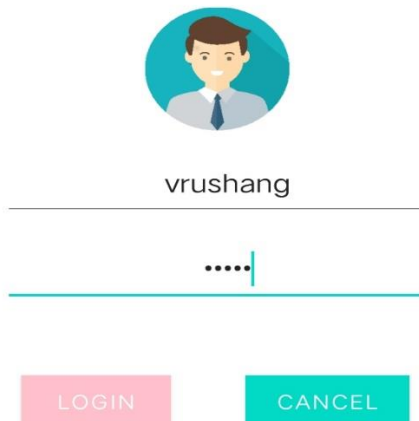
colors.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="pink">#FFC0CB</color>
</resources>
```
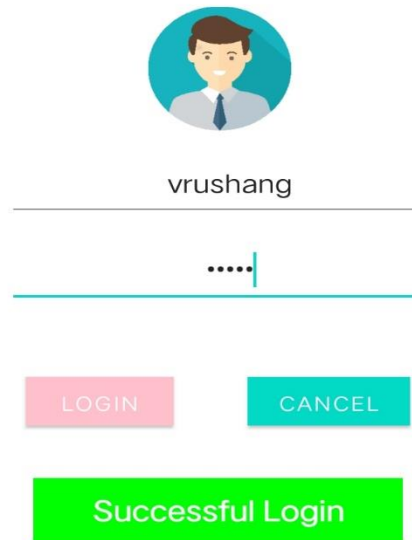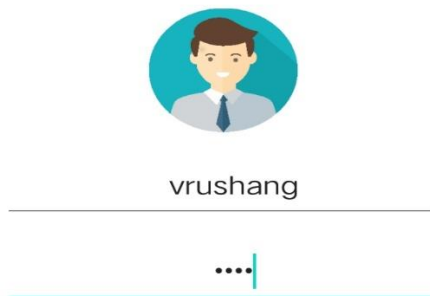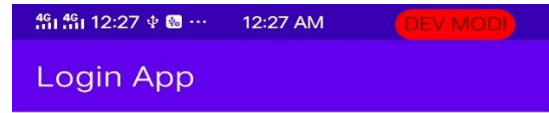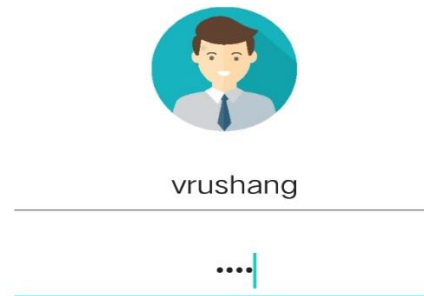
Output:-

Conclusion:- In this practical, I learned how to make the Login Application with User credentials validation.

PRACTICAL-2.3

AIM: Create android application to demonstrate life cycle of activity.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/mad_lab"
        android:textColor="@color/black"
        android:textStyle="bold"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.alcactivity;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

```java
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Toast.makeText(getApplicationContext(), "onCreate() method",
Toast.LENGTH_LONG).show();
}

@Override
protected void onStart() {
    super.onStart();
    Toast.makeText(getApplicationContext(), "onStart() method",
Toast.LENGTH_LONG).show();
}

@Override
protected void onResume() {
    super.onResume();
    Toast.makeText(getApplicationContext(), "onResume() method",
Toast.LENGTH_LONG).show();
}

@Override
protected void onPause() {
    super.onPause();
    Toast.makeText(getApplicationContext(), "onPause() method",
Toast.LENGTH_LONG).show();
}

@Override
protected void onStop() {
    super.onStop();
    Toast.makeText(getApplicationContext(), "onStop() method",
Toast.LENGTH_LONG).show();
}

@Override
protected void onDestroy() {
```
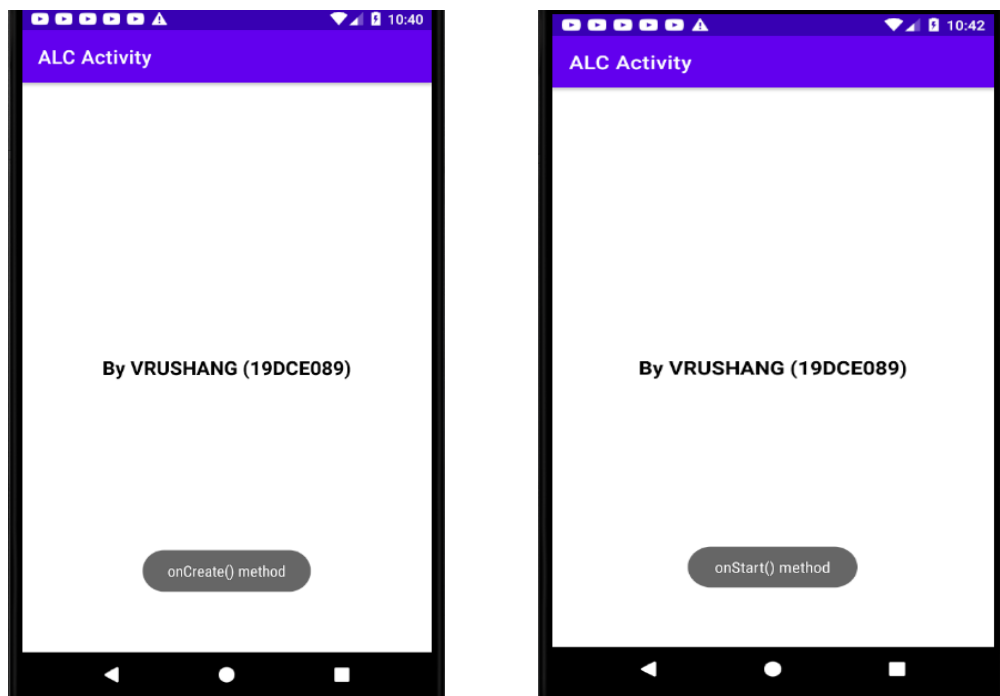
```
    super.onDestroy();
    Toast.makeText(getApplicationContext(), "onDestroy() method",
Toast.LENGTH_LONG).show();
  }

  @Override
  protected void onRestart() {
    super.onRestart();
    Toast.makeText(getApplicationContext(), "onRestart() method",
Toast.LENGTH_LONG).show();
  }
}
```

strings.xml File:-

```
<resources>
    <string name="app_name">ALC Activity</string>
    <string name="mad_lab">By VRUSHANG (19DCE089)</string>
    <string name="black">#000000</string>
</resources>
```

Output:-
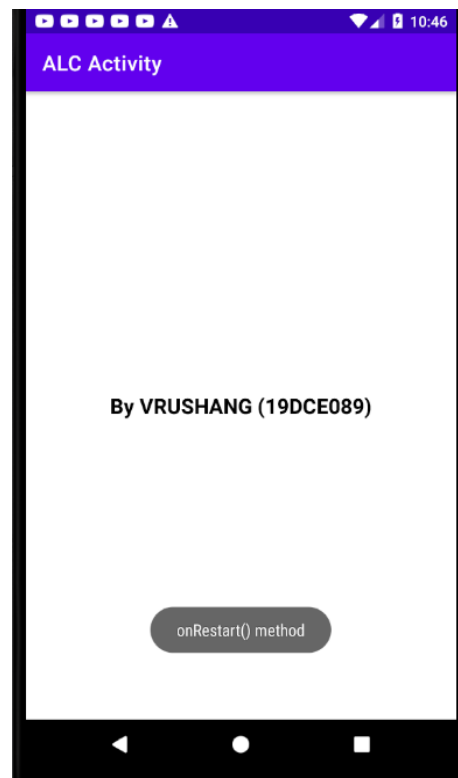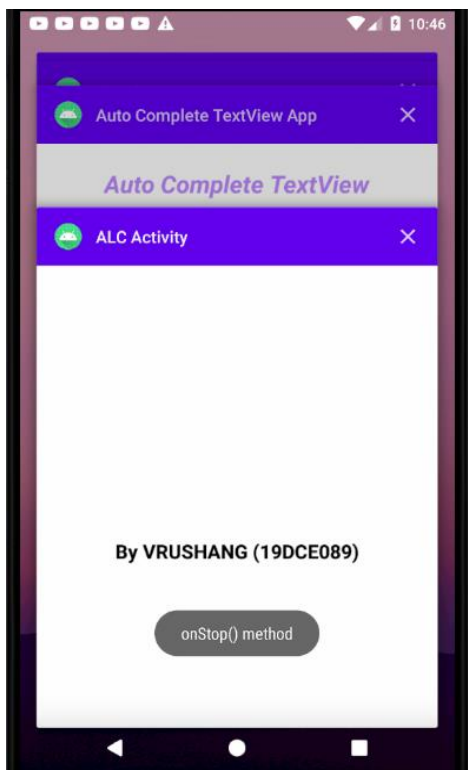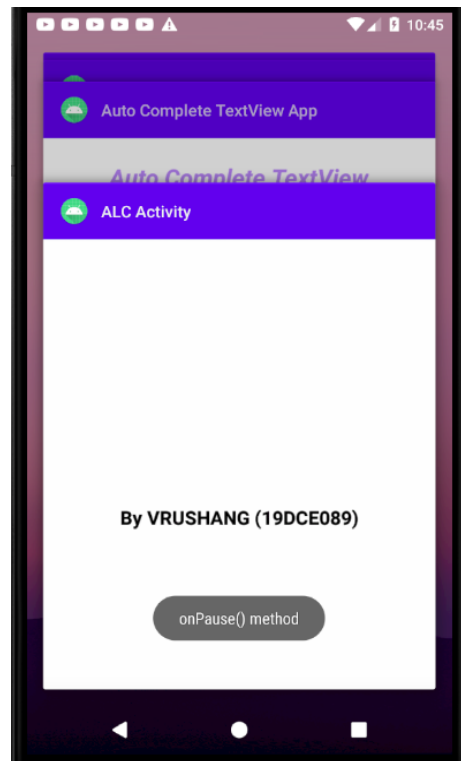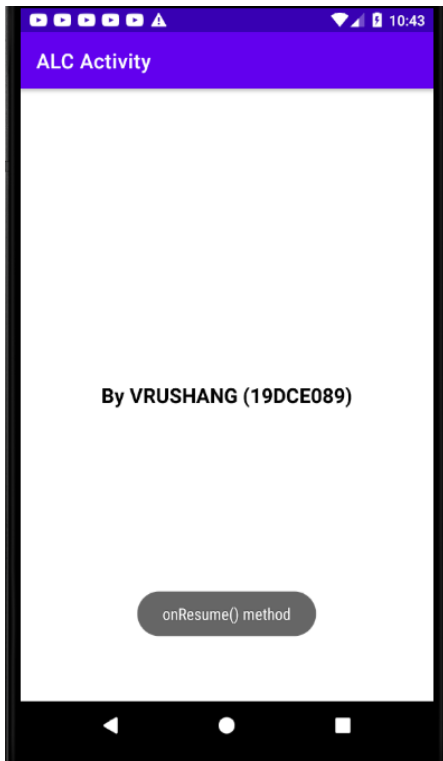
Conclusion:- From this practical, I have learned demonstrating the life cycle of activity in android application.

PRACTICAL-3.1

AIM: Create simple Application which show the use of List view.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="152dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/listView" />

    <ListView
        android:id="@+id/listView"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="1dp"
        android:layout_marginLeft="1dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="1dp"
        android:layout_marginRight="1dp"
        android:layout_marginBottom="61dp"
        app:layout_constraintBottom_toTopOf="@+id/textView"
```

```
                app:layout_constraintEnd_toEndOf="parent"
                app:layout_constraintStart_toStartOf="parent"
                app:layout_constraintTop_toTopOf="parent" />
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.listviewapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    ListView listView;
    String[] names;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        listView=(ListView)findViewById(R.id.listView);
        names=new String[]{"A","B","C","D","E","F"};
        click();
    }
    public void click()
    {
        ArrayAdapter adapter=new ArrayAdapter(MainActivity.this, R.layout.layout,
names);
        listView.setAdapter(adapter);
        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
```

```
        public void onItemClick(AdapterView<?> adapterView, View view, int i,
long l) {
            String str = (String)listView.getItemAtPosition(i);
            Toast.makeText(MainActivity.this,"Position: "+i+"\nValue:
"+str,Toast.LENGTH_LONG).show();
        }
    });
  }
}
```

layout.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:textSize="20sp"
    android:padding="15dp"
    android:textStyle="bold">
</TextView>
```
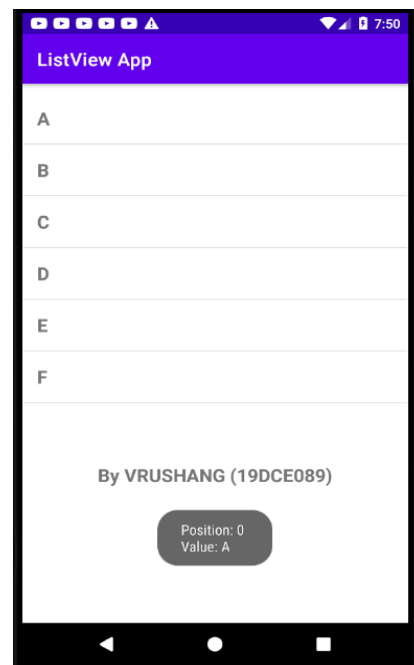
Output:-

Conclusion:- From this practical, I have learned how to use list view in android application.

PRACTICAL-3.2

AIM: Create simple program which show the use of Auto Complete Text View.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <AutoCompleteTextView
        android:id="@+id/autoCompleteTextView"
        android:layout_width="351dp"
        android:layout_height="67dp"
        android:layout_marginBottom="176dp"
        android:hint="Enter Branch Name"
        android:text=""
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="40dp"
        android:onClick="Display"
        android:text="Give Toast of entered branch"
        app:layout_constraintBottom_toTopOf="@+id/textView2"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.495"
        app:layout_constraintStart_toStartOf="parent" />
```

```xml
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Auto Complete TextView"
        android:textColor="@color/purple_200"
        android:textSize="25sp"
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toTopOf="@+id/autoCompleteTextView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.463" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="148dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.autocompletetextviewapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
import android.widget.Button;
```

```java
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    String[] branch={"Computer Engineering","Information Technology",
            "Computer Science & Engineering","Electronics & Communication"};

    AutoCompleteTextView autoCompleteTextView;
    Button button;

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


autoCompleteTextView=(AutoCompleteTextView)findViewById(R.id.autoCompl
eteTextView);
        ArrayAdapter<String> adapter = new
ArrayAdapter<String>(this,android.R.layout.select_dialog_item,branch);
        autoCompleteTextView.setThreshold(1);
        autoCompleteTextView.setAdapter(adapter);

    }

    public void Display(View view) {
        String s=autoCompleteTextView.getText().toString();
        Toast.makeText(MainActivity.this, s, Toast.LENGTH_LONG).show();
    }
}
```

Output:-
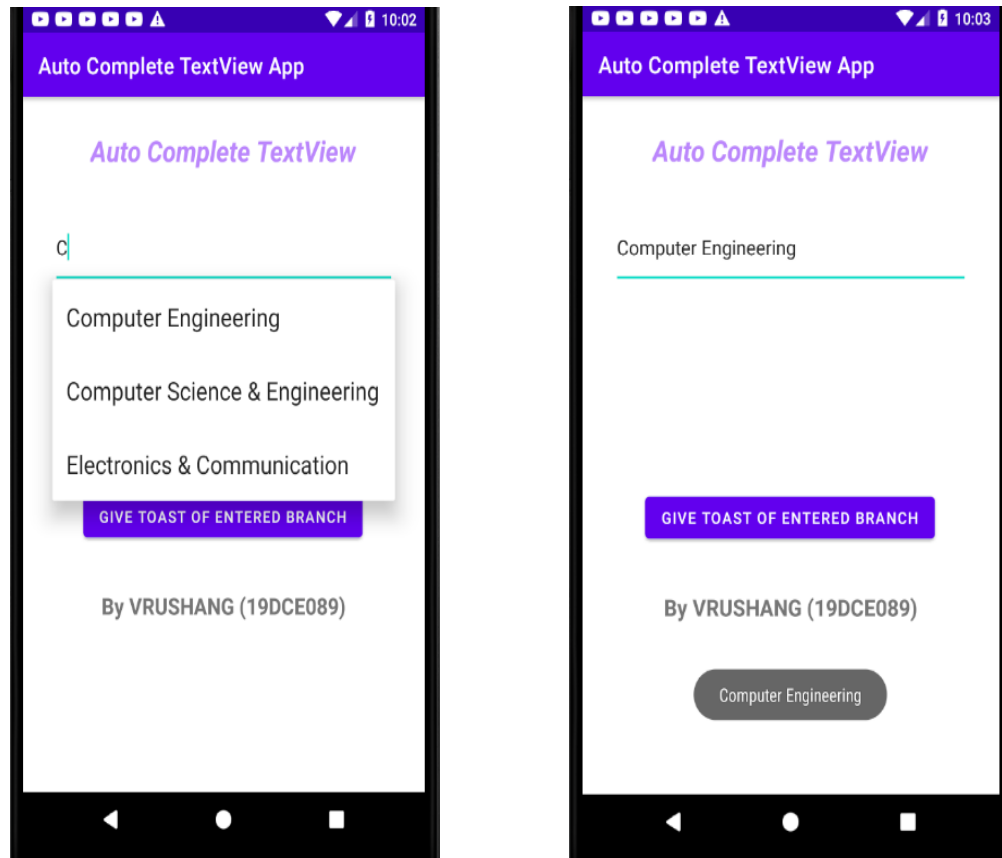
Conclusion:- From this practical, I learned that how to use of Auto Complete Text View.

PRACTICAL-3.3

AIM: Create simple Application which show the use of Radio view, take 3 radio button. When radio button is selected it will show the text of radio button using Toast.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:text="What is your stream?"
        android:textSize="30sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.504"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <RadioGroup
        android:id="@+id/radioGroup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="180dp"
        android:layout_marginEnd="35dp"
        android:layout_marginRight="35dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent">
```

```xml
        <RadioButton
          android:id="@+id/radioButton1"
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:text="Computer Engineering"
          android:textSize="20sp"
          android:textStyle="bold"/>
<!--        android:onClick="onClickedCE"/>-->


        <RadioButton
          android:id="@+id/radioButton2"
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:layout_marginTop="10dp"
          android:text="Information Technology"
          android:textSize="20sp"
          android:textStyle="bold"/>
<!--        android:onClick="onClickedIT"/>-->


        <RadioButton
          android:id="@+id/radioButton3"
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:layout_marginTop="10dp"
          android:text="Computer Science Engineering"
          android:textSize="20sp"
          android:textStyle="bold"/>
<!--        android:onClick="onClickedCSE"/>-->
    </RadioGroup>

    <TextView
      android:id="@+id/textView2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginBottom="150dp"
      android:text="By VRUSHANG (19DCE089)"
      android:textSize="20sp"
```

```
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />
```

`</androidx.constraintlayout.widget.ConstraintLayout>`

MainActivity.java File:-

```java
package com.example.radioviewapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    RadioGroup radioGroup;
    RadioButton radioButton1,radioButton2,radioButton3;

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

        radioGroup=(RadioGroup)findViewById(R.id.radioGroup);
        radioButton1=(RadioButton)findViewById(R.id.radioButton1);
        radioButton2=(RadioButton)findViewById(R.id.radioButton2);
        radioButton3=(RadioButton)findViewById(R.id.radioButton3);

        click();
    }

    public void click()
    {
        radioGroup.setOnCheckedChangeListener(new
```

```
RadioGroup.OnCheckedChangeListener() {
        @Override
        public void onCheckedChanged(RadioGroup radioGroup, int i) {
            switch (i)
            {
                case R.id.radioButton1:
                    Toast.makeText(MainActivity.this, "Computer Engineering !!!",
Toast.LENGTH_LONG).show();
                    break;
                case R.id.radioButton2:
                    Toast.makeText(MainActivity.this, "Information Technology !!!",
Toast.LENGTH_LONG).show();
                    break;
                case R.id.radioButton3:
                    Toast.makeText(MainActivity.this, "Computer Science Engineering
!!!", Toast.LENGTH_LONG).show();
                    break;
            }
        }
    });
    }

    /*
    public void onClickedCE(View view) {
      Toast.makeText(MainActivity.this, "Computer Engineering !!!",
Toast.LENGTH_LONG).show();
    }
    public void onClickedIT(View view) {
      Toast.makeText(MainActivity.this, "Information Technology !!!",
Toast.LENGTH_LONG).show();
    }
    public void onClickedCSE(View view) {
      Toast.makeText(MainActivity.this, "Computer Science Engineering !!!",
Toast.LENGTH_LONG).show();
    }
    */
}
```

Output:-
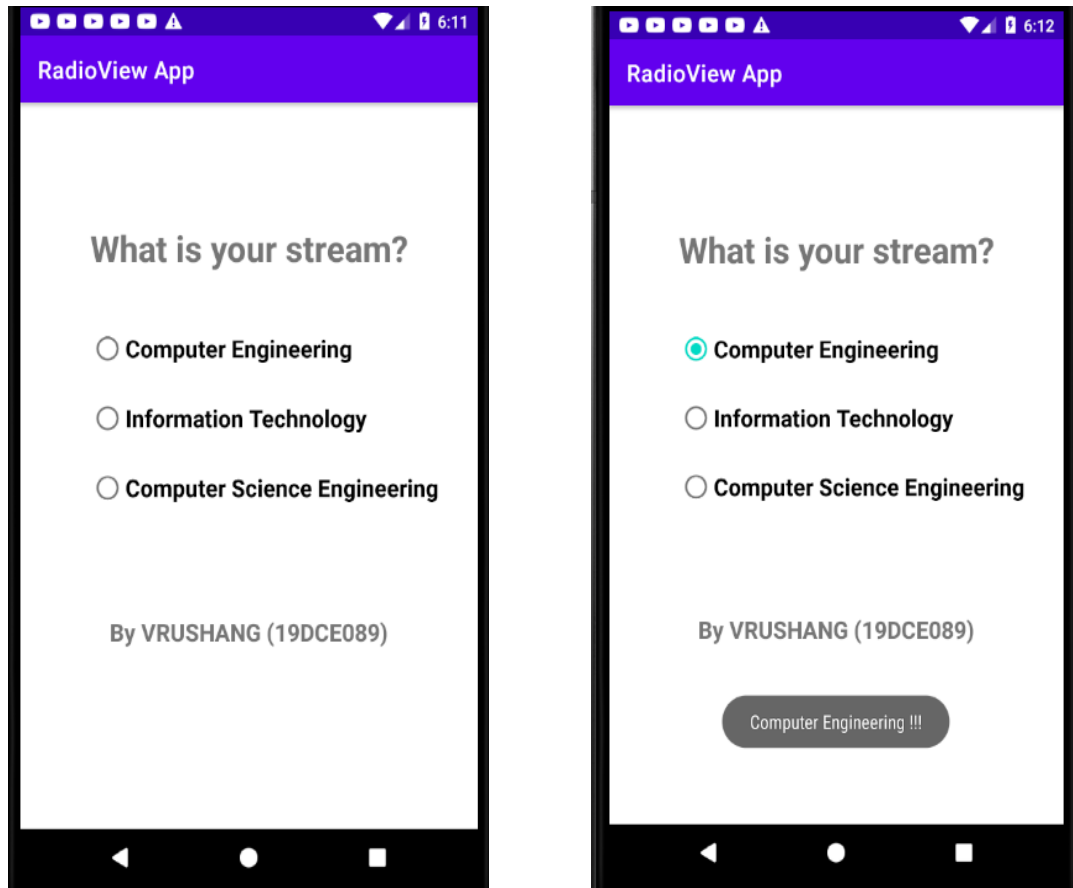
Conclusion:- From this practical, I learned that how to use of Auto Complete Radio View and Radio Button.

PRACTICAL-4.1

AIM: Create simple Application which show the use of SeekBar.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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:id="@+id/constraintLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <SeekBar
        android:id="@+id/seekBar"
        android:layout_width="287dp"
        android:layout_height="59dp"
        android:layout_marginBottom="88dp"
        android:max="100"
        app:layout_constraintBottom_toTopOf="@+id/textView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="64dp"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/textView3"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
```

```
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Seek Bar"
        android:textSize="30sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/seekBar"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.74" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="196dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.seekbarapp;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.graphics.Color;
import android.os.Bundle;
import android.widget.SeekBar;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

```java
SeekBar sb;
TextView tv;
ConstraintLayout cl;

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

    sb=(SeekBar)findViewById(R.id.seekBar);
    tv=(TextView)findViewById(R.id.textView);
    cl=(ConstraintLayout)findViewById(R.id.constraintLayout);
    tv.setText("Progress: "+sb.getProgress()+" out of "+sb.getMax());
    click();
}

public void click(){
    sb.setOnSeekBarChangeListener(new SeekBar.OnSeekBarChangeListener() {
        @Override
        public void onProgressChanged(SeekBar seekBar, int i, boolean b) {
            tv.setText("Progress: "+sb.getProgress()+" out of "+sb.getMax());

            if(sb.getProgress()==30){
                cl.setBackgroundColor(Color.RED);
            }
            if(sb.getProgress()==50){
                cl.setBackgroundColor(Color.GREEN);
            }
            if(sb.getProgress()==80){
                cl.setBackgroundColor(Color.BLUE);
            }
            if(sb.getProgress()==100){
                finish();
            }
        }

        @Override
        public void onStartTrackingTouch(SeekBar seekBar) {
```
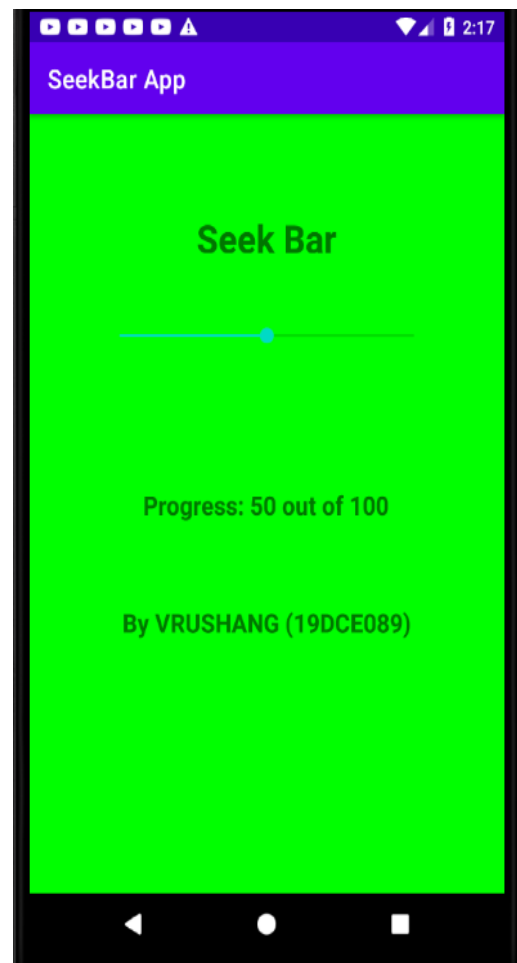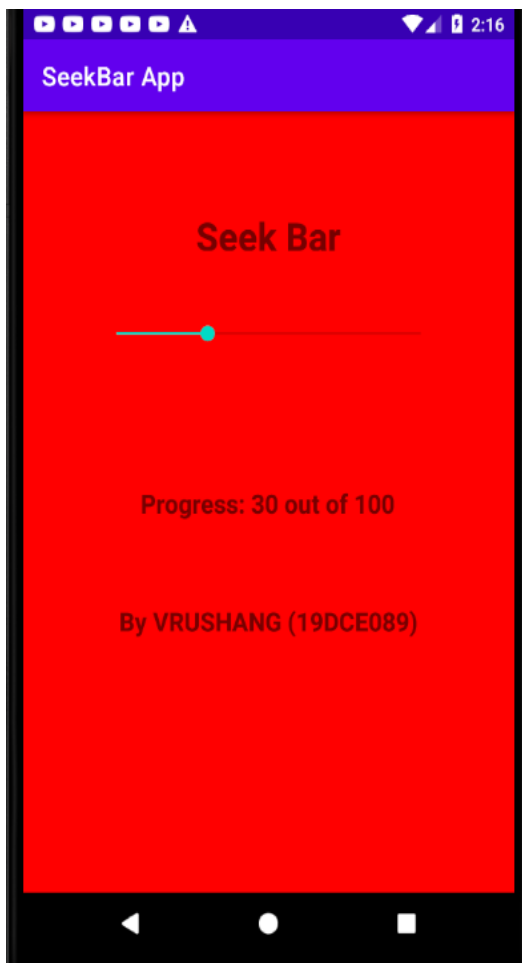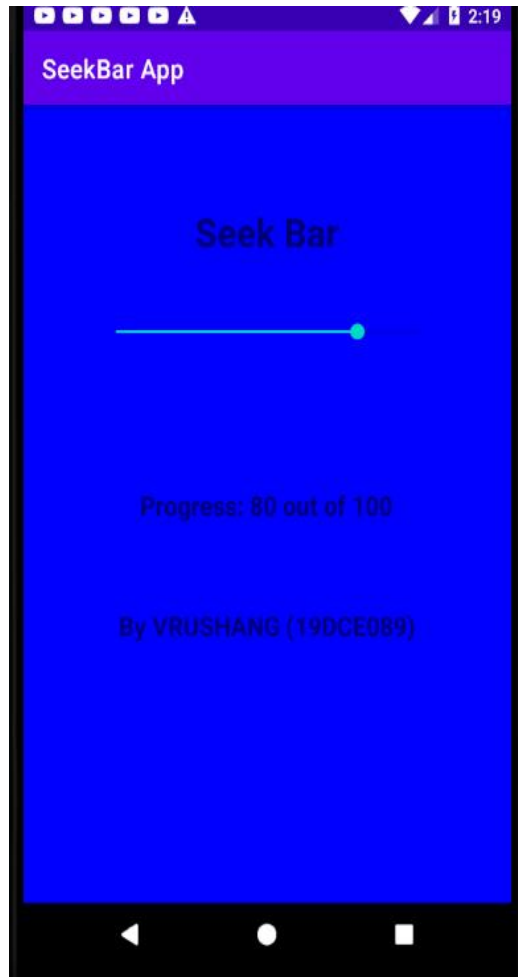
```
        //Toast.makeText(getApplicationContext(), "This is
onStartTrackingTouch method", Toast.LENGTH_LONG).show();
        }

        @Override
        public void onStopTrackingTouch(SeekBar seekBar) {
        //Toast.makeText(getApplicationContext(), "This is
onStopTrackingTouch method", Toast.LENGTH_LONG).show();
        }
    });
  }
}
```

Output:-

Conclusion:- From this practical, I learned that how to use Seek Bar.

PRACTICAL-4.2

AIM: Create simple Application which show the use of RatingBar.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <RatingBar
        android:id="@+id/ratingBar"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="212dp"
        android:numStars="7"
        android:rating="1"
        android:stepSize="1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.493"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="100dp"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/ratingBar"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent" />
```

```xml
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="60dp"
    android:text="Give Toast of Current Rating"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/ratingBar" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="62dp"
    android:text="By VRUSHANG (19DCE089)"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.ratingbarapp;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RatingBar;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

```java
TextView textView;
Button button;
RatingBar ratingBar;

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

    textView=(TextView)findViewById(R.id.textView);
    button=(Button)findViewById(R.id.button);
    ratingBar=(RatingBar)findViewById(R.id.ratingBar);
    textView.setText("Ratings : "+String.valueOf(ratingBar.getRating()));
    click();
    buttonClick();
}

public void click()
{
    ratingBar.setOnRatingBarChangeListener(new
RatingBar.OnRatingBarChangeListener() {
        @Override
        public void onRatingChanged(RatingBar ratingBar, float v, boolean b) {
            textView.setText("Ratings : "+String.valueOf(v));
        }
    });
}

public void buttonClick()
{
    button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {

Toast.makeText(MainActivity.this,String.valueOf(ratingBar.getRating()),Toast.LENGTH_LONG).show();
        }
```
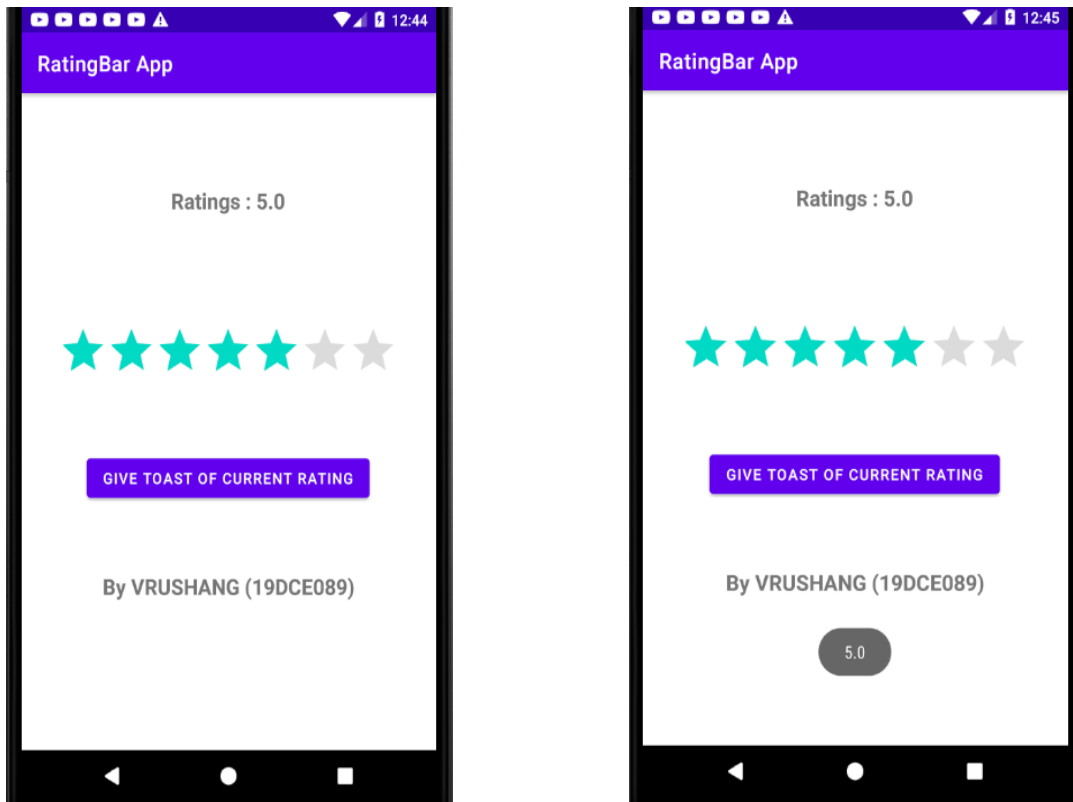
```
        });
    }
}
```

Output:-

Conclusion:- From this practical, I learned that how to use Rating Bar.

PRACTICAL-4.3

AIM: Create simple Application which show the use of Alert Dialog.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="229dp"
        android:text="Open Alert Dialog Box"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="156dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

package com.example.alertdialogboxapp;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button button;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.*activity_main*);
        button=(Button)findViewById(R.id.*button*);
        click();
    }
    public void click()
    {
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                AlertDialog.Builder builder=new
AlertDialog.Builder(MainActivity.this);
                builder.setTitle("Quit");
                builder.setMessage("Do you want to close your app?");
                builder.setPositiveButton("Yes", new DialogInterface.OnClickListener()
{
                    @Override
                    public void onClick(DialogInterface dialogInterface, int i) {
                        finish();
                    }
                });

```
        builder.setNegativeButton("No", new DialogInterface.OnClickListener()
{
            @Override
            public void onClick(DialogInterface dialogInterface, int i) {
                dialogInterface.cancel();
            }
        });
        builder.show();
      }
    });
  }
}
```

Output:-
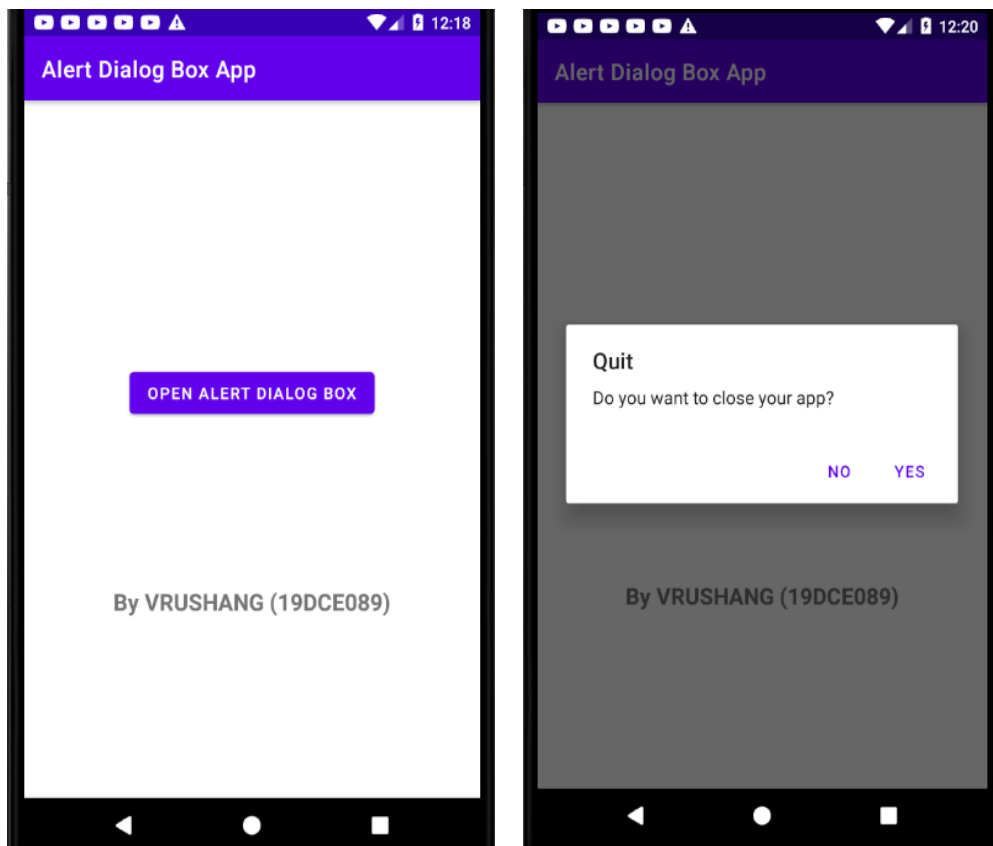
Conclusion:- From this practical, I learned that how to use Alert Dialog Box.

PRACTICAL-5

AIM: Implement the given layout using Linear Layout. HINT: LinearLayout is a view group that aligns children in single direction, Horizontal or Vertical. The attribute android:orientation is used to set the direction. E.g.android:orientation="vertical".
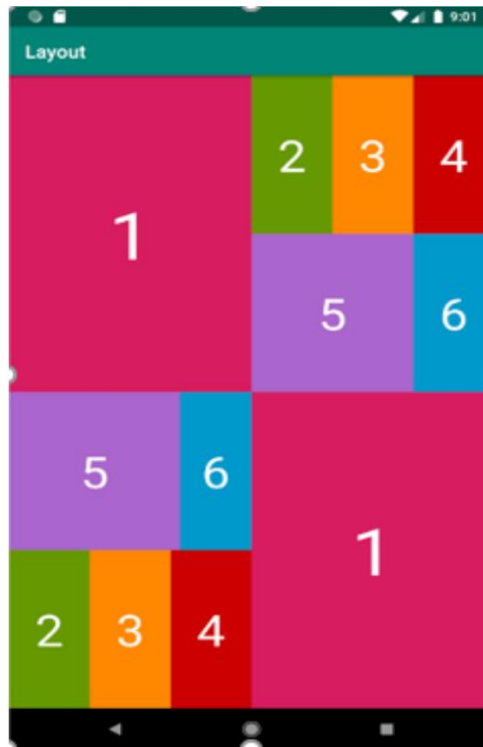
activity_main.xml File:-

```
<?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:weightSum="2"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
```

```xml
android:layout_height="0dp"
android:layout_weight="1"
android:weightSum="2"
android:orientation="horizontal">
<LinearLayout
    android:layout_width="0dp"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_weight="1"
    android:background="#cc0066">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="1"
        android:textColor="@color/white"
        android:textSize="40dp"
        android:gravity="center"/>
</LinearLayout>
<LinearLayout
    android:layout_width="0dp"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_weight="1"
    android:weightSum="2">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:weightSum="3">
        <LinearLayout
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:background="#009933">

            <TextView
```

```xml
            android:id="@+id/textView2"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="2"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="#ff9900">

        <TextView
            android:id="@+id/textView3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="3"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="#ff3300">

        <TextView
            android:id="@+id/textView4"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="4"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
```

```xml
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:weightSum="3">
        <LinearLayout
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="2"
            android:background="#cc00cc">

            <TextView
                android:id="@+id/textView5"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:text="5"
                android:textColor="@color/white"
                android:textSize="40dp"
                android:gravity="center"/>
        </LinearLayout>
        <LinearLayout
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:background="#3399ff">

            <TextView
                android:id="@+id/textView6"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:text="6"
                android:textColor="@color/white"
                android:textSize="40dp"
                android:gravity="center"/>
        </LinearLayout>
    </LinearLayout>
</LinearLayout>
```

```xml
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:weightSum="2">
        <LinearLayout
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:orientation="vertical"
            android:layout_weight="1"
            android:weightSum="2">
            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="0dp"
                android:layout_weight="1"
                android:weightSum="3">
                <LinearLayout
                    android:layout_width="0dp"
                    android:layout_height="match_parent"
                    android:layout_weight="2"
                    android:background="#cc00cc">

                    <TextView
                        android:id="@+id/textView7"
                        android:layout_width="match_parent"
                        android:layout_height="match_parent"
                        android:text="5"
                        android:textColor="@color/white"
                        android:textSize="40dp"
                        android:gravity="center"/>
                </LinearLayout>
                <LinearLayout
                    android:layout_width="0dp"
                    android:layout_height="match_parent"
                    android:layout_weight="1"
                    android:background="#3399ff">
```

```xml
        <TextView
            android:id="@+id/textView8"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="6"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    android:weightSum="3">
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="#009933">

        <TextView
            android:id="@+id/textView9"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="2"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="#ff9900">

        <TextView
```

```xml
            android:id="@+id/textView10"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="3"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="#ff3300">

        <TextView
            android:id="@+id/textVie11"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="4"
            android:textColor="@color/white"
            android:textSize="40dp"
            android:gravity="center"/>
    </LinearLayout>
  </LinearLayout>
</LinearLayout>
<LinearLayout
  android:layout_width="0dp"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:layout_weight="1"
  android:background="#cc0066">

  <TextView
    android:id="@+id/textView12"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:text="1"
    android:textColor="@color/white"
```

```
        android:textSize="40dp"
        android:gravity="center"/>
    </LinearLayout>
  </LinearLayout>

</LinearLayout>
```

MainActivity.java File:-

```
package com.example.layout;

import androidx.appcompat.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);
  }
}
```
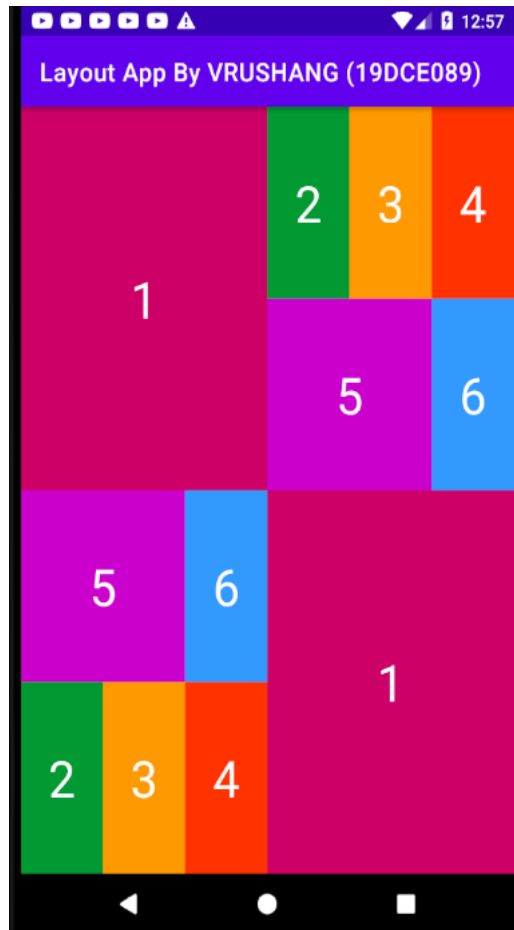
strings.xml File:-

```
<resources>
  <string name="app_name">Layout App By VRUSHANG
(19DCE089)</string>
</resources>
```

Output:-

Conclusion:- In this practical, I have learned how to use Linear Layout and how to apply designing of that layout by setting height and width of particular layout.

PRACTICAL-6.1

AIM: 1. Create login application where you will have to validate EmailID (UserName). Till the username and password is not validated, login button should remain disabled.

2. On successful login, go to on new Acticity.

activity_main.xml File:-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

  <TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:text="Login Validate App"
    android:textSize="25sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

  <ImageView
    android:id="@+id/imageButton"
    android:layout_width="184dp"
    android:layout_height="171dp"
    android:layout_marginTop="20dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
```

```
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView"
    app:srcCompat="@drawable/avatar" />

<EditText
    android:id="@+id/editText1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="35dp"
    android:ems="10"
    android:hint="Enter email address"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/imageButton" />

<EditText
    android:id="@+id/editText2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:ems="10"
    android:hint="Enter password"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.502"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText1" />

<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="30dp"
    android:text="Login"
    app:layout_constraintEnd_toStartOf="@+id/button2"
    app:layout_constraintHorizontal_bias="0.441"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText2" />


    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="72dp"
        android:layout_marginRight="72dp"
        android:text="Quit"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText2" />


    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="By VRUSHANG (19DCE089)"
        android:textStyle="bold"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button2" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_after_login.xml File:-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".AfterLogin">


    <TextView
```

```xml
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="232dp"
    android:text="TextView"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="52dp"
    android:text="TextView"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView2" />

<TextView
    android:id="@+id/textView5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="By VRUSHANG (19DCE089)"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView3"
    app:layout_constraintVertical_bias="0.721" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

AfterLogin.java File:-

```java
package com.example.validateapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class AfterLogin extends AppCompatActivity {

    TextView textView2,textView3;

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

        textView2=(TextView)findViewById(R.id.textView2);
        textView3=(TextView)findViewById(R.id.textView3);

        Intent intent=getIntent();
        textView2.setText(intent.getStringExtra("A"));
        textView3.setText(intent.getStringExtra("B"));
    }
}
```

MainActivity.java File:-

```java
package com.example.validateapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```java
public class MainActivity extends AppCompatActivity {

  EditText editText1,editText2;
  Button button1,button2;
  boolean isValidEmail=false, isValidPassword=false;

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

    editText1=(EditText)findViewById(R.id.editText1);
    editText2=(EditText)findViewById(R.id.editText2);
    button1=(Button)findViewById(R.id.button1);
    button2=(Button)findViewById(R.id.button2);

    button1.setEnabled(false);

    button2.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        finish();
      }
    });

    editText1.addTextChangedListener(new TextWatcher() {
      @Override
      public void beforeTextChanged(CharSequence charSequence, int i, int i1, int i2) {

      }

      @Override
      public void onTextChanged(CharSequence charSequence, int i, int i1, int i2) {

      }
```

```java
        @Override
        public void afterTextChanged(Editable editable) {
          if(editText1.getText().toString().equals("19dce089@charusat.edu.in"))
          {
            isValidEmail=true;
          }
          else
          {
            isValidEmail=false;
          }
          button1.setEnabled(isValidEmail && isValidPassword);
        }
    });

    editText2.addTextChangedListener(new TextWatcher() {
        @Override
        public void beforeTextChanged(CharSequence charSequence, int i, int i1,
int i2) {

        }

        @Override
        public void onTextChanged(CharSequence charSequence, int i, int i1, int
i2) {

        }

        @Override
        public void afterTextChanged(Editable editable) {
          if(editText2.getText().toString().equals("vru@123"))
          {
            isValidPassword=true;
          }
          else
          {
            isValidPassword=false;
          }
```
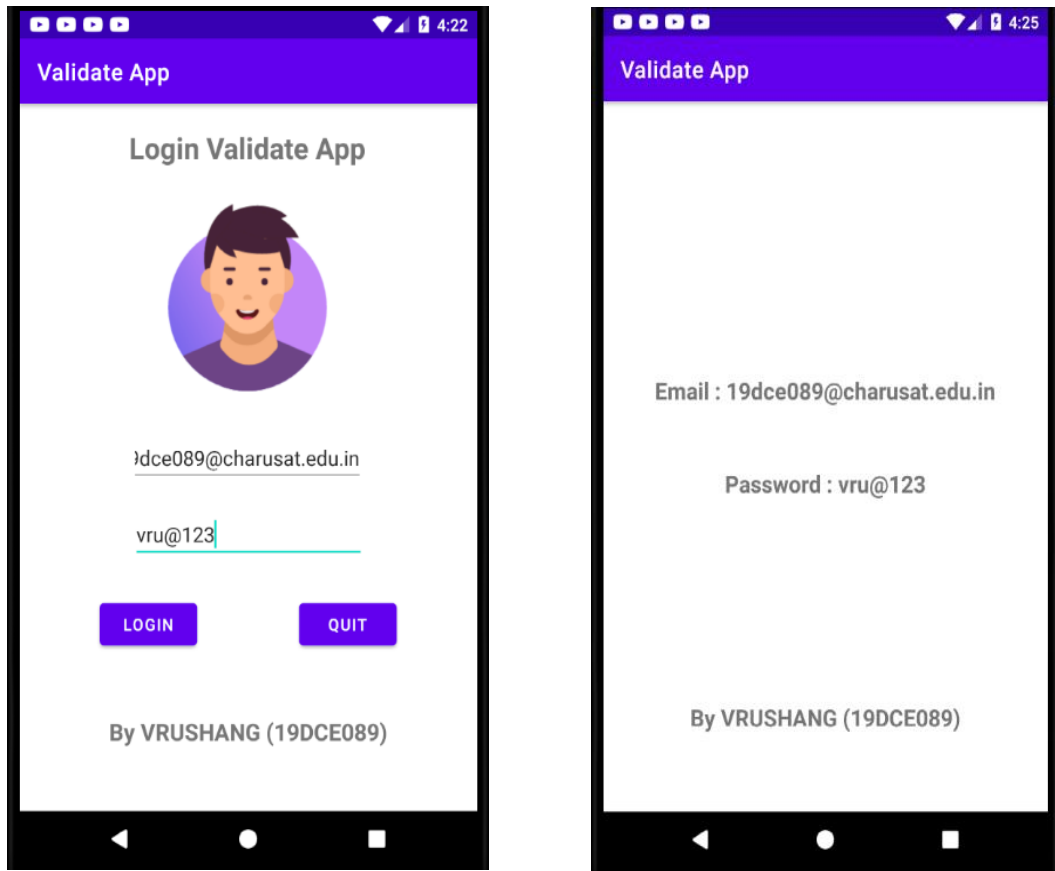
```
            button1.setEnabled(isValidEmail && isValidPassword);
        }
    });

    button1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Intent intent=new Intent(MainActivity.this,AfterLogin.class);
            intent.putExtra("A","Email : "+editText1.getText().toString());
            intent.putExtra("B","Password : "+editText2.getText().toString());
            startActivity(intent);
        }
    });
  }
}
```

Output:-
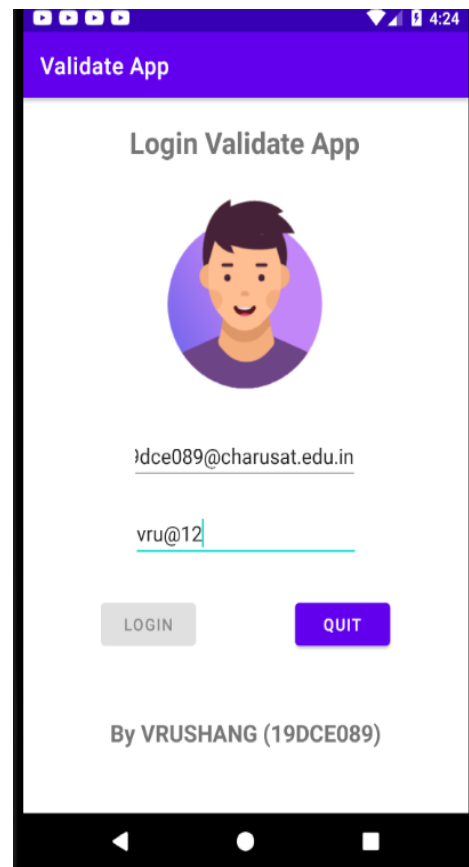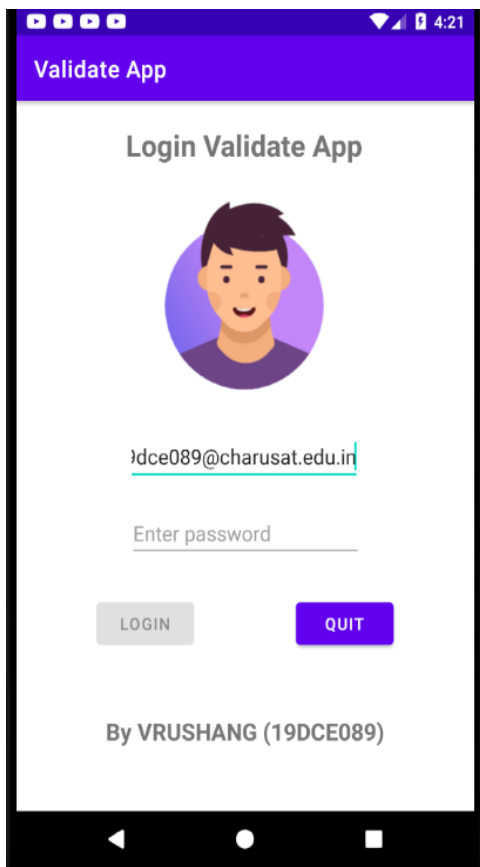
Conclusion:- From this practical, I learned that how to validate username and password by creating its logic.

PRACTICAL-6.2

AIM: Understand Menu option. Create an application that will change color of the screen, based on selected options from the menu.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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:id="@+id/constraintLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Option Menu"
        android:textSize="50sp"
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="16dp"
        android:layout_marginRight="16dp"
        android:layout_marginBottom="171dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="30sp"
        android:textStyle="bold"
```

```
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />
```

`</androidx.constraintlayout.widget.ConstraintLayout>`

MainActivity.java File:-

```java
package com.example.optionmenuapplication;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;

import android.graphics.Color;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    ConstraintLayout constraintLayout;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        constraintLayout=(ConstraintLayout)findViewById(R.id.constraintLayout);
    }

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

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
```

```
        if(R.id.item1==item.getItemId())

Toast.makeText(MainActivity.this,item.getTitle(),Toast.LENGTH_SHORT).show()
;

        else if(R.id.subitem1==item.getItemId())
            constraintLayout.setBackgroundColor(Color.RED);

        else if(R.id.subitem2==item.getItemId())
            constraintLayout.setBackgroundColor(Color.GREEN);

        else if(R.id.subitem3==item.getItemId())
            constraintLayout.setBackgroundColor(Color.BLUE);

        else if(R.id.subitem4==item.getItemId())
            constraintLayout.setBackgroundColor(Color.parseColor("#FAD5E5"));

        else if(R.id.subitem5==item.getItemId())
            constraintLayout.setBackgroundColor(0xFFFF4500);

        else if(R.id.item2==item.getItemId())
            finish();

        return super.onOptionsItemSelected(item);
    }
}
```

menu.xml File:-

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

   <item android:id="@+id/item1"
       android:title="Colors">
       <menu>
          <item android:id="@+id/subitem1"
              android:title="Red"/>
```

```
        <item android:id="@+id/subitem2"
           android:title="Green"/>
        <item android:id="@+id/subitem3"
           android:title="Blue"/>
        <item android:id="@+id/subitem4"
           android:title="Pink"/>
        <item android:id="@+id/subitem5"
           android:title="Orange"/>
      </menu>
   </item>

   <item android:id="@+id/item2"
      android:title="Quit"/>

</menu>
```
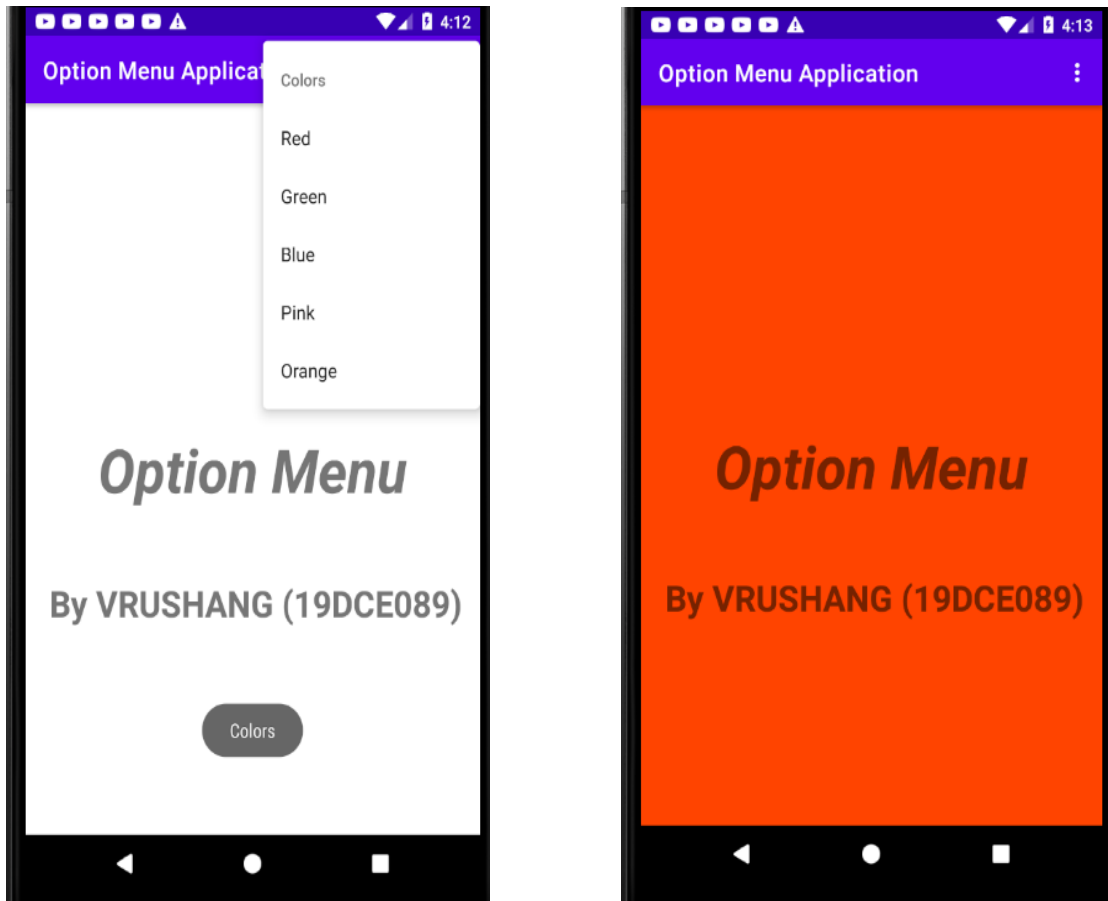
Output:-

Conclusion:- From this practical, I learned that how to use Option Menu in android application.

PRACTICAL-7

AIM: Create an application to make a Phone call on specific entered number by user in the EditText.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="60dp"
        android:ems="10"
        android:hint="Enter phone number"
        android:inputType="phone"
        app:layout_constraintBottom_toTopOf="@+id/imageButton"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

    <ImageButton
        android:id="@+id/imageButton"
        android:layout_width="95dp"
        android:layout_height="95dp"
        android:layout_marginBottom="154dp"
        android:scaleType="fitXY"
        app:layout_constraintBottom_toTopOf="@+id/textView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText"
```

```
        app:srcCompat="@drawable/phonecall" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="128dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/imageButton" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="131dp"
        android:layout_marginBottom="64dp"
        android:text="Make a Call"
        android:textSize="30sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/editText"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.458"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```
package com.example.phonecallapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
```

```java
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.ImageButton;

public class MainActivity extends AppCompatActivity {

    EditText editText;
    ImageButton imageButton;

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

        editText=(EditText)findViewById(R.id.editText);
        imageButton=(ImageButton)findViewById(R.id.imageButton);

        imageButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent=new Intent(Intent.ACTION_CALL,
Uri.parse("tel:"+editText.getText().toString()));
                startActivity(intent);
            }
        });
    }
}
```

AndroidManifest.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.phonecallapp">
    <uses-permission android:name="android.permission.CALL_PHONE"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
```

```
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.PhoneCallApp">
        <activity android:name=".MainActivity">
          <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
          </intent-filter>
        </activity>
      </application>

  </manifest>
```

Output:-
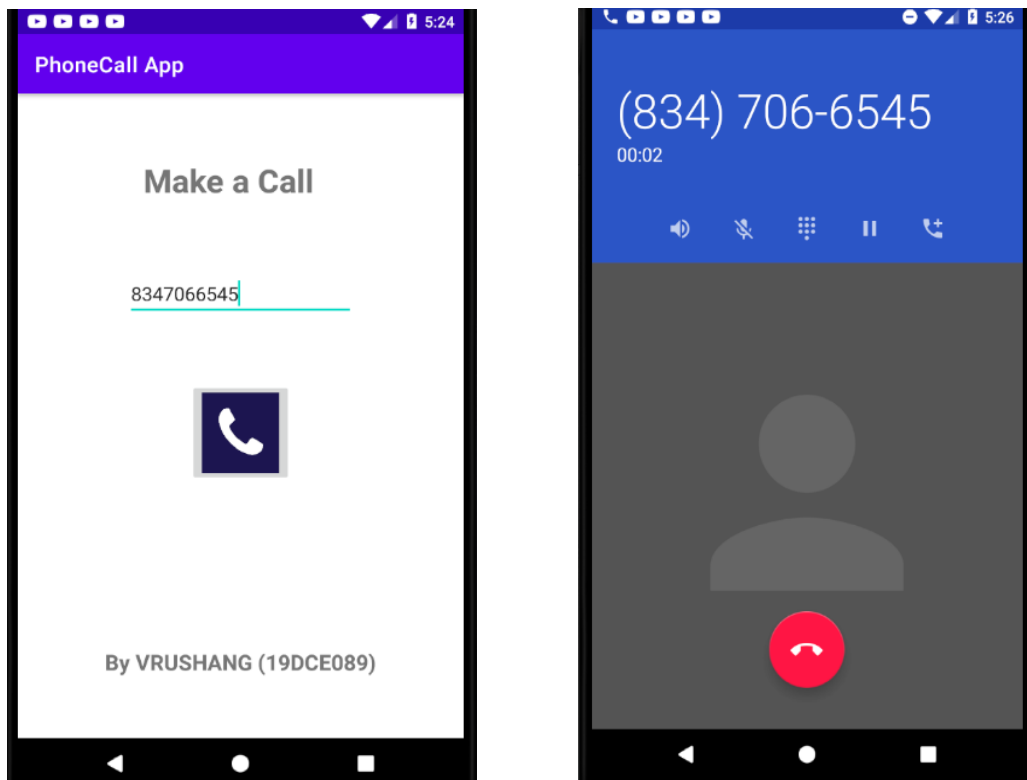
Conclusion:- From this practical, I learned that how to make a phone call on entered phone number by user.

PRACTICAL-8.1

AIM: Create an Android Application where user will enter the destination email address, subject and a message. On clicking Send button, it will prompt email client only and email will compose. Also put some logic over EditText field that no one fields are empty otherwise notify with toast.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

  <TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="64dp"
    android:text="To:"
    android:textSize="15sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toStartOf="@+id/editText1"
    app:layout_constraintHorizontal_bias="0.571"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

  <TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="60dp"
    android:text="Subject:"
```

```
    android:textSize="15sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toStartOf="@+id/editText2"
    app:layout_constraintHorizontal_bias="0.43"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView1" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="64dp"
    android:text="Message:"
    android:textStyle="bold"
    android:textSize="15sp"
    app:layout_constraintEnd_toStartOf="@+id/editText3"
    app:layout_constraintHorizontal_bias="0.382"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView2" />

<EditText
    android:id="@+id/editText1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="48dp"
    android:layout_marginEnd="48dp"
    android:layout_marginRight="48dp"
    android:ems="10"
    android:hint="Enter destination email id"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/editText2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="36dp"
```

```xml
    android:layout_marginEnd="48dp"
    android:layout_marginRight="48dp"
    android:ems="10"
    android:hint="Enter subject"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText1" />

<EditText
    android:id="@+id/editText3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="40dp"
    android:layout_marginEnd="44dp"
    android:layout_marginRight="44dp"
    android:ems="10"
    android:hint="Enter message"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText2" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="44dp"
    android:text="Send"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText3" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="188dp"
    android:text="By VRUSHANG (19DCE089)"
```

```
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button"
        app:layout_constraintVertical_bias="0.235" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.emailsendingapp;

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;

public class MainActivity extends AppCompatActivity {

    EditText editText1,editText2,editText3;
    Button button;

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

        editText1=(EditText)findViewById(R.id.editText1);
        editText2=(EditText)findViewById(R.id.editText2);
        editText3=(EditText)findViewById(R.id.editText3);
        button=(Button)findViewById(R.id.button);
```

```java
button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {

        String to=editText1.getText().toString();
        String subject=editText2.getText().toString();
        String message=editText3.getText().toString();

        if (to.matches("") || subject.matches("") || message.matches(""))
        {
            Toast.makeText(getApplicationContext(), "No one fields can be empty
!!", Toast.LENGTH_LONG).show();
        }
        else
        {
            Intent intent = new Intent(Intent.ACTION_SEND);
            intent.putExtra(Intent.EXTRA_EMAIL, new String[]{to});
            intent.putExtra(Intent.EXTRA_SUBJECT, subject);
            intent.putExtra(Intent.EXTRA_TEXT, message);
            intent.setType("message/rfc822");
            startActivity(Intent.createChooser(intent, "Choose an Email client
:"));
        }
    }
});
    }
}
```

Output:-
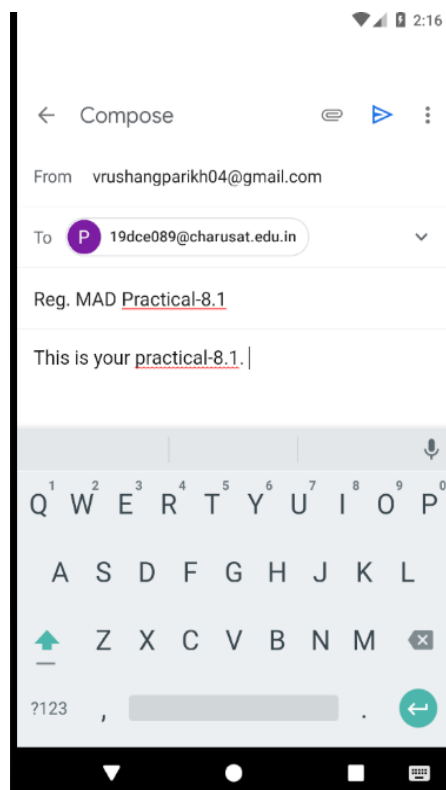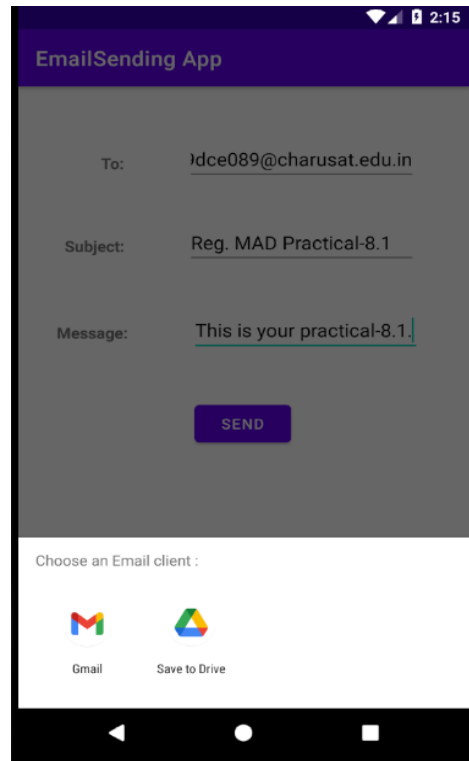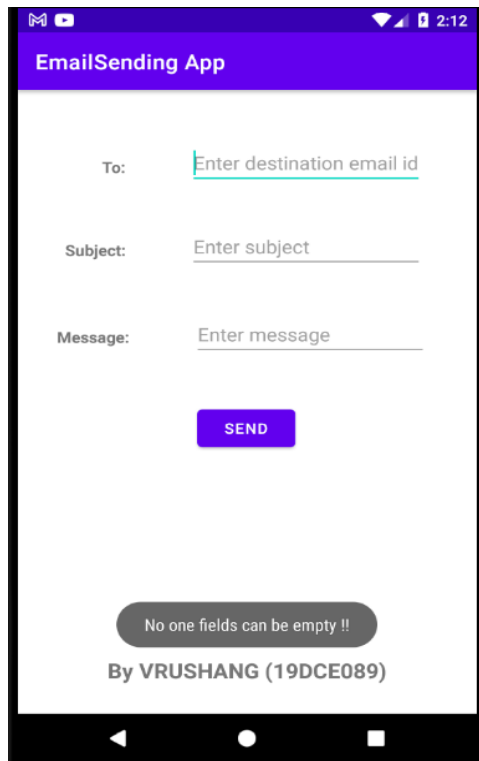
Conclusion:- From this practical, I learned that how to send email to particular email id entered by the user.

PRACTICAL-8.2

AIM: Create an Application in which user pass the data with intent object to another activity.

activity_main.xml File:-

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="60dp"
        android:ems="10"
        android:hint="Enter Username"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView4" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="52dp"
        android:text="Go to next acivity"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText2" />
```

```xml
<EditText
    android:id="@+id/editText2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="24dp"
    android:ems="10"
    android:hint="Enter Password"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.502"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText1" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="72dp"
    android:text="By VRUSHANG (19DCE089)"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="36dp"
    android:text="Pass some data"
    android:textColor="@color/teal_200"
    android:textSize="30sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.482"
    app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_main2.xml File:-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity2">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="200dp"
        android:text="TextView"
        android:textColor="@color/purple_700"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="52dp"
        android:text="TextView"
        android:textColor="@color/purple_700"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView1" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity2.java File:-

```java
package com.example.passdataapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;


public class MainActivity2 extends AppCompatActivity {

    TextView textView1,textView2;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
```

```
    textView1=(TextView)findViewById(R.id.textView1);
    textView2=(TextView)findViewById(R.id.textView2);
    Intent intent=getIntent();
    textView1.setText(intent.getStringExtra("A"));
    textView2.setText(intent.getStringExtra("B"));
  }
}
```

MainActivity.java File:-

```
package com.example.passdataapp;

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;

public class MainActivity extends AppCompatActivity {

  EditText editText1,editText2;
  Button button;

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

    editText1=(EditText)findViewById(R.id.editText1);
    editText2=(EditText)findViewById(R.id.editText2);
    button=(Button)findViewById(R.id.button);

    button.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
```

```java
        if(editText1.getText().toString().isEmpty() &&
editText2.getText().toString().isEmpty())
        {
            Toast.makeText(MainActivity.this, "Please enter both username and
password", Toast.LENGTH_LONG).show();
        }
        else if(editText1.getText().toString().isEmpty())
        {
            Toast.makeText(MainActivity.this, "Please enter your username",
Toast.LENGTH_LONG).show();
        }
        else if(editText2.getText().toString().isEmpty())
        {
            Toast.makeText(MainActivity.this, "Please enter your password",
Toast.LENGTH_LONG).show();
        }
        else
        {
            Intent intent=new Intent(MainActivity.this,MainActivity2.class);
            intent.putExtra("A","Username : "+editText1.getText().toString());
            intent.putExtra("B","Password : "+editText2.getText().toString());
            startActivity(intent);
        }
      }
    });
  }
}
```

Output:-
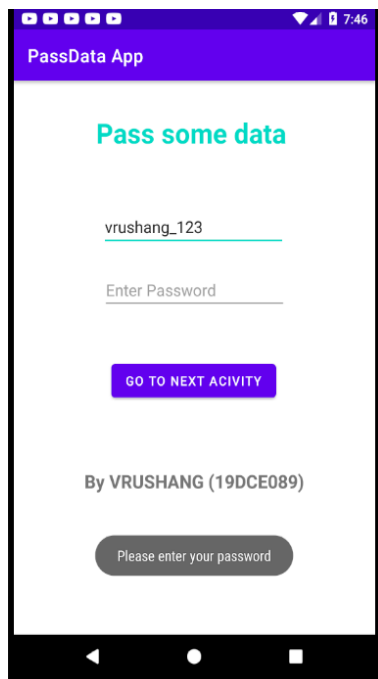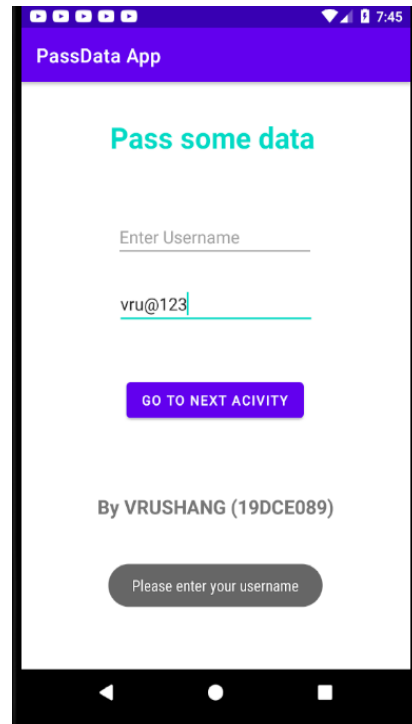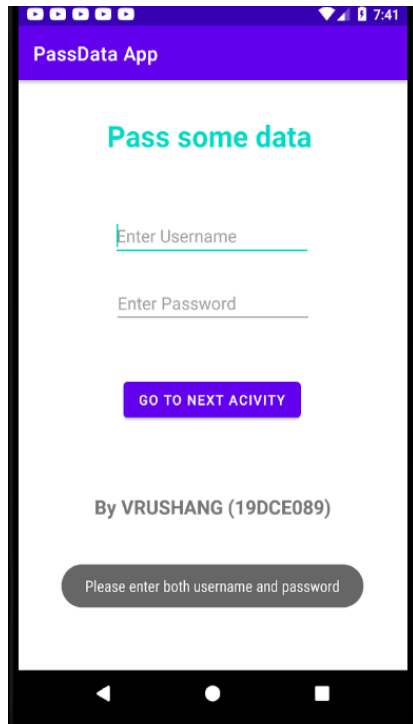
Conclusion:- From this practical, I learned that how to pass any data from one activity to another activity.

PRACTICAL-9

AIM: Create an application to make Insert, update, Delete and retrieve operation on the SQLite database.

activity_main.xml File:-

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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=".MainActivity">

    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="70dp"
```

```
      android:layout_marginEnd="48dp"
      android:layout_marginRight="48dp"
      android:ems="10"
      android:hint="Enter id"
      android:inputType="textPersonName"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

  <EditText
      android:id="@+id/editText2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="28dp"
      android:layout_marginEnd="48dp"
      android:layout_marginRight="48dp"
      android:ems="10"
      android:hint="Enter name"
      android:inputType="textPersonName"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/editText1" />

  <EditText
      android:id="@+id/editText4"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="30dp"
      android:layout_marginEnd="48dp"
      android:layout_marginRight="48dp"
      android:ems="10"
      android:hint="Enter mark"
      android:inputType="textPersonName"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/editText3" />

  <Button
      android:id="@+id/button1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
```

```
    android:layout_marginTop="48dp"
    android:text="Insert"
    app:layout_constraintEnd_toStartOf="@+id/button2"
    app:layout_constraintHorizontal_bias="0.392"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView4" />

<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="40dp"
    android:layout_marginEnd="68dp"
    android:layout_marginRight="68dp"
    android:text="View"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText4" />

<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="12dp"
    android:text="Update"
    app:layout_constraintEnd_toStartOf="@+id/button4"
    app:layout_constraintHorizontal_bias="0.407"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button1" />

<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:layout_marginEnd="68dp"
    android:layout_marginRight="68dp"
    android:text="Delete"
    app:layout_constraintEnd_toEndOf="parent"
```

```xml
    app:layout_constraintTop_toBottomOf="@+id/button2" />

<EditText
    android:id="@+id/editText3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="28dp"
    android:layout_marginEnd="48dp"
    android:layout_marginRight="48dp"
    android:ems="10"
    android:hint="Enter surname"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editText2" />

<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="80dp"
    android:text="Id"
    android:textSize="15sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toStartOf="@+id/editText1"
    app:layout_constraintHorizontal_bias="0.794"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="56dp"
    android:text="Name"
    android:textSize="15sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toStartOf="@+id/editText2"
    app:layout_constraintHorizontal_bias="0.745"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView1" />


    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="56dp"
        android:text="Surname"
        android:textSize="15sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/editText3"
        app:layout_constraintHorizontal_bias="0.659"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />


    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="56dp"
        android:text="Mark"
        android:textSize="15sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/editText4"
        app:layout_constraintHorizontal_bias="0.758"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />

    <TextView
        android:id="@+id/textView5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="28dp"
        android:text="By VRUSHANG (19DCE089)"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java File:-

```java
package com.example.databaseapp;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Database1 database1;
    EditText editText1,editText2,editText3,editText4;
    Button button1,button2,button3,button4;

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

        database1=new Database1(MainActivity.this);

        editText1=(EditText)findViewById(R.id.editText1);
        editText2=(EditText)findViewById(R.id.editText2);
        editText3=(EditText)findViewById(R.id.editText3);
        editText4=(EditText)findViewById(R.id.editText4);
        button1=(Button)findViewById(R.id.button1);
        button2=(Button)findViewById(R.id.button2);
        button3=(Button)findViewById(R.id.button3);
```

```java
        button4=(Button)findViewById(R.id.button4);

        insertdata();
        showdata();
        updatedata();
        deletedata();
    }

    public void insertdata()
    {
        button1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                boolean r=database1.insert(editText1.getText().toString(),
editText2.getText().toString(), editText3.getText().toString(),
editText4.getText().toString());
                if(r==true)
                    Toast.makeText(MainActivity.this, "Inserted Sucessfully!!!",
Toast.LENGTH_LONG).show();
                else
                    Toast.makeText(MainActivity.this, "Error while inserting data!!!",
Toast.LENGTH_LONG).show();
            }
        });
    }


    public void showdata()
    {
        button2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Cursor cursor=database1.show();
                StringBuffer stringBuffer=new StringBuffer();
                if(cursor.getCount() <= 0)
                {
                    message("Student Data","Data not found !!!");
                }
```

```java
        else
        {
          while(cursor.moveToNext())
          {
            stringBuffer.append("\nId: "+cursor.getString(0)+", Name:
"+cursor.getString(1)
                        +", Surname: "+cursor.getString(2)+", Mark:
"+cursor.getString(3)+"\n");
          }
          message("Student Data",stringBuffer.toString());
        }
      }
    });
  }


  public void updatedata()
  {
    button3.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        boolean flag=database1.updateDB(editText1.getText().toString(),
editText2.getText().toString(),
                      editText3.getText().toString(),
editText4.getText().toString());

        if(flag==true)
        {
          Toast.makeText(MainActivity.this,"Data
Updated!!!",Toast.LENGTH_LONG).show();
        }
        else
        {
          Toast.makeText(MainActivity.this,"Error in updating
data!!!",Toast.LENGTH_LONG).show();
        }
      }
    });
  }
```

```java
//alert dialog
public void message(String title,String msg)
{
    AlertDialog.Builder builder=new AlertDialog.Builder(MainActivity.this);
    builder.setMessage(msg);
    builder.setTitle(title);
    builder.setPositiveButton("Ok", new DialogInterface.OnClickListener() {
        @Override
        public void onClick(DialogInterface dialogInterface, int i) {
            dialogInterface.cancel();
        }
    });
    builder.show();
}


public void deletedata()
{
    button4.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            boolean r=database1.deleteDB(editText1.getText().toString());
            if(r==true)
                Toast.makeText(MainActivity.this, "Data deleted successfully!!!",
Toast.LENGTH_LONG).show();
            else
                Toast.makeText(MainActivity.this, "Error while deleting data!!!",
Toast.LENGTH_LONG).show();
        }
    });
}
}
```

Database1.java File:-

package com.example.databaseapp;

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


public class Database1 extends SQLiteOpenHelper {

    String tname="ce2",col1="id",col2="name",col3="surname",col4="marks";

    public Database1(Context context) {
        //Database name : "depstarce12.db"
        super(context, "depstar_ce2.db", null, 1);
        //SQLiteDatabase sqLiteDatabase=this.getWritableDatabase();
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {
        sqLiteDatabase.execSQL("create table ce2 (id integer primary key
autoincrement, name text, surname text, marks integer)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {
        sqLiteDatabase.execSQL("drop table if exists "+tname);
        onCreate(sqLiteDatabase);
    }

    public boolean insert(String id, String name, String surname, String marks)
    {
        SQLiteDatabase sqLiteDatabase=this.getWritableDatabase();
        ContentValues contentValues=new ContentValues();
//      contentValues.put(col1,id);
        contentValues.put(col2,name);
        contentValues.put(col3,surname);
        contentValues.put(col4,marks);
        long res=sqLiteDatabase.insert(tname,null,contentValues);
```

```java
        if(res==-1)
            return false;
        else
            return true;
    }

    public Cursor show()
    {
        SQLiteDatabase db=this.getWritableDatabase();
        Cursor cursor=db.rawQuery("select * from "+tname,null);
        return cursor;
    }

    public boolean updateDB(String id, String name, String surname, String marks)
    {
        SQLiteDatabase db=this.getWritableDatabase();
        ContentValues contentValues=new ContentValues();
        contentValues.put(col1,id);
        contentValues.put(col2,name);
        contentValues.put(col3,surname);
        contentValues.put(col4,marks);
        int res=db.update(tname,contentValues,"id=?",new String[] {id});
        if(res>0)
            return true;
        else
            return false;
    }

    public boolean deleteDB(String id)
    {
        SQLiteDatabase db=this.getWritableDatabase();
        int res=db.delete(tname,"id=?",new String[]{id});
        if(res>0)
            return true;
        else
            return false;
    }
}
```

Output:-
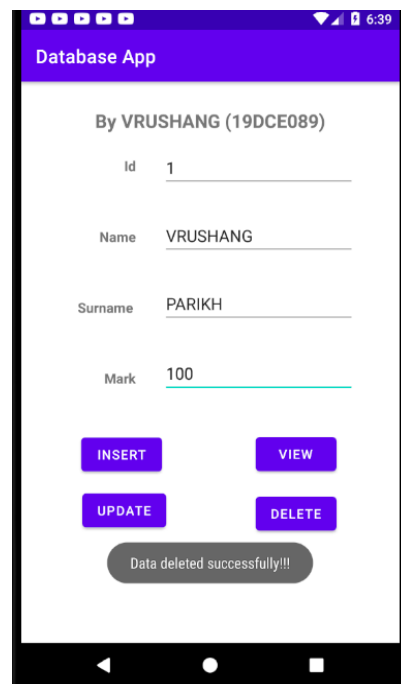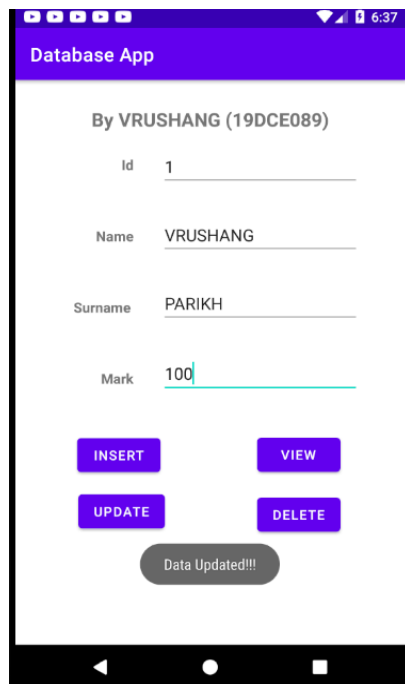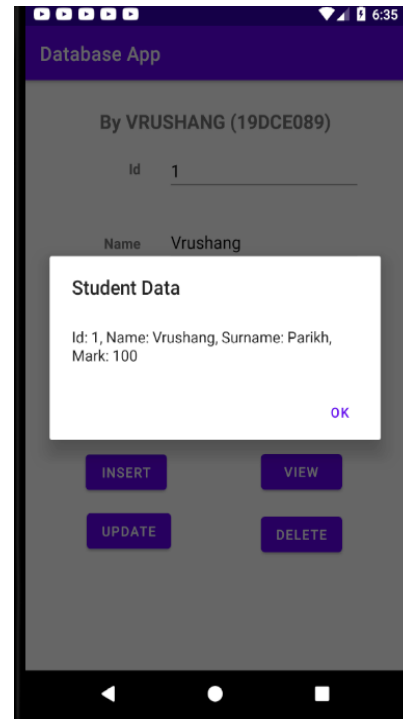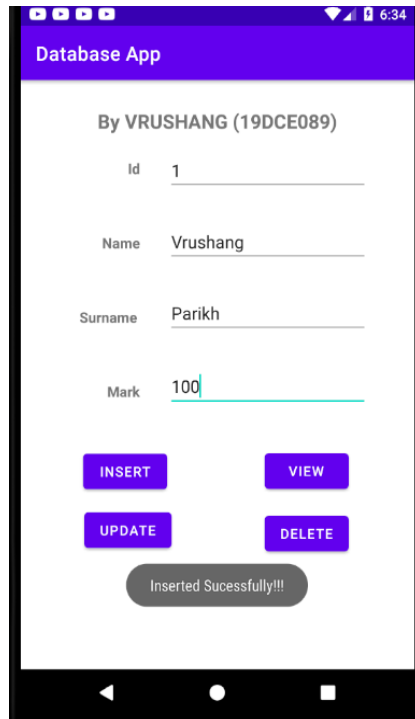
Conclusion:- From this practical, I learned that how to make Insert, update, Delete and retrieve operation on the SQLite database.

PRACTICAL-10

AIM: Introduction to I-phone & installation of x-code on MAC.

What is Xcode?

Xcode is an application that developers use to build apps for Apple's various platforms such as iPhone, iPad, Macs, AppleTV and Apple Watch.

Step – 0 Check your mac OS Version

We will be using the latest version of Apple's Xcode 11 to program iOS 13 apps and run our apps in Xcode's built in iOS simulator.

Xcode is an Integrated Development Environment (IDE) developed by Apple and the vast majority of iOS developers rely on it for making iPhone or iPad applications. Xcode 11 can only be installed on a Mac running macOS 10.14.4 (Mojave) or above. But ideally, you should be running macOS 10.15.0 or above Catalina).

If you are still running an earlier OS such as Mavericks, Yosemite, El Capitan, Sierra etc, you will need to update your OS. Have a look on Apple's website for instructions on how to do so.

Check that your OS is either Mojave 10.14.4 or above or Catalina 10.15 If your version is lower than this, head over to the Mac App Store and you can upgrade your operating system to the latest version of macOS Catalina for free.

Step 1: Open the App Store

Once you're sure you are running the correct version of the Mac operating system, you can get started with downloading Xcode 11 through the Mac App Store. Open the App Store app on your Mac. By default, the App Store is in the Dock. You can also find it in your Launchpad.

Step 2: Search for Xcode

In the search field in the top-right corner, type Xcode and press the Return key.
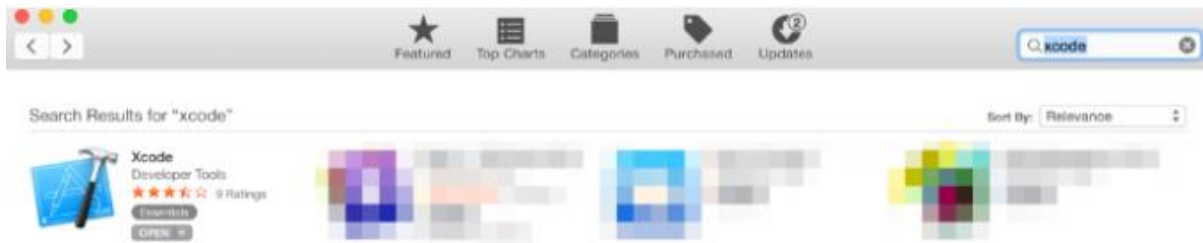
Step 3: Install Xcode

Xcode is a free application developed by Apple, so just click the "Get" or "Download" button and start the installation process.

Xcode is several gigabytes in size so downloading it could take a while. By default, Xcode is downloaded into your /Applications directory.

Step 4: Launch Xcode

Launch Xcode. Do you see the Welcome to Xcode window and the version is 11.0 or above (e.g 11.1 or 11.1.2 etc.)? If yes, then great, we're all done!
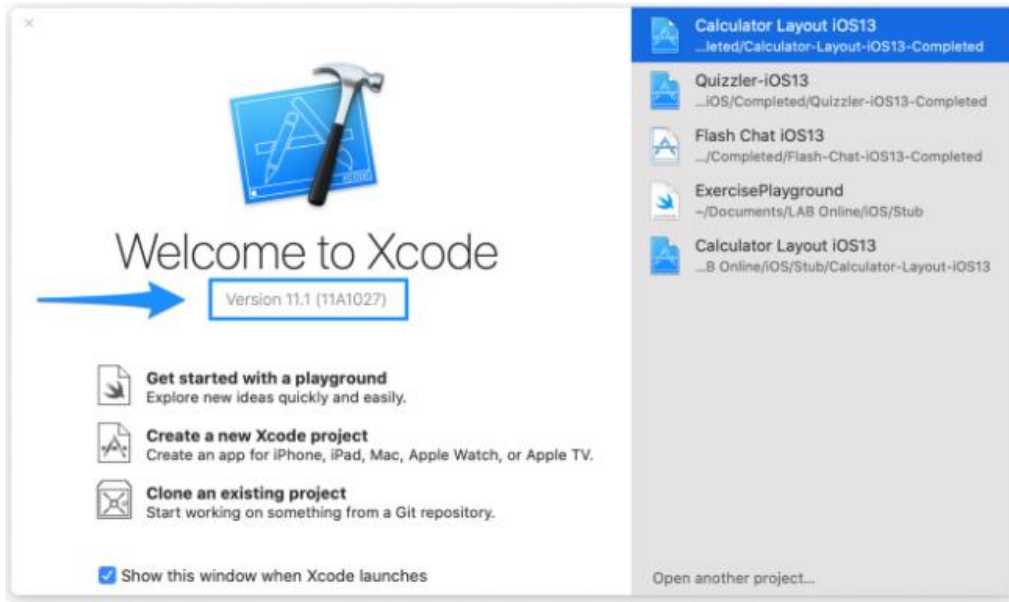
By the end of this chapter, you'll have a great understanding of how to navigate the development environment and how to create your first Xcode project.

Before we dive in, keep this Apple Documentation for Xcode handy.

Let's now look at the diagram below. If your interface looks different, make sure you have Xcode 11 and not an earlier version.
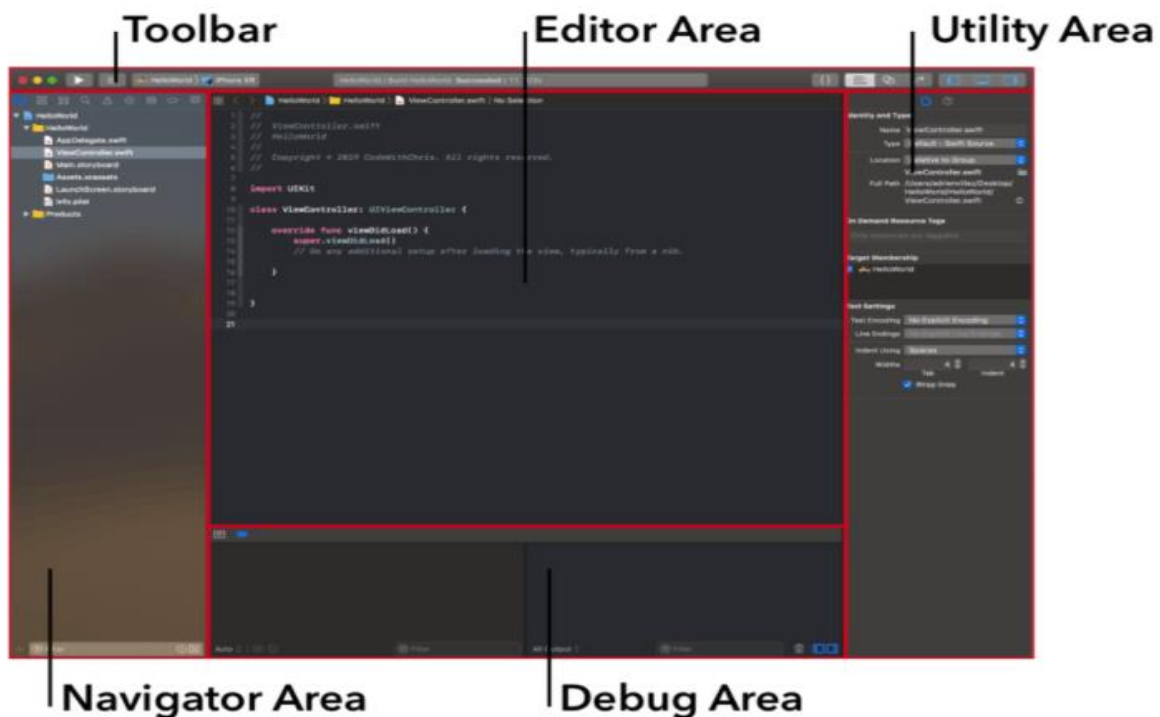
The reason this is a great diagram is because it lets me refer to these different sections of the interface and you can refer back to this diagram to see what I'm talking about!

As you can see from the diagram, there are 5 major areas: the Navigator, Editor, Utility Area, Toolbar and Debug Area. We'll cover each area in detail later but for now, let's talk about general navigation of Xcode.

Keep in mind that you can adjust the size of each of those panes by hovering your cursor over the boundaries of each area and dragging.

You can also show and hide the various areas as needed via the "View" buttons in the upper right hand corner:
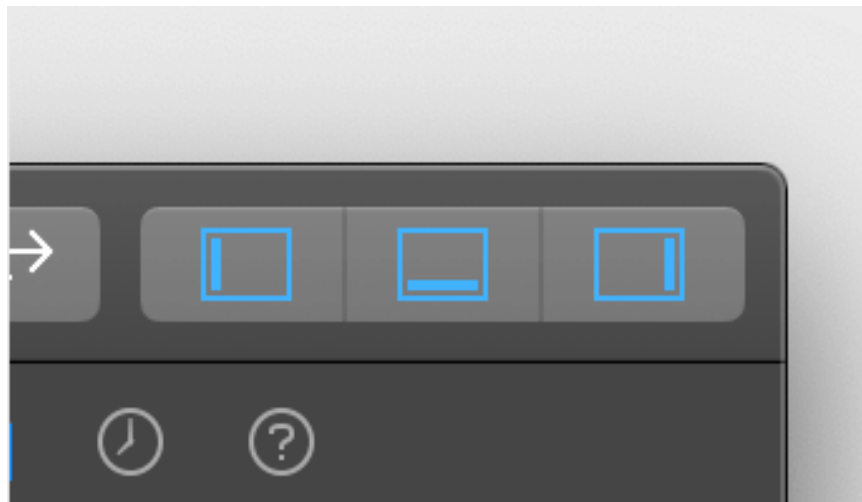
This can be helpful, for example, when you're writing code and you don't need the debugger area or the utility area. Then you can use the View buttons to hide those 2 panes to give your editor more visible space.
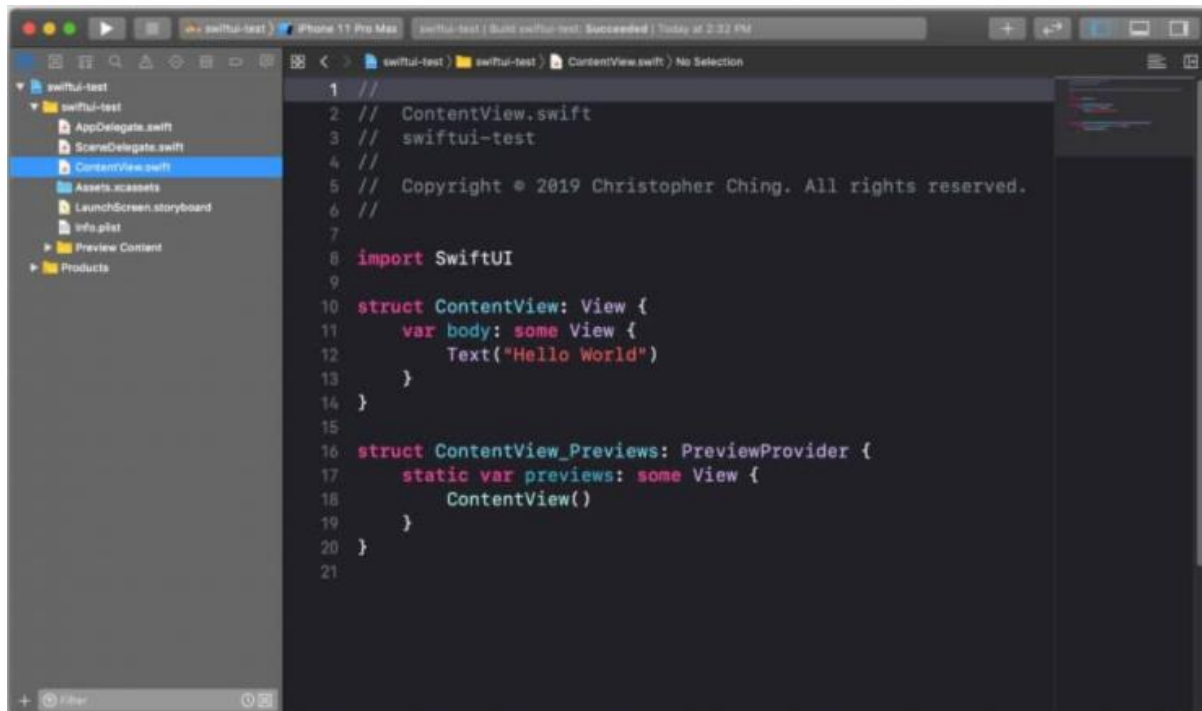
PRACTICAL-11

AIM: Create I-OS application that will display "Custom Message" in the middle of the screen in the Black color with the Yellow background.

CODE:

```
import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var customlabel: UILabel!

    override func viewDidLoad() {

        super.viewDidLoad()

        // Do any additional setup after loading the view.

        customlabel.textColor = UIColor.black

        customlabel.text = "Custome Message"

        self.view.backgroundColor = UIColor.yellow

    }

}
```

OUTPUT:
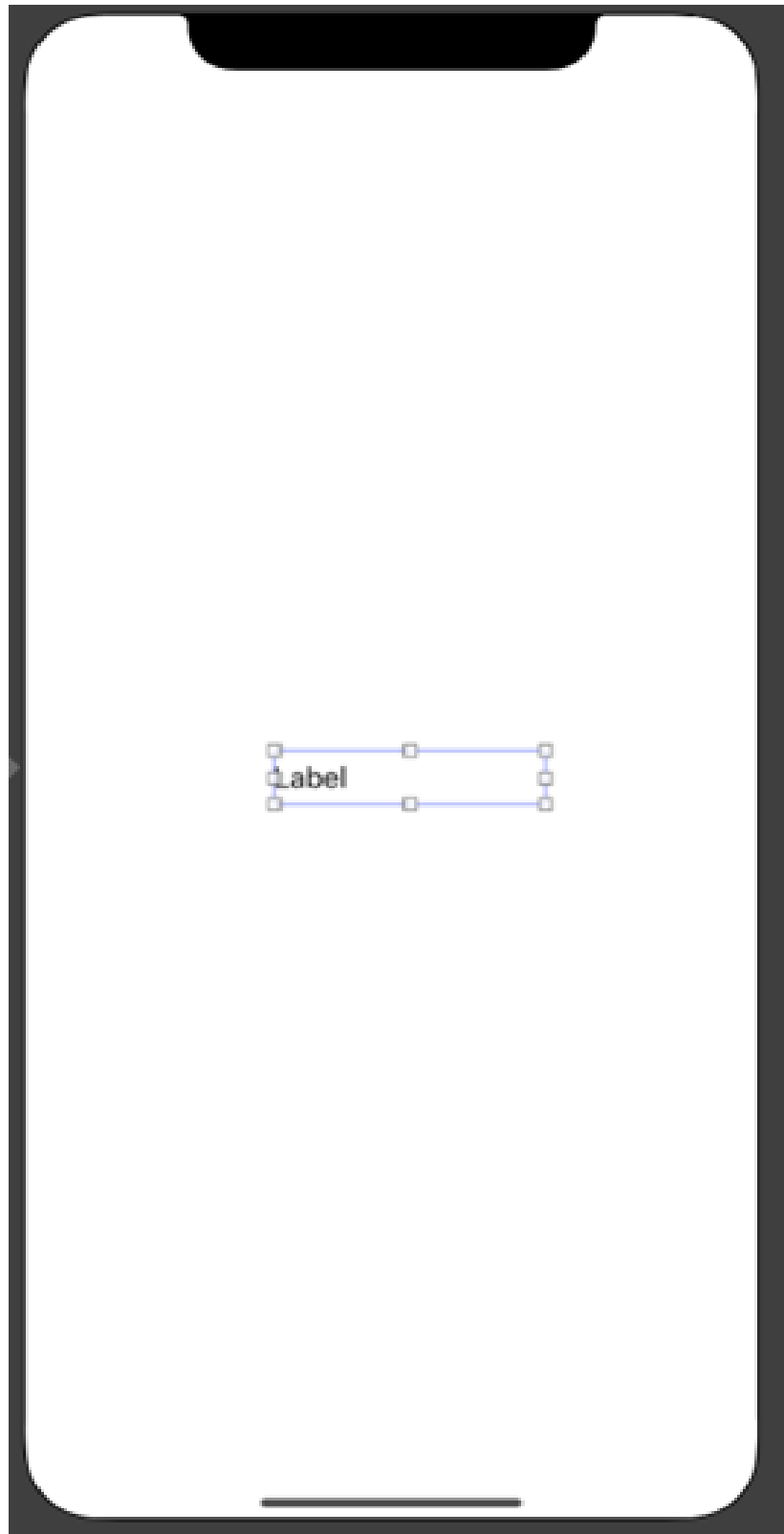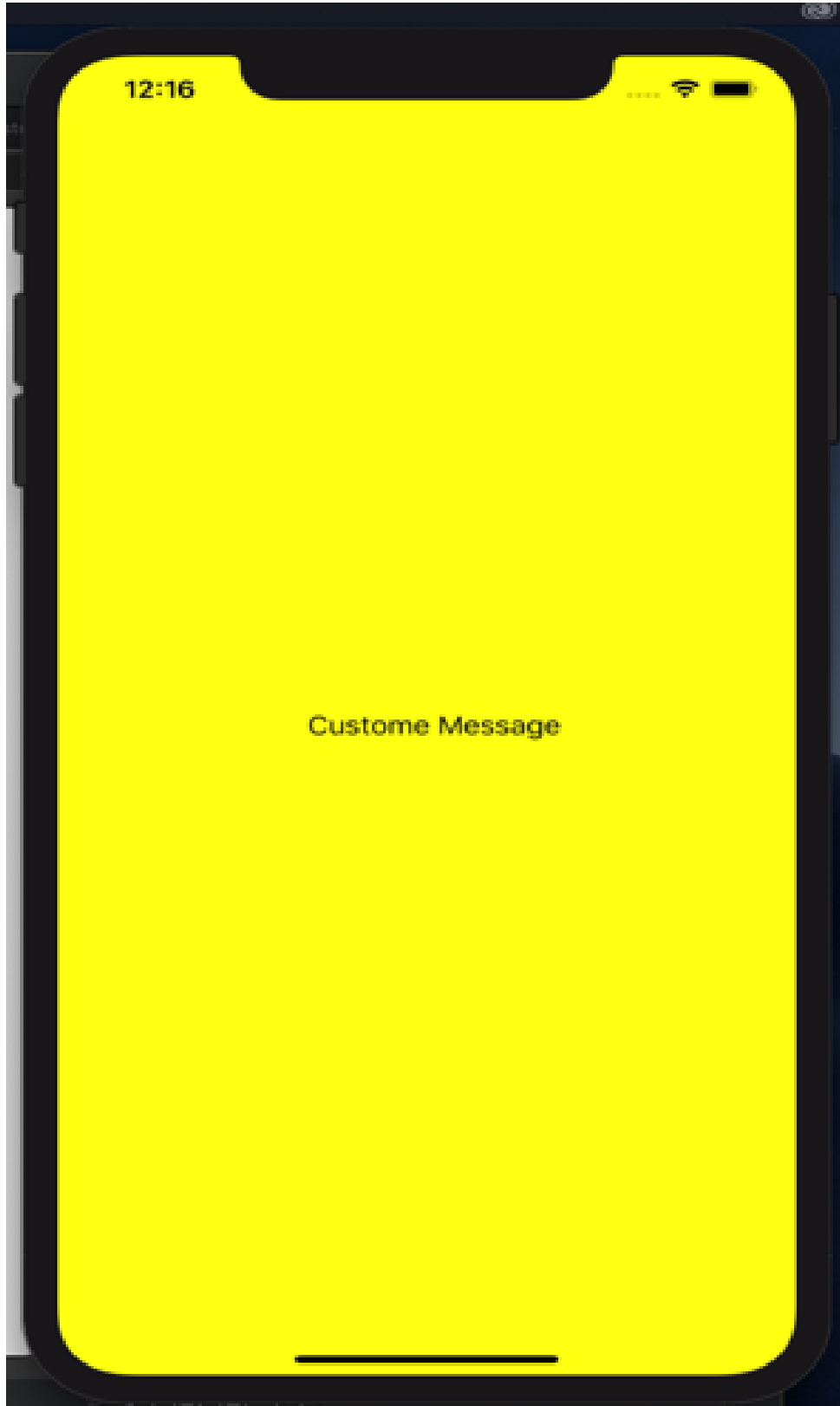
PRACTICAL-12.1

AIM: Create an I-OS application to calculate sum of two numbers and gives result in Toast Message.

CODE:

```
import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var Number1: UITextField!

    @IBOutlet weak var Number2: UITextField!

    @IBOutlet weak var Add: UIButton!

    override func viewDidLoad() {

        super.viewDidLoad()

        // Do any additional setup after loading the view.

    }

    @IBAction func Addclick(_ sender: Any) {

        let a:Int! = Int(Number1.text!)

        let b:Int! = Int(Number2.text!)

        let c = a + b

        //Result.text = String(c)

        Toast(String(c))

    }

}

extension ViewController

{

    func Toast(_ message:String)

    {
```

```
var Toastlabel = UILabel(frame: CGRect(x: self.view.frame.width/2-75, y:
self.view.frame.height-100, width: 150, height: 40))

Toastlabel.textAlignment = .center

Toastlabel.text = message

Toastlabel.textColor = UIColor.black

Toastlabel.backgroundColor = UIColor.red.withAlphaComponent(0.5)

Toastlabel.alpha = 1.0

self.view.addSubview(Toastlabel)


UIView.animate(withDuration: 3.0, delay: 1.0, options: .curveEaseInOut,
animations: {

    Toastlabel.alpha = 0.0

}) { (isCompleted) in

    Toastlabel.removeFromSuperview()

}

}
}
```

OUTPUT:
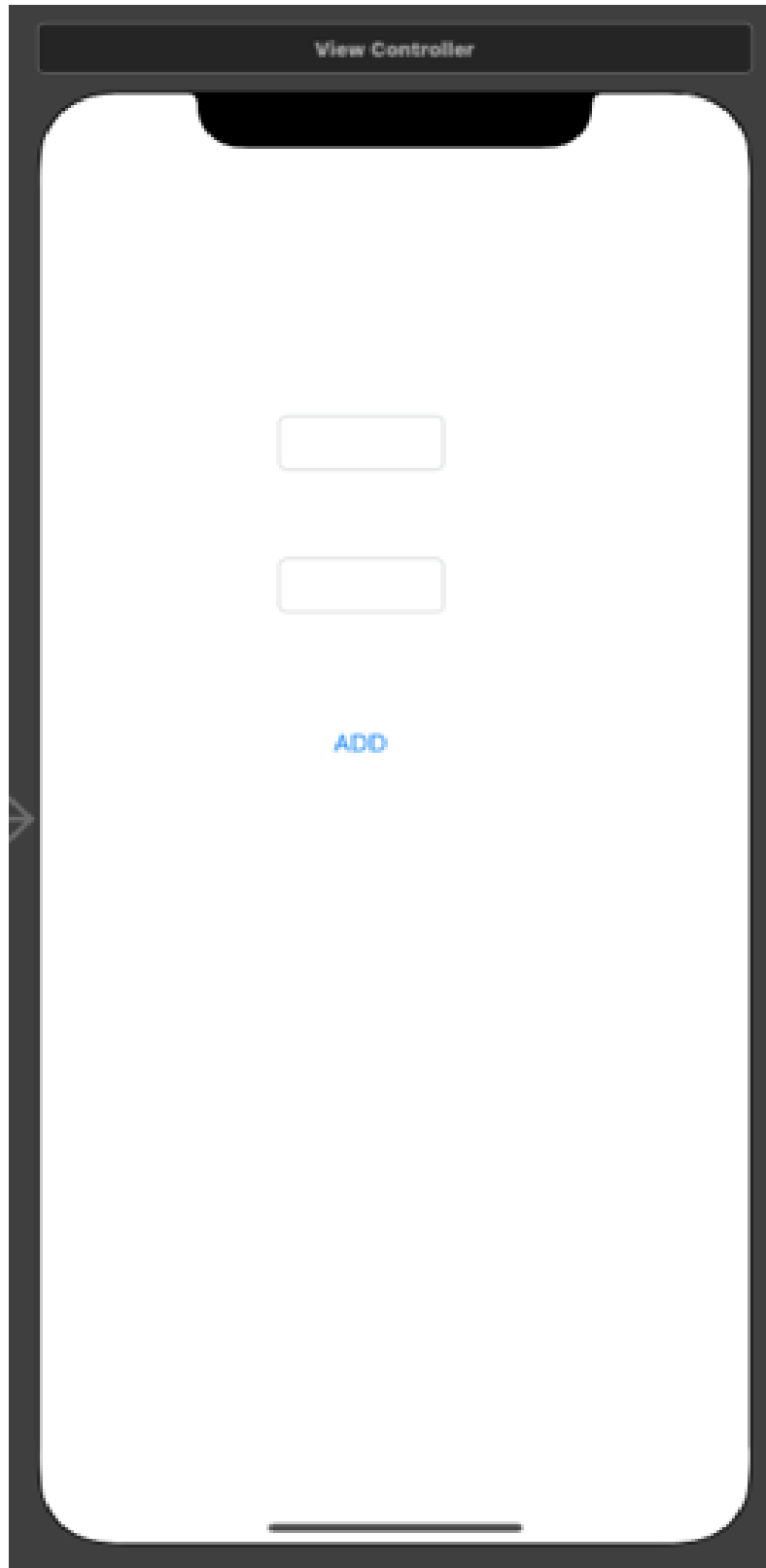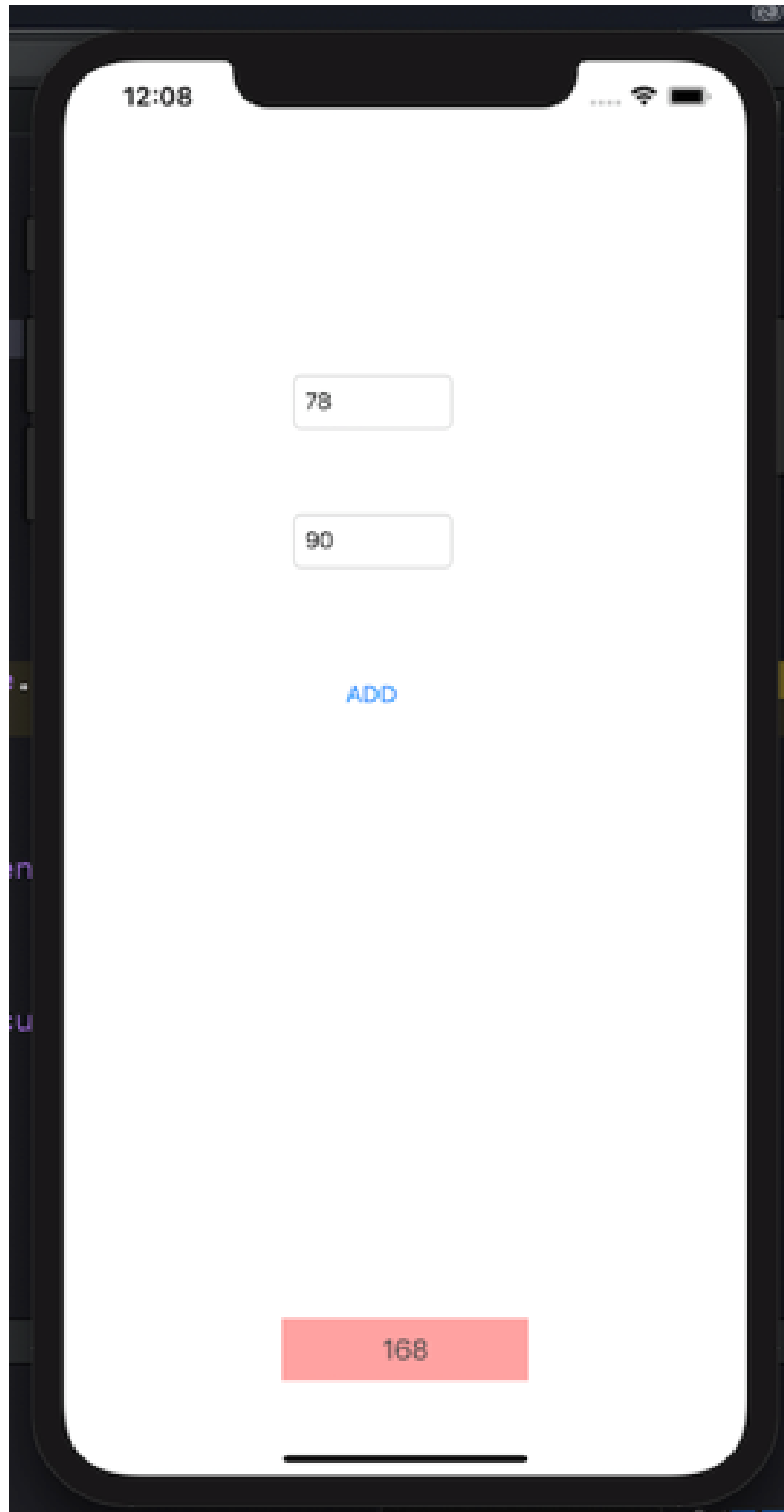
PRACTICAL-12.2

AIM: Design an I-OS application representing a simple calculator.

CODE:

```
class ViewController: UIViewController {


    @IBOutlet weak var Number1: UITextField!


    @IBOutlet weak var Number2: UITextField!


    @IBOutlet weak var labelanswer: UILabel!


    @IBOutlet weak var btnadd: UIButton!


    @IBOutlet weak var btnsubtract: UIButton!


    @IBOutlet weak var btnmultiply: UIButton!


    @IBOutlet weak var btndivide: UIButton!


    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view.
    }
```

```swift
@IBAction func btnaddclick(_ sender: Any) {
    let a:String! = Number1.text
    let b:String! = Number2.text
    let a1:Int! = Int(a)
    let a2:Int! = Int(b)
    let c = a1 + a2
    labelanswer.text = "Answer is \(c)"
    print("add")
}


@IBAction func btnsubtractclick(_ sender: Any) {
    let a:String! = Number1.text
    let b:String! = Number2.text
    let a1:Int! = Int(a)
    let a2:Int! = Int(b)
    let c = a1 - a2
    labelanswer.text = "Answer is \(c)"
    print("subtract")
}


@IBAction func btnmultiplyclick(_ sender: Any) {
    let a:String! = Number1.text
    let b:String! = Number2.text
    let a1:Int! = Int(a)
```
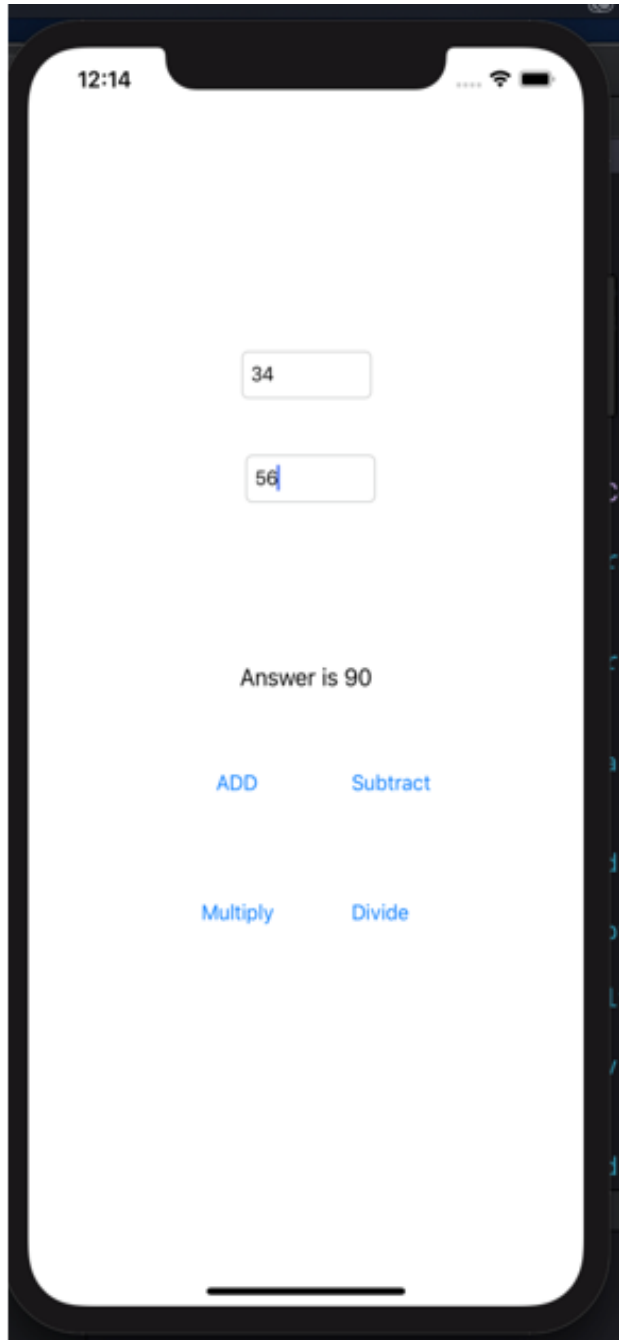
```swift
        let a2:Int! = Int(b)

        let c = a1 * a2

        labelanswer.text = "Answer is \(c)"

        print("multiply")

    }


    @IBAction func btndivideclick(_ sender: Any) {

        let a:String! = Number1.text

        let b:String! = Number2.text

        let a1:Float! = Float(a)

        let a2:Float! = Float(b)

        let c = a1 / a2

        labelanswer.text = "Answer is \(c)"

        print("divide")

    }

}
```
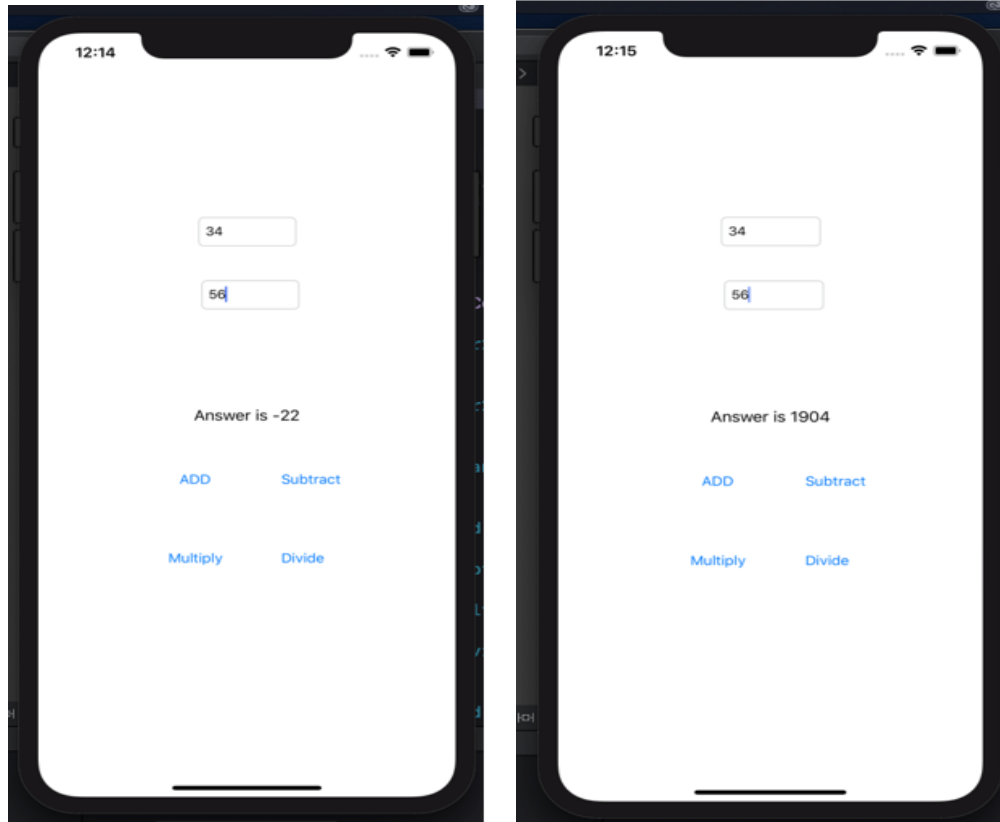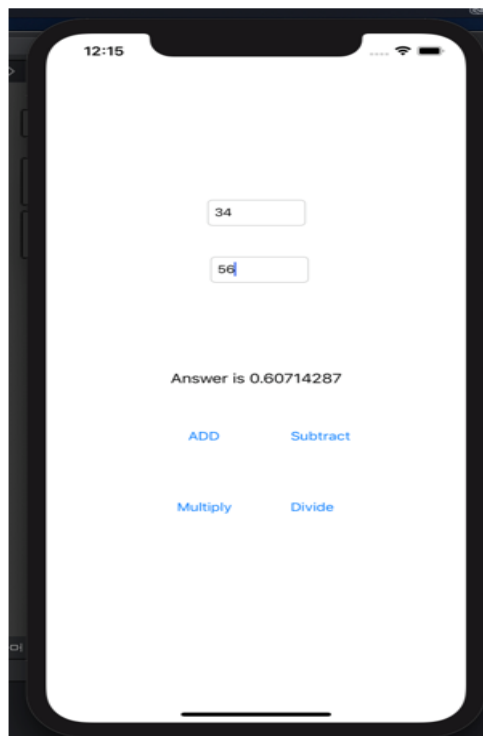
OUTPUT:

Addition:-

Subtraction & Multiplication:-

Division: -

PRACTICAL-13

AIM: Create an I-OS Application to Change the Image Displayed on the Screen.

CODE:

```swift
import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var card: UIImageView!

    @IBOutlet weak var imgchange: UIButton!

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view.
    }

    @IBAction func imgchangeclick(_ sender: Any) {
        card.image = UIImage(named: "card2")
    }
}
```
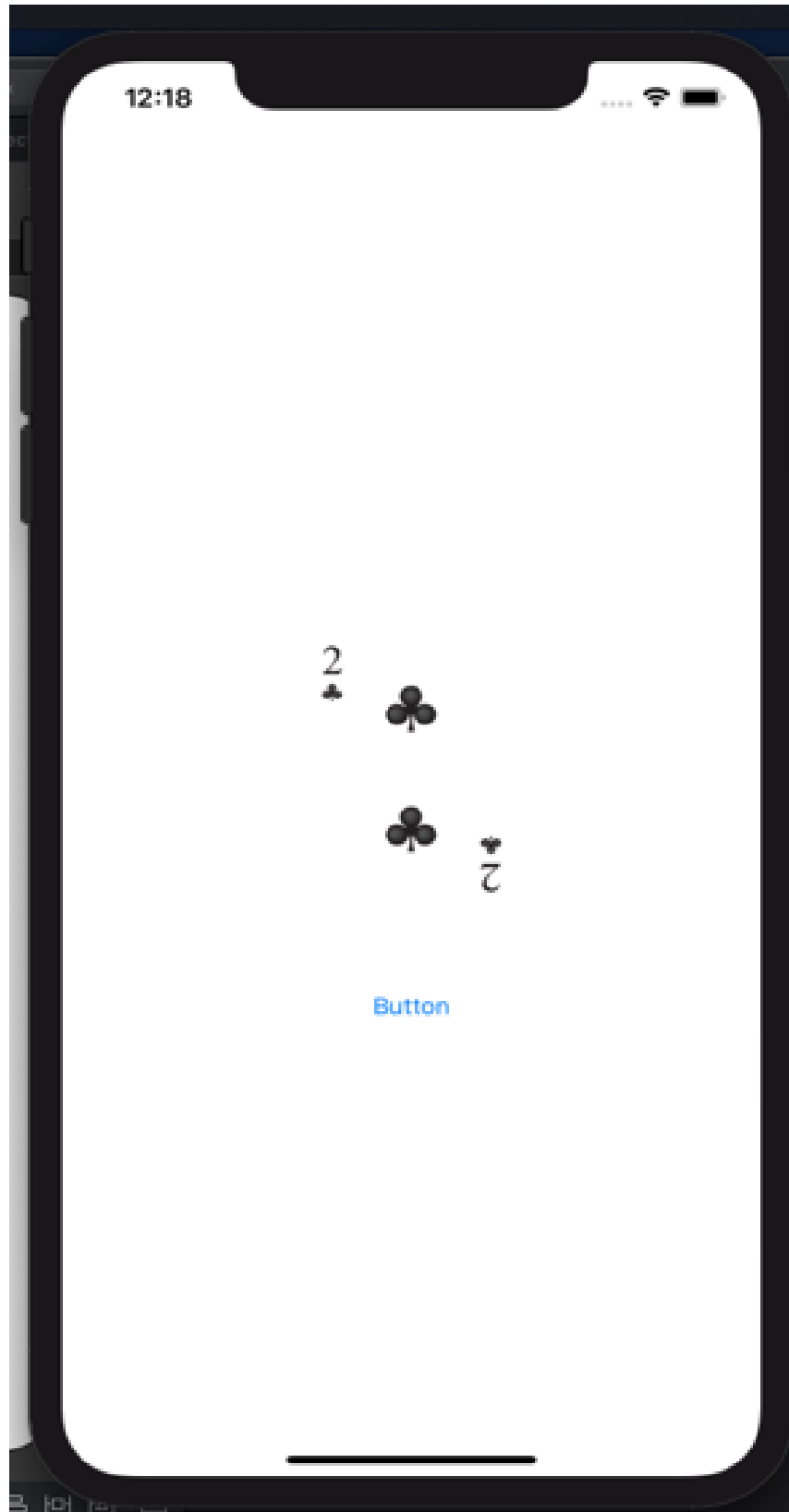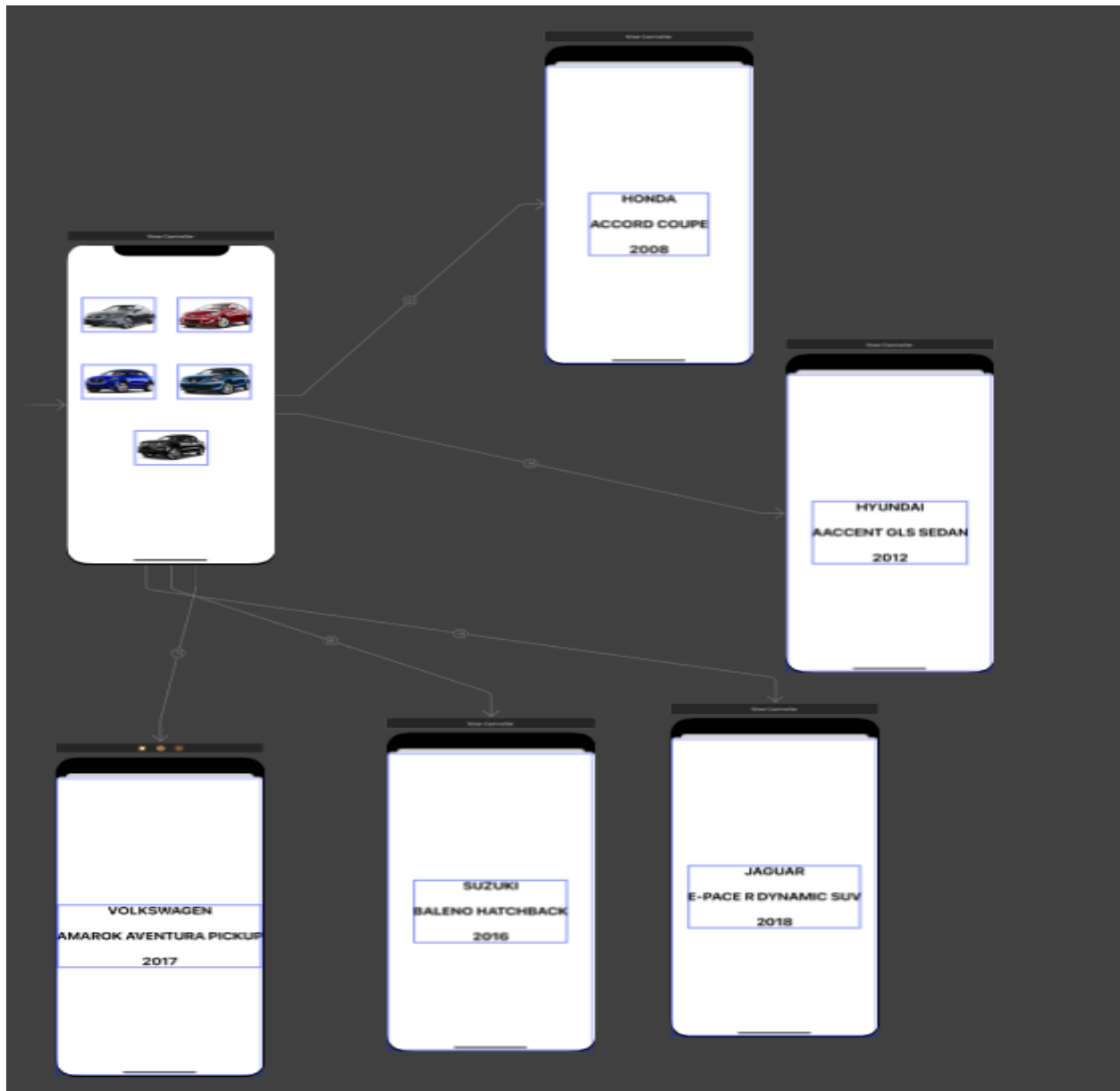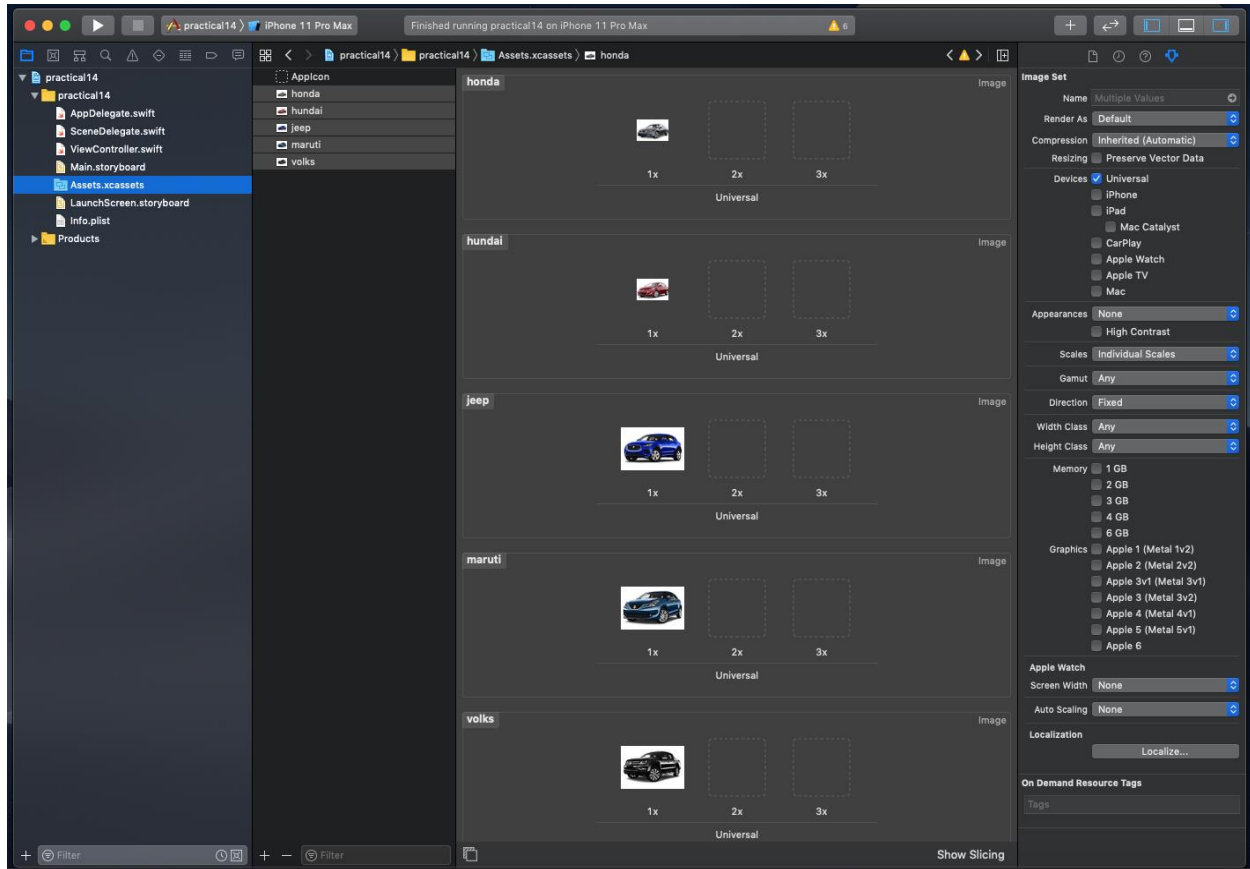
OUTPUT:
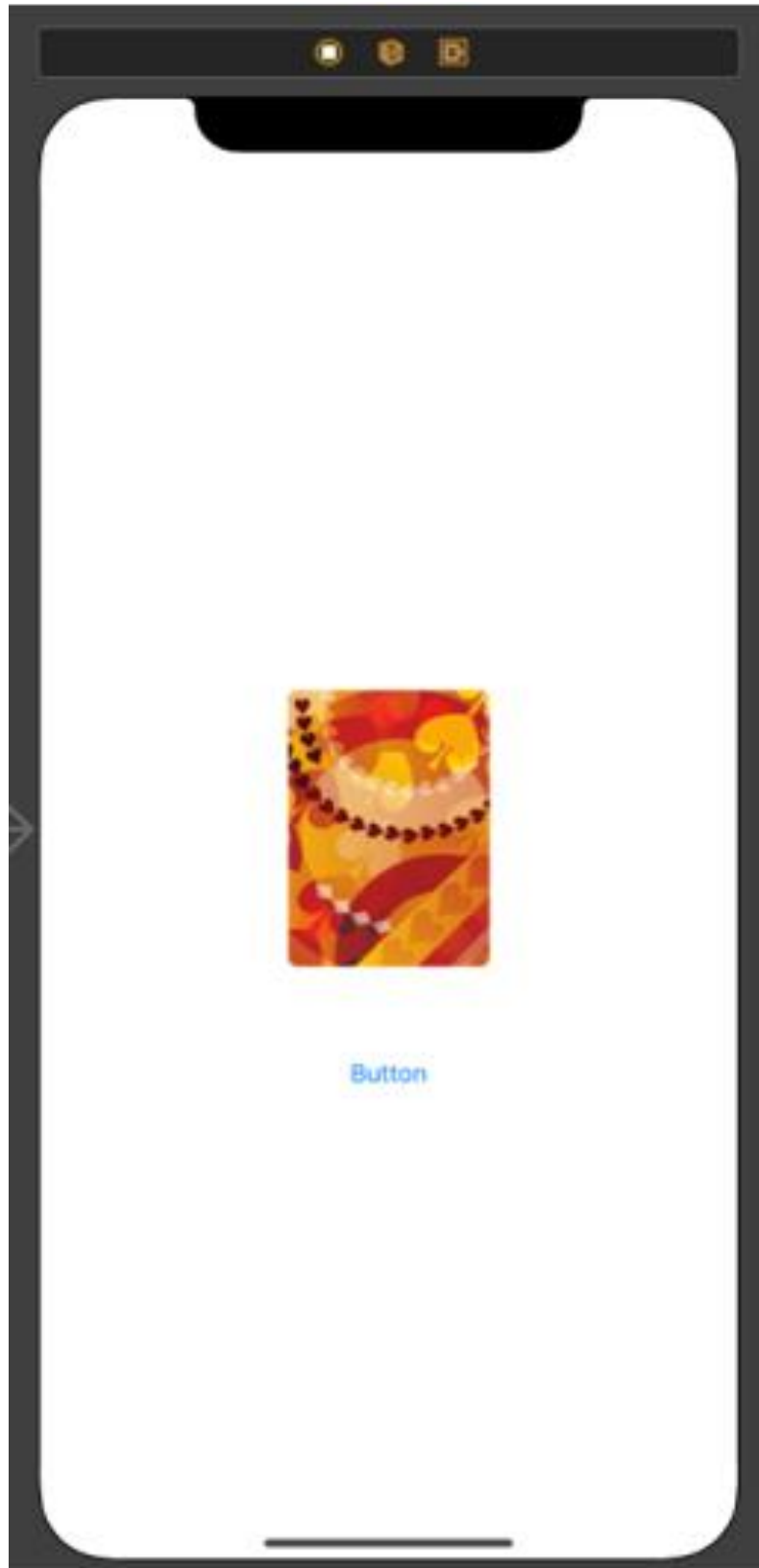
PRACTICAL-14

AIM: Understanding of UI: Create an UI such that, one screen has list of all the types of cars. On selecting of any car name, next screen should show Car details like : name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.

DESIGN:

IMAGE ASSETS:

CODE:

```
import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view.
    }
}
```
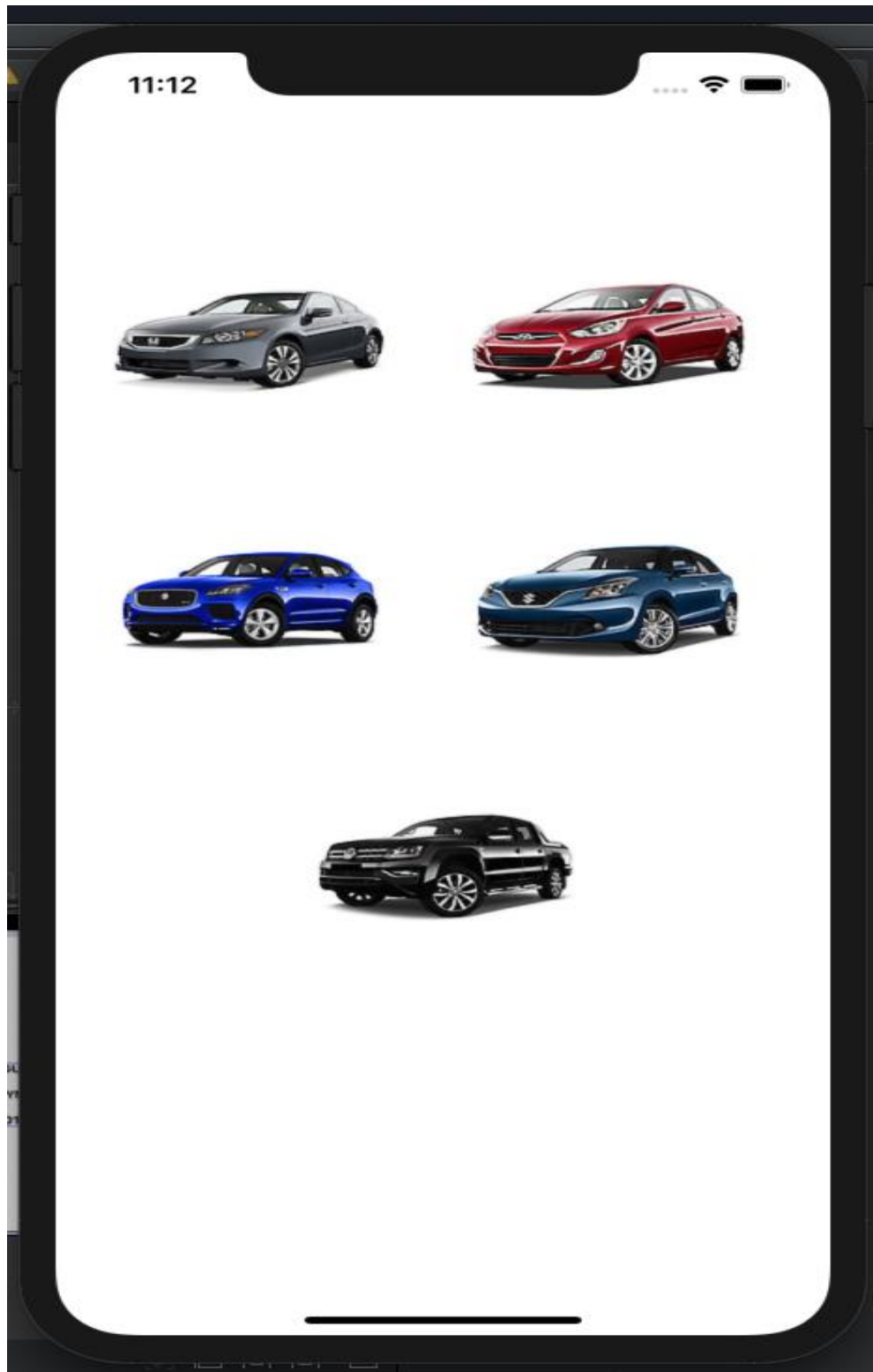
OUTPUT:

ON CLICK OF FIRST CAR:

ON CLICK OF SECOND CAR: