

Mobile Computing

Assignment 01

Aim: 40 Programs in C, C++ and Java.

1. Write a C program to display “This is my first C Program”.
2. Write a C program to add two numbers (2 and 6) and display its sum.
3. Write a C program to multiply two numbers (4 and 5) and display its product.
4. Write a C program to calculate area and circumference of a circle.
5. Write a C program to perform addition, subtraction, division, and multiplication of two numbers.
6. Write a C program to evaluate each of the following equations:
 - (a) $V = u + at$
 - (b) $S = ut + \frac{1}{2}at^2$
 - (c) $T = 2a + \sqrt{b + 9c}$
 - (d) $H = \sqrt{b^2 + p^2}$
7. Write a program to calculate simple and compound interest.
8. Write a program to swap values of two variables with and without using a third variable.
9. Write a program to display the size of every data type using the “sizeof” operator.
10. Write a program to illustrate the use of unary prefix and postfix increment and decrement operators.
11. Write a program to input two numbers and display the maximum number.
12. Write a program to find the largest of three numbers using ternary operators.
13. Write a program to find the roots of quadratic equation.
14. Write a program to input the name, marks of 5 subjects of a student and display the name of the student, total marks scored, percentage scored, and the class of result.
15. Write a Program to Check Whether a Number is Prime or not.
16. Write a program to find the largest and smallest among three entered numbers and also display whether the identified largest/smallest number is even or odd.
17. Write a program to compute grade of students using if-else ladder. The grades are assigned as followed:
 - Marks \geq 50: Grade F
 - 50 Marks \geq 60: Grade C
 - 60 Marks \geq 70: Grade B
 - 70 Marks \geq 80: Grade B+
 - 80 Marks \geq 90: Grade A
 - 90 Marks \geq 100: Grade A+
18. Write a program to check whether the entered year is a leap year or not (a year is leap if it is divisible by 4 and divisible by 100 or 400).
19. Write a program to find the factorial of a number.
20. Write a program to check if a number is Armstrong or not. (Hint: A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself).

21. Write a program to count the number of digits in a given integer.
22. Write a program to reverse a given integer.
23. Write a program to print numbers in reverse order with a difference of 2.
24. Write a program to print the sum of digits of a number using a for loop.
25. Write a program to check whether a number is Palindrome or not.
26. Write a program to generate Fibonacci series.
27. If a four-digit number is input through the keyboard, write a program to obtain the sum of the first and last digit of this number.
28. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
29. Write a Program to Search an element in an array.
30. Write a Program to perform addition of all elements in an Array.
31. Write a Program to find the largest and smallest element in an Array.
32. Write a Program to reverse the array elements in C Programming.
33. Write a Program for deletion of an element from the specified location from an Array.
34. Write a Program to access an element in a 2-D Array.
35. Write a program for addition of two matrices of any order in C.
36. Write a Program to multiply two 3×3 Matrices.
37. Write a program to read a string and check for palindrome without using string related functions (a string is palindrome if its half is mirrored by itself, e.g., abcdcba).
38. Write a program to accept a string and count the number of vowels present in this string.
39. Write a program to display the following pattern:

Code and Output:

1.1) Program to Count Number of Digits in a Given Integer

```
main.c
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 #include <stdio.h>
5 int main() {
6     int num, count = 0;
7     printf("Enter an integer: ");
8     scanf("%d", &num);
9
10    // Handle negative numbers
11    if (num < 0)
12        num = -num;
13
14    do {
15        count++;
16        num /= 10;
17    } while (num != 0);
18
19    printf("Number of digits: %d\n", count);
20    return 0;
21 }
22
```

Output

Enter an integer: 4545
Number of digits: 4

=== Code Execution Successful ===

```
main.cpp
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 #include <iostream>
5 using namespace std;
6 int main() {
7     int num, count = 0;
8     cout << "Enter an integer: ";
9     cin >> num;
10    if (num < 0)
11        num = -num;
12
13    do {
14        count++;
15        num /= 10;
16    } while (num != 0);
17    cout << "Number of digits: " << count << endl;
18    return 0;
19 }
20
```

Output

Enter an integer: 4545
Number of digits: 4

=== Code Execution Successful ===

```
Main.java
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 import java.util.Scanner;
5 public class Main {
6     public static void main(String[] args) {
7         Scanner scanner = new Scanner(System.in);
8         System.out.print("Enter an integer: ");
9         int num = scanner.nextInt();
10        int count = 0;
11        num = Math.abs(num);
12
13        do {
14            count++;
15            num /= 10;
16        } while (num != 0);
17
18        System.out.println("Number of digits: " + count);
19        scanner.close();
20    }
21 }
```

Output

Enter an integer: 4545
Number of digits: 4

=== Code Execution Successful ===

1.2) Program to Reverse a Given Integer

```
main.c
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 #include <stdio.h>
5
6 int main() {
7     int num, reverse = 0;
8     printf("Enter an integer: ");
9     scanf("%d", &num);
10
11     while (num != 0) {
12         reverse = reverse * 10 + num % 10;
13         num /= 10;
14     }
15
16     printf("Reversed number: %d\n", reverse);
17     return 0;
18 }
19
20
21
```

Output

Enter an integer: 123
Reversed number: 321

=== Code Execution Successful ===

```
main.cpp
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 #include <iostream>
5 using namespace std;
6
7 int main() {
8     int num, reverse = 0;
9     cout << "Enter an integer: ";
10    cin >> num;
11
12    while (num != 0) {
13        reverse = reverse * 10 + num % 10;
14        num /= 10;
15    }
16
17    cout << "Reversed number: " << reverse << endl;
18    return 0;
19 }
20
21
22
```

Output

Enter an integer: 123
Reversed number: 321

=== Code Execution Successful ===

```
Main.java
1 // Name:- Shekhar Garud
2 // Roll No:- 16
3
4 import java.util.Scanner;
5
6 public class Main {
7     public static void main(String[] args) {
8         Scanner scanner = new Scanner(System.in);
9         System.out.print("Enter an integer: ");
10        int num = scanner.nextInt();
11        int reverse = 0;
12
13        while (num != 0) {
14            reverse = reverse * 10 + num % 10;
15            num /= 10;
16        }
17
18        System.out.println("Reversed number: " + reverse);
19        scanner.close();
20    }
21 }
22
23
```

Output

Enter an integer: 123
Reversed number: 321

=== Code Execution Successful ===

Mobile Computing

Assignment 04

Aim: Use various controls like Edit View, buttons, radio buttons, checkboxes, AutoCompleteTextView, Image Button, and Toggle Button on Mobile to develop UI using Android /other.

Code:

MainActivity.java:

```
1 package com.example.usevariouscontrols;
2
3 import android.os.Bundle;
4 import android.view.View;
5 import android.widget.*;
6 import androidx.activity.EdgeToEdge; // Ensure this is defined in your project
7 import androidx.appcompat.app.AppCompatActivity;
8 import androidx.core.graphics.Insets;
9 import androidx.core.view.ViewCompat;
10 import androidx.core.view.WindowInsetsCompat;
11
12 public class MainActivity extends AppCompatActivity {
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         EdgeToEdge.enable(this);
18         setContentView(R.layout.activity_main);
19
20         // Setting up views
21         EditText editText = findViewById(R.id.editText);
22         Button submitButton = findViewById(R.id.submitButton);
23         RadioGroup radioGroup = findViewById(R.id.radioGroup);
24         CheckBox checkBox = findViewById(R.id.checkBox);
25         AutoCompleteTextView autoCompleteTextView = findViewById(R.id.
            autoCompleteTextView);
26         ImageButton imageButton = findViewById(R.id.imageButton);
27         ToggleButton toggleButton = findViewById(R.id.toggleButton);
28         TextView resultTextView = findViewById(R.id.resultTextView);
29
30         // Setup AutoCompleteTextView
31         String[] suggestions = {"Apple", "Banana", "Cherry", "Date", "
            Elderberry"};
32         ArrayAdapter<String> adapter = new ArrayAdapter<>(this, android.R.
            layout.simple_dropdown_item_1line, suggestions);
33         autoCompleteTextView.setAdapter(adapter);
34
35         submitButton.setOnClickListener(v -> {
36             String enteredText = editText.getText().toString();
37             String selectedOption = radioGroup.getCheckedRadioButtonId() != -1
                ?
38                 ((RadioButton) findViewById(radioGroup.
                    getCheckedRadioButtonId())).getText().toString() : "None
                    ";
39             String checkBoxStatus = checkBox.isChecked() ? "Checked" : "
                Unchecked";
40             String toggleStatus = toggleButton.isChecked() ? "Toggle_ON" : "
                Toggle_OFF";
41             String result = "You entered: " + enteredText + "\n" +
                "Selected: " + selectedOption + "\n" +
                "CheckBox: " + checkBoxStatus + "\n" +
```

```

44         toggleStatus;
45
46         resultTextView.setText(result);
47     });
48
49     // ImageButton click event
50     imageButton.setOnClickListener(v -> Toast.makeText(MainActivity.this, "
        Image_Button_Clicked!", Toast.LENGTH_SHORT).show());
51
52     // ToggleButton change event
53     toggleButton.setOnCheckedChangeListener((buttonView, isChecked) -> {
54         Toast.makeText(MainActivity.this, isChecked ? "Toggle_ON" : "Toggle
        _OFF", Toast.LENGTH_SHORT).show();
55     });
56
57     ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v,
        insets) -> {
58         Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.
            systemBars());
59         v.setPadding(systemBars.left, systemBars.top, systemBars.right,
            systemBars.bottom);
60         return insets;
61     });
62 }
63 }

```

activity_main.xml:

```

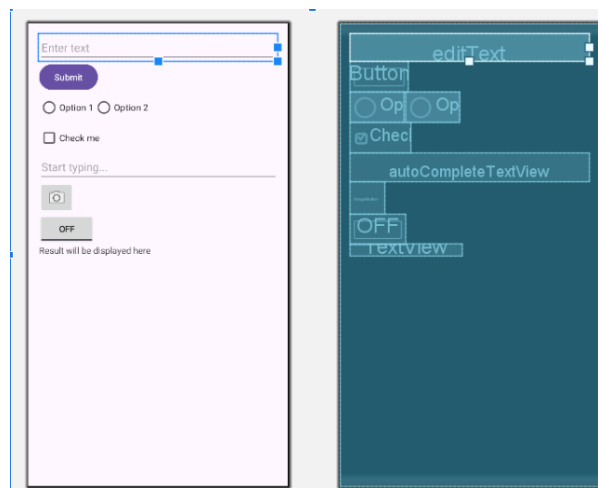
1  <?xml version="1.0" encoding="utf-8"?>
2  <LinearLayout
3      xmlns:android="http://schemas.android.com/apk/res/android"
4      android:id="@+id/main"
5      android:layout_width="match_parent"
6      android:layout_height="match_parent"
7      android:orientation="vertical"
8      android:padding="16dp">
9
10     <!-- EditText View -->
11     <EditText
12         android:id="@+id/editText"
13         android:layout_width="match_parent"
14         android:layout_height="wrap_content"
15         android:hint="Enter_text" />
16
17     <!-- Button -->
18     <Button
19         android:id="@+id/submitButton"
20         android:layout_width="wrap_content"
21         android:layout_height="wrap_content"
22         android:text="Submit" />
23
24     <!-- RadioGroup with RadioButtons -->
25     <RadioGroup
26         android:id="@+id/radioGroup"
27         android:layout_width="wrap_content"
28         android:layout_height="wrap_content"
29         android:orientation="horizontal">
30
31         <RadioButton
32             android:id="@+id/radioButton1"
33             android:layout_width="wrap_content"
34             android:layout_height="wrap_content"
35             android:text="Option_1" />
36

```

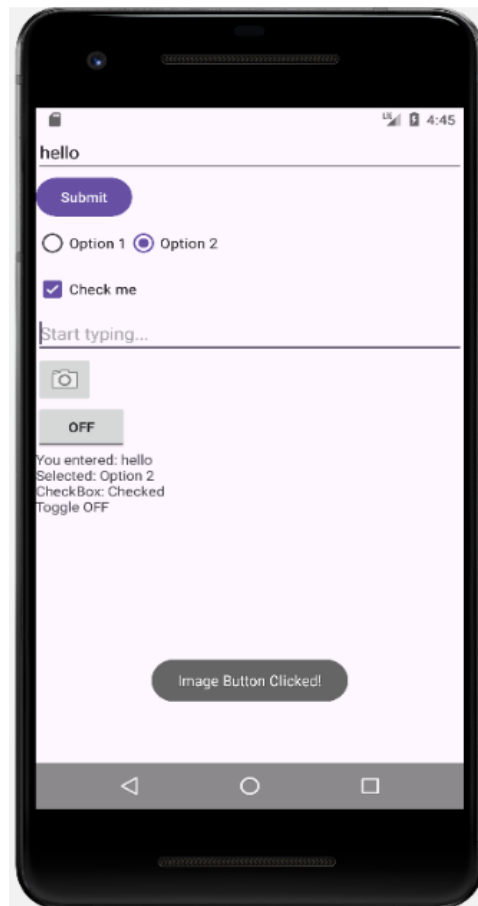
```

37         <RadioButton
38             android:id="@+id/radioButton2"
39             android:layout_width="wrap_content"
40             android:layout_height="wrap_content"
41             android:text="Option_2" />
42     </RadioGroup>
43
44     <!-- CheckBox -->
45     <CheckBox
46         android:id="@+id/checkbox"
47         android:layout_width="wrap_content"
48         android:layout_height="wrap_content"
49         android:text="Check_me" />
50
51     <!-- AutoCompleteTextView -->
52     <AutoCompleteTextView
53         android:id="@+id/autoCompleteTextView"
54         android:layout_width="match_parent"
55         android:layout_height="wrap_content"
56         android:hint="Start_typing..." />
57
58     <!-- ImageButton -->
59     <ImageButton
60         android:id="@+id/imageButton"
61         android:layout_width="wrap_content"
62         android:layout_height="wrap_content"
63         android:src="@android:drawable/ic_menu_camera"
64         android:contentDescription="Image_Button" />
65
66     <!-- ToggleButton -->
67     <ToggleButton
68         android:id="@+id/toggleButton"
69         android:layout_width="wrap_content"
70         android:layout_height="wrap_content"
71         android:textOn="ON"
72         android:textOff="OFF" />
73
74     <!-- Result TextView -->
75     <TextView
76         android:id="@+id/resultTextView"
77         android:layout_width="wrap_content"
78         android:layout_height="wrap_content"
79         android:text="Result_will_be_displayed_here" />
80 </LinearLayout>

```



Output:



Mobile Computing

Assignment 05

Aim: Design a simple calculator using Android/ other as a separate module of previous.

Code:

MainActivity.java:

```
1
2 package com.example.simple_addition_subtraction;
3 import android.os.Bundle;
4 import android.view.View;
5 import android.widget.Switch;
6 import android.widget.Toast;
7 //import androidx.activity.EdgeToEdge;
8 import androidx.appcompat.app.AppCompatActivity;
9 //import androidx.core.graphics.Insets;
10 //import androidx.core.view.ViewCompat;
11 //import androidx.core.view.WindowInsetsCompat;
12 import android.widget.Button;
13 import android.widget.EditText;
14 import android.widget.TextView;
15 public class MainActivity extends AppCompatActivity {
16     private EditText firstNumber;
17     private EditText secondNumber;
18     private TextView resultText;
19     private Switch onoffSwitch;
20     private Button addButton;
21     private Button subtractButton;
22     private Button multiplyButton;
23     private Button divideButton;
24     private Button moduleButton;
25     private Button exponentButton;
26     private Button clearButton;
27     private enum Check {
28         ADD, SUBTRACT, MULTIPLY, DIVIDE, MODULE, EXPONENT
29     }
30     (Check check){
31         if(!onoffSwitch.isChecked()) {
32             Toast.makeText(MainActivity.this, "Please turn on the switch to perform
33                 calculations", Toast.LENGTH_SHORT).show();
34             return;
35         };
36         if(firstNumber.getText().toString().isEmpty() ||
37             secondNumber.getText().toString().isEmpty()) {
38             Toast.makeText(MainActivity.this, "Please enter both numbers", Toast.
39                 LENGTH_SHORT).show();
40             return;
41         };
42         double n1 = Double.parseDouble (firstNumber.getText().toString()); double n2
43             = Double.parseDouble(secondNumber.getText().toString()); double result=0;
44         switch (check) {
45             case ADD:
46                 result = n1 + n2;
47                 break;
48             case SUBTRACT:
49                 result = n1 - n2;
50                 break;
51             case MULTIPLY:
52                 result = n1 * n2;
```

```

50     break;
51     case DIVIDE:
52     if (n2 == 0) {
53         resultText.setText("Reached_Infinity");
54         return;
55     } else {
56         result = n1 / n2;
57     }
58     break;
59     case MODULE:
60     if (n2 == 0) {
61         resultText.setText("Result_is:_0");
62         return;
63     } else {
64         result = n1 % n2;
65     }
66     break;
67     case EXPONENT:
68     // result = 1;
69     // for (int i = 0; i < n2; i++) {
70     //     result *= n1;
71     // }
72     result = Math.pow(n1, n2);
73     break;
74 }
75 resultText.setText("Result_is:_ " + result);
76 }
77 @Override
78 protected void onCreate(Bundle savedInstanceState) {
79     super.onCreate(savedInstanceState);
80     // EdgeToEdge.enable(this);
81     setContentView(R.layout.activity_main);
82     // ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v,
83     insets) -> {
84     // Insets systemBars =
85     insets.getInsets(WindowInsetsCompat.Type.systemBars());
86     // v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.
87     bottom);
88     // return insets;
89     // });
90     onoffSwitch= findViewById(R.id.switchOnOff);
91     firstNumber = findViewById(R.id.editTextNumber1);
92     secondNumber = findViewById(R.id.editTextNumber2);
93     addButton = findViewById(R.id.buttonAdd);
94     subtractButton = findViewById(R.id.buttonSubtract);
95     multiplyButton=findViewById(R.id.buttonMultiply);
96     divideButton=findViewById(R.id.buttonDivide);
97     moduleButton=findViewById(R.id.buttonModule);
98     exponentButton=findViewById(R.id.buttonExponent);
99     resultText = findViewById(R.id.textViewResult);
100     clearButton = findViewById(R.id.buttonClear);
101     addButton.setOnClickListener(new View.OnClickListener() { @Override
102     public void onClick(View v) {
103         performOperation(Check.ADD);
104     }
105     });
106     subtractButton.setOnClickListener(new View.OnClickListener() { @Override
107     public void onClick(View v) {
108         performOperation(Check.SUBTRACT);
109     }
110     });
111     multiplyButton.setOnClickListener(new View.OnClickListener() { @Override
112     public void onClick(View v) {

```

```

111 performOperation(Check.MULTIPLY);
112 }
113 });
114 divideButton.setOnClickListener(new View.OnClickListener() { @Override
115 public void onClick(View v) {
116 performOperation(Check.DIVIDE);
117 }
118 });
119 moduleButton.setOnClickListener(new View.OnClickListener() { @Override
120 public void onClick(View v) {
121 performOperation(Check.MODULE);
122 }
123 });
124 exponentButton.setOnClickListener(new View.OnClickListener() { @Override
125 public void onClick(View v) {
126 performOperation(Check.EXPONENT);
127 }
128 });
129 clearButton.setOnClickListener(new View.OnClickListener() { @Override
130 public void onClick(View v){
131 if(firstNumber.getText().toString().isEmpty() || secondNumber.getText().
132 toString().isEmpty()){
133 Toast.makeText(MainActivity.this, "Field is already empty", Toast.
134 LENGTH_SHORT).show();
135 }
136 else{
137 firstNumber.setText("");
138 secondNumber.setText("");
139 resultText.setText("Result will appear here");
140 }
141 }
142 }

```

activity_main.xml:

```

1
2 <?xml version="1.0" encoding="utf-8"?>
3 <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://
4 schemas.android.com/apk/res/android" xmlns:app="http://schemas.android.com/
5 apk/res-auto" xmlns:tools="http://schemas.android.com/tools" android:id="@
6 +id/main"
7 android:layout_width="match_parent"
8 android:layout_height="match_parent"
9 tools:context=".MainActivity">
10 <EditText
11 android:id="@+id/editTextNumber1"
12 android:layout_width="350dp"
13 android:layout_height="70dp"
14 android:hint="Enter First Number"
15 android:inputType="number"
16 app:layout_constraintBottom_toBottomOf="parent"
17 app:layout_constraintEnd_toEndOf="parent"
18 app:layout_constraintHorizontal_bias="0.508"
19 app:layout_constraintStart_toStartOf="parent"
20 app:layout_constraintTop_toTopOf="parent"
21 app:layout_constraintVertical_bias="0.024" />
22 <EditText
23 android:id="@+id/editTextNumber2"
24 android:layout_width="350dp"
25 android:layout_height="70dp"
26 android:hint="Enter Second Number"
27 android:inputType="number"

```

```

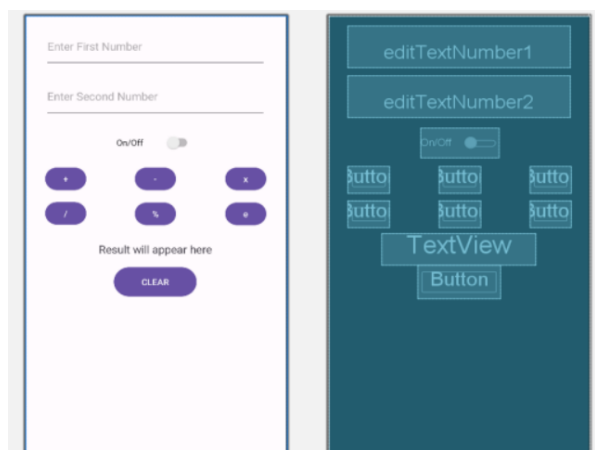
22 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toEndOf="parent "
23 app:layout_constraintStart_toStartOf="parent "
    app:layout_constraintTop_toBottomOf="@+id/editTextNumber1 "
    app:layout_constraintVertical_bias="0.022" />
24 <Button
25 android:id="@+id/buttonAdd"
26 android:layout_width="65dp"
27 android:layout_height="45dp"
28 android:text="+"
29 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toStartOf="@+id/buttonSubtract "
    app:layout_constraintHorizontal_bias="0.289"
30 app:layout_constraintStart_toStartOf="parent "
    app:layout_constraintTop_toBottomOf="@+id/editTextNumber2 "
    app:layout_constraintVertical_bias="0.152" />
31 <Button
32 android:id="@+id/buttonDivide"
33 android:layout_width="65dp"
34 android:layout_height="45dp"
35 android:text="/"
36 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toStartOf="@+id/buttonModule "
    app:layout_constraintHorizontal_bias="0.289"
    app:layout_constraintStart_toStartOf="parent "
    app:layout_constraintTop_toBottomOf="@+id/editTextNumber2 "
    app:layout_constraintVertical_bias="0.263" />
37 <Button
38 android:id="@+id/buttonModule"
39 android:layout_width="65dp"
40 android:layout_height="45dp"
41 android:text="%"
42 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toEndOf="parent "
43 app:layout_constraintStart_toStartOf="parent "
    app:layout_constraintTop_toBottomOf="@+id/buttonSubtract "
    app:layout_constraintVertical_bias="0.033" />
44 <Button
45 android:id="@+id/buttonClear"
46 android:layout_width="131dp"
47 android:layout_height="56dp"
48 android:text="CLEAR"
49 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toEndOf="parent "
50 app:layout_constraintStart_toStartOf="parent "
    app:layout_constraintTop_toBottomOf="@+id/buttonModule "
    app:layout_constraintVertical_bias="0.191" />
51 <Button
52 android:id="@+id/buttonMultiply"
53 android:layout_width="65dp"
54 android:layout_height="45dp"
55 android:text="x"
56 app:layout_constraintBottom_toBottomOf="parent "
    app:layout_constraintEnd_toEndOf="parent "
57 app:layout_constraintHorizontal_bias="0.724"
    app:layout_constraintStart_toEndOf="@+id/buttonSubtract "
    app:layout_constraintTop_toBottomOf="@+id/editTextNumber2 "
    app:layout_constraintVertical_bias="0.152" />
58 <Switch
59 android:id="@+id/switchOnOff"
60 android:layout_width="123dp"
61 android:layout_height="48dp"
62 android:text="On/Off"

```

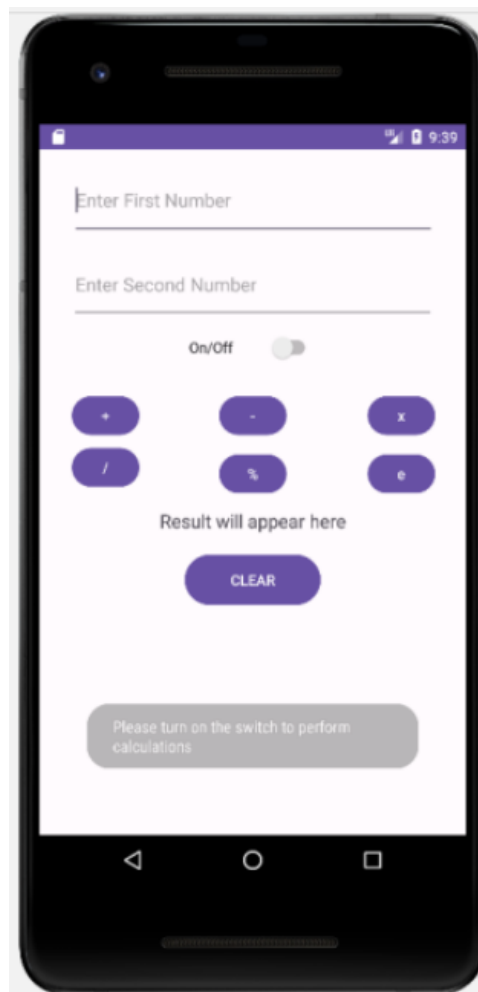
```

63     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
64     app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
65     app:layout_constraintVertical_bias="0.272" /> <TextView
66 android:id="@+id/textViewResult"
67     android:layout_width="243dp"
68     android:layout_height="53dp"
69     android:gravity="center"
70     android:text="Result will appear here"
71     android:textSize="18sp"
72     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
73     app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextNumber2"
        app:layout_constraintVertical_bias="0.375" />
74 <Button
75     android:id="@+id/buttonSubtract"
76     android:layout_width="65dp"
77     android:layout_height="45dp"
78     android:text="-"
79     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
80     app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextNumber2"
        app:layout_constraintVertical_bias="0.152" />
81 <Button
82     android:id="@+id/buttonExponent"
83     android:layout_width="65dp"
84     android:layout_height="45dp"
85     android:text="e"
86     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
87     app:layout_constraintHorizontal_bias="0.724"
        app:layout_constraintStart_toEndOf="@+id/buttonModule"
        app:layout_constraintTop_toBottomOf="@+id/buttonMultiply"
        app:layout_constraintVertical_bias="0.033" />
88 </androidx.constraintlayout.widget.ConstraintLayout>

```



Output:



Mobile Computing

Assignment 06

Aim: Create a simple temperature converter application using Android/other as a separate module of previous.

Code:

MainActivity.java:

```
1 package com.example.check_temperature;
2 import android.os.Bundle;
3 import androidx.activity.EdgeToEdge;
4 import androidx.appcompat.app.AppCompatActivity;
5 import androidx.core.graphics.Insets;
6 import androidx.core.view.ViewCompat;
7 import androidx.core.view.WindowInsetsCompat;
8 import android.view.View;
9 import android.widget.ArrayAdapter;
10 import android.widget.Button;
11 import android.widget.EditText;
12 import android.widget.Spinner;
13 import android.widget.TextView;
14 import android.widget.Toast;
15 public class MainActivity extends AppCompatActivity {
16     private Spinner spinnerTemperature;
17     private Spinner spinnerTemperature2;
18     private Button buttonConvert;
19     private EditText textNumber;
20     private TextView textResult;
21     private Button buttonClear;
22     private double performConversion(double n){
23         String from=spinnerTemperature.getSelectedItem().toString();   String to=
            spinnerTemperature2.getSelectedItem().toString();
24         if(from.equals(to)){
25             return n;
26         }
27         switch(from){
28             case "Celsius":
29                 if(to.equals("Fahrenheit")){
30                     return (n*9.0/5.0)+32;
31                 } else if (to.equals("Kelvin")) {
32                     return n+273.15;
33                 }
34                 break;
35             case "Fahrenheit":
36                 if(to.equals("Celsius")){
37                     return 5.0/9.0*(n-32);
38                 } else if (to.equals("Kelvin")) {
39                     return 5.0/9.0*(n-32) + 273.15;
40                 }
41                 break;
42             case "Kelvin":
43                 if(to.equals("Fahrenheit")){
44                     return 9.0/5.0*(n - 273.15) + 32;
45                 } else if (to.equals("Celsius")) {
46                     return n - 273.15;
47                 }
48                 break;
49             }
50         return n;
51     }
```

```

52 private String getSymbol(String unit) {
53     switch (unit) {
54         case "Celsius":
55             return "C" ;
56         case "Fahrenheit":
57             return "F" ;
58         case "Kelvin":
59             return "K";
60         default:
61             return "";
62     }
63 }
64 @Override
65 protected void onCreate(Bundle savedInstanceState) {
66     super.onCreate(savedInstanceState);
67     EdgeToEdge.enable(this);
68     setContentView(R.layout.activity_main);
69     spinnerTemperature=findViewById(R.id.spinnerTemperature);
70     spinnerTemperature2=findViewById(R.id.spinnerTemperature2);    buttonConvert=
        findViewById(R.id.buttonConvert);
71     textNumber=findViewById(R.id.editTextNumber);
72     textResult=findViewById(R.id.textViewResult);
73     buttonClear=findViewById(R.id.buttonClear);
74
75     ArrayAdapter<CharSequence>adapter=ArrayAdapter.createFromResource(this,R.array.
        temperat ure, android.R.layout.simple_spinner_item);
76     adapter.setDropDownViewResource(android.R.layout.simple_spinner_item);
77     ArrayAdapter<CharSequence>adapter2=ArrayAdapter.createFromResource(this,R.array
        .tempera ture2, android.R.layout.simple_spinner_item);
78     adapter2.setDropDownViewResource(android.R.layout.simple_spinner_item);
79     spinnerTemperature.setAdapter(adapter);
80     spinnerTemperature2.setAdapter(adapter2);
81     buttonConvert.setOnClickListener(new View.OnClickListener(){ @Override
82     public void onClick(View v){
83         if(textNumber.getText().toString().isEmpty()){
84             Toast.makeText(MainActivity.this,"Please enter the number",Toast.LENGTH_SHORT
            ).show();
85             return ;
86         }
87         double n=Double.parseDouble(textNumber.getText().toString());
88         double result=performConversion(n);
89         // String to=spinnerTemperature2.getSelectedItem().toString(); String
90         symbol=getSymbol(spinnerTemperature2.getSelectedItem().toString());    textResult
            .setText("result is :-"+result +" "+symbol);
91     }
92 });
93
94     buttonClear.setOnClickListener(new View.OnClickListener() { @Override
95     public void onClick(View v) {
96         if(textNumber.getText().toString().isEmpty()){ Toast.makeText(MainActivity.
            this, "Field is already empty", Toast.LENGTH_SHORT).show();
97         }
98         else {
99             textNumber.setText("");
100             textResult.setText("Result will appear here");    }
101     }
102 });
103 }
104 }

```

activity_main.xml:

```

1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout

```



```

3  xmlns:android="http://schemas.android.com/apk/res/android"
4  xmlns:app="http://schemas.android.com/apk/res-auto"
5  xmlns:tools="http://schemas.android.com/tools"
6  android:id="@+id/main"
7  android:layout_width="match_parent"
8  android:layout_height="match_parent"
9  tools:context=".MainActivity">
10 <Button
11     android:id="@+id/buttonClear"
12     android:layout_width="99dp"
13     android:layout_height="47dp"
14     android:text="Clear"
15     app:layout_constraintBottom_toBottomOf="parent"
16     app:layout_constraintEnd_toEndOf="parent"
17     app:layout_constraintHorizontal_bias="0.708"
18     app:layout_constraintStart_toStartOf="parent"
19     app:layout_constraintTop_toBottomOf="@+id/textViewResult"
20     app:layout_constraintVertical_bias="0.0" />
21 <EditText
22     android:id="@+id/editTextNumber"
23     android:layout_width="203dp"
24     android:layout_height="40dp"
25     android:layout_marginBottom="125dp"
26     android:ems="10"
27     android:inputType="number"
28     app:layout_constraintBottom_toBottomOf="parent"
29     app:layout_constraintEnd_toEndOf="parent"
30     app:layout_constraintHorizontal_bias="0.144"
31     app:layout_constraintStart_toStartOf="parent"
32     app:layout_constraintTop_toTopOf="parent"
33     app:layout_constraintVertical_bias="0.226" />
34 <Spinner
35     android:id="@+id/spinnerTemperature"
36     android:layout_width="160dp"
37     android:layout_height="50dp"
38     android:layout_marginStart="1dp"
39     android:layout_marginEnd="1dp"
40     app:layout_constraintBottom_toBottomOf="parent"
41     app:layout_constraintEnd_toEndOf="parent"
42     app:layout_constraintHorizontal_bias="0.662"
43     app:layout_constraintStart_toStartOf="parent"
44     app:layout_constraintTop_toTopOf="parent"
45     app:layout_constraintVertical_bias="0.262" />
46 <Spinner
47     android:id="@+id/spinnerTemperature2"
48     android:layout_width="160dp"
49     android:layout_height="50dp"
50     android:layout_marginStart="1dp"
51     android:layout_marginEnd="1dp"
52     app:layout_constraintBottom_toBottomOf="parent"
53     app:layout_constraintEnd_toEndOf="parent"
54     app:layout_constraintHorizontal_bias="0.662"
55     app:layout_constraintStart_toStartOf="parent"
56     app:layout_constraintTop_toTopOf="parent"
57     app:layout_constraintVertical_bias="0.348" />
58 <TextView
59     android:id="@+id/textView"
60     android:layout_width="350dp"
61     android:layout_height="50dp"
62     android:layout_marginTop="54dp"
63     android:layout_marginBottom="139dp"
64     android:text="Temperature Converter: -"
65     android:textSize="24sp"

```

```

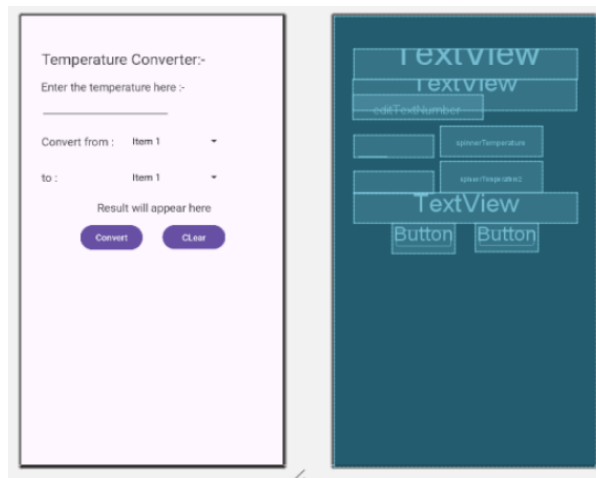
52     app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.0" />
53 <Button
54     android:id="@+id/buttonConvert"
55     android:layout_width="wrap_content"
56     android:layout_height="wrap_content"
57     android:text="Convert"
58     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.293"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textViewResult"
        app:layout_constraintVertical_bias="0.0" />
59 <TextView
60     android:id="@+id/textView2"
61     android:layout_width="350dp"
62     android:layout_height="50dp"
63     android:text="Enter the temperature here:-"    android:textSize="18sp"
64     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.491"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.152" />
65 <TextView
66     android:id="@+id/textView3"
67     android:layout_width="125dp"
68     android:layout_height="36dp"
69     android:text="Convert from:"
70     android:textSize="18sp"
71     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.108"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.277" />
72 <TextView
73     android:id="@+id/textView4"
74     android:layout_width="125dp"
75     android:layout_height="36dp"
76     android:text="to:"
77     android:textSize="18sp"
78     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.108"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.361" />
79 <TextView
80     android:id="@+id/textViewResult"
81     android:layout_width="350dp"
82     android:layout_height="50dp"
83     android:gravity="center"
84     android:text="Result will appear here"    android:textSize="18sp"
85     app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"

```

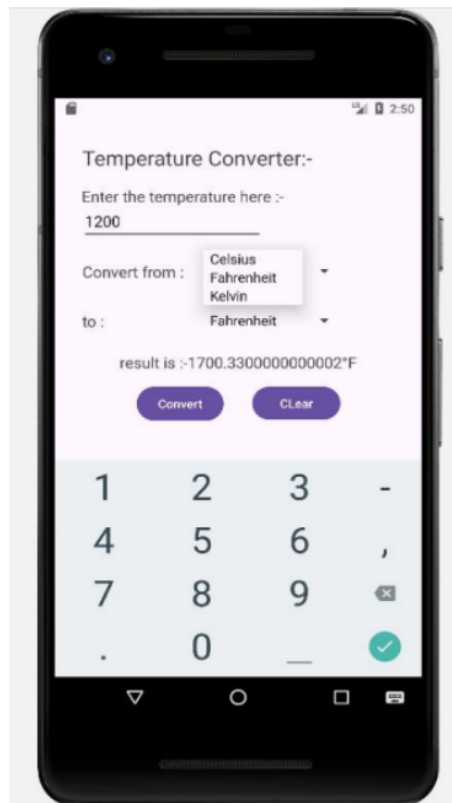
```

        app:layout_constraintVertical_bias="0.421" />
86 </androidx.constraintlayout.widget.ConstraintLayout>

```



Output:



Mobile Computing

Assignment 07

Aim: Write a Program to generate Calendar using Android/other.

Code:

MainActivity.java:

```
1 package com.example.calender;
2 import android.graphics.Color;
3 import android.os.Bundle;
4 import android.widget.Toast;
5 import androidx.annotation.NonNull;
6 import androidx.appcompat.app.AppCompatActivity;
7 import com.prolificinteractive.materialcalendarview.CalendarDay; import com.
    prolificinteractive.materialcalendarview.MaterialCalendarView; import com.
    prolificinteractive.materialcalendarview.OnDateSelectedListener;
8 import java.util.Calendar;
9 import java.util.HashSet;
10 import java.util.Set;
11 public class MainActivity extends AppCompatActivity {
12     @Override
13     protected void onCreate(Bundle savedInstanceState) {
14         super.onCreate(savedInstanceState);
15         setContentView(R.layout.activity_main);
16         MaterialCalendarView calendarView = findViewById(R.id.calendarView);
17         calendarView.state().edit()
18             .setMinimumDate(CalendarDay.from(2024, 1, 1))
19             .setMaximumDate(CalendarDay.from(2024, 12, 31))
20             .commit();
21         Set<CalendarDay> weekendDays = new HashSet<>();
22         Calendar calendar = Calendar.getInstance();
23         for (int month = 0; month < 12; month++) {
24             for (int day = 1; day <=
25                 calendar.getActualMaximum(Calendar.DAY_OF_MONTH); day++) { calendar.set(2024,
26                     month, day);
27                     if (calendar.get(Calendar.DAY_OF_WEEK) == Calendar.SATURDAY || calendar.get(
28                         Calendar.DAY_OF_WEEK) == Calendar.SUNDAY)
29                     {
30                         weekendDays.add(CalendarDay.from(calendar));
31                     }
32                 }
33             }
34         calendarView.addDecorator(new WeekendDecorator(this, weekendDays));
35         calendarView.addDecorator(new TodayDecorator(this));
36         calendarView.setOnDateChangeListener(new OnDateSelectedListener() { @Override
37             public void onDateSelected(@NonNull MaterialCalendarView widget, @NonNull
38                 CalendarDay date, boolean selected) {
39                 Toast.makeText(getApplicationContext(), "Selected date: " + date.getDate(),
40                     Toast.LENGTH_SHORT).show();
41             }
42         });
43     }
44 }
```

TodayDecorator.java:

```
1 package com.example.calender;
2 import android.content.Context;
3 import androidx.annotation.NonNull;
4 import com.prolificinteractive.materialcalendarview.DayViewDecorator; import
    com.prolificinteractive.materialcalendarview.CalendarDay; import com.
    prolificinteractive.materialcalendarview.DayViewFacade;
```

```

5 public class TodayDecorator implements DayViewDecorator {
6 private final Context context;
7 public TodayDecorator(Context context) {
8 this.context = context;
9 }
10 @Override
11 public boolean shouldDecorate(@NonNull CalendarDay day) { return day.equals(
    CalendarDay.today());
12 }
13 @Override
14 public void decorate(@NonNull DayViewFacade view) {
15 view.setBackgroundDrawable(context.getDrawable(R.drawable.red_bg)); view.
    addSpan(new
16 android.text.style.StyleSpan(android.graphics.Typeface.BOLD)); } }

```

WeekendDecorator.java:

```

1 package com.example.calender;
2 import android.content.Context;
3 import androidx.annotation.NonNull;
4 import com.prolificinteractive.materialcalendarview.DayViewDecorator; import
    com.prolificinteractive.materialcalendarview.CalendarDay; import com.
    prolificinteractive.materialcalendarview.DayViewFacade;
5 import java.util.Set;
6 public class WeekendDecorator implements DayViewDecorator {
7 private final Set<CalendarDay> dates;
8 private final Context context;
9 public WeekendDecorator(Context context, Set<CalendarDay> dates) { this.context
    = context;
10 this.dates = dates;
11 }
12 @Override
13 public boolean shouldDecorate(@NonNull CalendarDay day) { return dates.contains
    (day);
14 }
15 @Override
16 public void decorate(@NonNull DayViewFacade view) {
17 view.setBackgroundDrawable(context.getDrawable(R.drawable.red_bg)); }
18 }

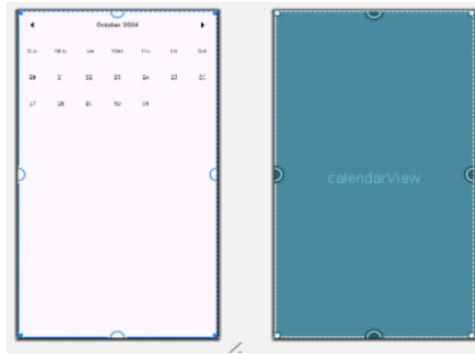
```

activity_main.xml:

```

1 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
2 xmlns:mcv="http://schemas.android.com/apk/res-auto"
3 android:layout_width="match_parent"
4 android:layout_height="match_parent">
5 <com.prolificinteractive.materialcalendarview.MaterialCalendarView android:id="
    @+id/calendarView"
6 android:layout_width="match_parent"
7 android:layout_height="match_parent"/>
8 <!-- app:mcv_showOtherMonths="false" /> &lt;!&ndash; Hide days from other
    months &ndash;&gt;-->
9 </RelativeLayout>

```



redbg.xml:

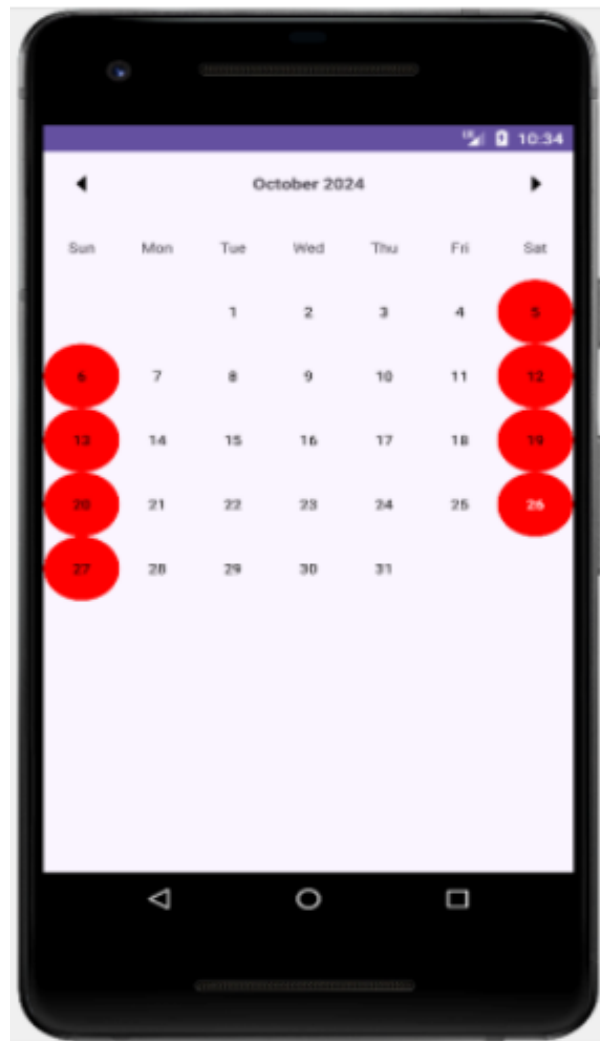
```

1 <!-- res/drawable/red_bg.xml -->
2 <shape xmlns:android="http://schemas.android.com/apk/res/android"> <solid
   android:color="#FF0000"/>
3 <corners android:radius="300dp"/>
4 </shape>

```



Output:



Mobile Computing

Assignment 08

Aim: Design a simple to-do list using Android/other.

Code:

MainActivity.java:

```
1 package com.example.todolist;
2 import android.content.SharedPreferences;
3 import android.os.Bundle;
4 import android.view.View;
5 import android.widget.ArrayAdapter;
6 import android.widget.Button;
7 import android.widget.EditText;
8 import android.widget.ListView;
9 import android.widget.CheckBox;
10 import android.widget.TextView;
11 import android.widget.Toast;
12 import androidx.appcompat.app.AppCompatActivity; import android.widget.
    AdapterView;
13 import android.view.LayoutInflater;
14 import android.view.ViewGroup;
15 import android.graphics.Paint;
16 import com.example.todolist.R;
17 import java.util.ArrayList;
18 import java.util.HashSet;
19 import java.util.Set;
20 public class MainActivity extends AppCompatActivity {
21     private EditText editTextTask;
22     private Button buttonAdd;
23     private ListView listViewTasks;
24     private ArrayList<String> tasks;
25     private ArrayAdapter<String> adapter;
26     @Override
27     protected void onCreate(Bundle savedInstanceState) { super.onCreate(
        savedInstanceState);
28     setContentView(R.layout.activity_main);
29     editTextTask = findViewById(R.id.editTextTask);
30     buttonAdd = findViewById(R.id.buttonAdd);
31     listViewTasks = findViewById(R.id.listViewTasks);
32     tasks = loadTasks();
33     adapter = new TaskAdapter(this, tasks);
34     listViewTasks.setAdapter(adapter);
35     buttonAdd.setOnClickListener(v -> {
36     String task = editTextTask.getText().toString().trim();
37     if (!task.isEmpty()) {
38     tasks.add(task);
39     adapter.notifyDataSetChanged();
40     saveTasks();
41     editTextTask.setText(""); // Clear input field
42     } else {
43     Toast.makeText(MainActivity.this, "Please enter a task",
44     Toast.LENGTH_SHORT).show();
45     }
46     });
47     }
48     private void saveTasks() {
49     SharedPreferences sharedPreferences = getSharedPreferences("tasks",
        MODE_PRIVATE);
50     SharedPreferences.Editor editor = sharedPreferences.edit(); editor.putStringSet
        ("taskSet", new HashSet<>(tasks));
```



```

51 editor.apply();
52 }
53 private ArrayList<String> loadTasks() {
54     SharedPreferences sharedPreferences = getSharedPreferences("tasks",
55         MODE_PRIVATE);
56     Set<String> taskSet = sharedPreferences.getStringSet("taskSet", new HashSet<>());
57 }
58 private class TaskAdapter extends ArrayAdapter<String> {
59     public TaskAdapter(MainActivity context, ArrayList<String> tasks) { super(
60         context, 0, tasks);
61     }
62     @Override
63     public View getView(int position, View convertView, ViewGroup parent) { // Get
64         // the data item for this position
65         String task = getItem(position);
66         if (convertView == null) {
67             convertView =
68                 LayoutInflater.from(getContext()).inflate(R.layout.list_item, parent, false);
69             // Lookup view for data population
70             CheckBox checkBoxTask =
71                 convertView.findViewById(R.id.checkBoxTask);
72             TextView textViewTask =
73                 convertView.findViewById(R.id.textViewTask);
74             textViewTask.setText(task);
75             checkBoxTask.setChecked(false);
76             checkBoxTask.setOnCheckedChangeListener((buttonView, isChecked) -> {
77                 if (isChecked) {
78                     textViewTask.setPaintFlags(textViewTask.getPaintFlags() |
79                         Paint.STRIKE_THRU_TEXT_FLAG);
80                 } else {
81                     textViewTask.setPaintFlags(textViewTask.getPaintFlags() &
82                         (~Paint.STRIKE_THRU_TEXT_FLAG));
83                 }
84             });
85             return convertView;
86         }
87     }
88 }

```

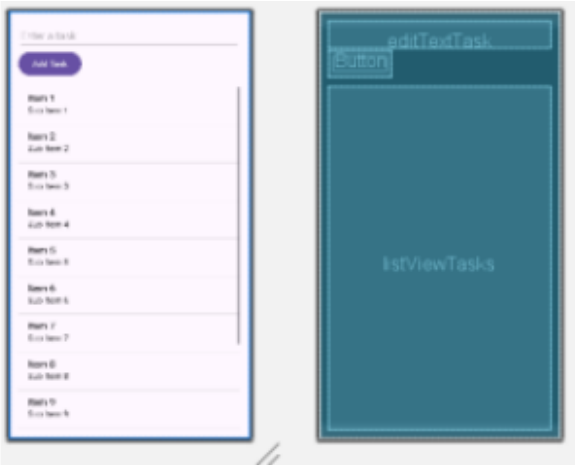
activity_main.xml:

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3      android:layout_width="match_parent"
4      android:layout_height="match_parent"
5      android:orientation="vertical"
6      android:padding="16dp">
7      <EditText
8          android:id="@+id/editTextTask"
9          android:layout_width="match_parent"
10         android:layout_height="48dp"
11         android:hint="Enter a task" />
12     <Button
13         android:id="@+id/buttonAdd"
14         android:layout_width="wrap_content"
15         android:layout_height="wrap_content"
16         android:text="Add Task" />
17     <ListView
18         android:id="@+id/listViewTasks"
19         android:layout_width="match_parent"
20         android:layout_height="wrap_content"
21         android:layout_marginTop="16dp"/>

```

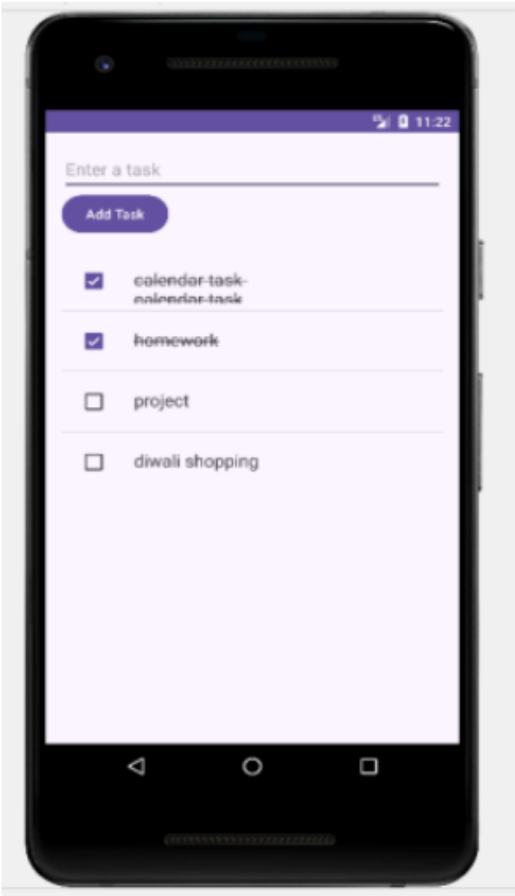
21 </LinearLayout>



list_{item}.xml :



Output:



Mobile Computing

Assignment 09

Aim: Demo of all layouts and write a short note on each layout.

Code:

MainActivity.java:

```
1 package com . example . layoutdemo ;
2 import android . content . Intent ; import
3 android . os . Bundle ; import android . view .
4 View ; import android . widget . Button ;
5 import androidx . appcompat . app . AppCompatActivity ; public class Main
6 Activity extends AppCompatActivity {
7 @ Override
8 protected void onCreate ( Bundle savedInstanceState ) { super . onCreate
9 ( savedInstanceState ) ; setContentView ( R . layout . activity_main ) ;
10 Button linearButton = findViewById ( R . id . linearButton ) ; Button relative
    Button =
11 findViewById ( R . id . relative Button ) ;
12 Button constraintButton = findViewById ( R . id . constraintButton ) ; Button
    table Button = findViewById ( R . id . table Button ) ;
13 Button frame Button = findViewById ( R . id . frame Button ) ; Button
14 listButton = findViewById ( R . id . listButton ) ; Button grid Button = find
    View
15 findViewById ( R . id . grid Button ) ; Button web Button = findViewById ( R . id . web
16 Button ) ; Button scrollButton = findViewById ( R . id . scrollButton ) ;
17 linearButton . setOnClickListener ( v -> startActivity ( new Intent ( this ,
    LayoutLinearActivity . class ) ) ) ; relative Button . setOnClickListener ( v
    -> startActivity ( new Intent ( this , LayoutRelativeActivity . class ) ) ) ;
    constraintButton . setOnClickListener ( v -> startActivity ( new Intent (
    this ,
18 LayoutConstraintActivity . class ) ) ) ;
19 table Button . setOnClickListener ( v -> startActivity ( new Intent ( this ,
    LayoutTableActivity . class ) ) ) ; frame Button . setOnClickListener ( v ->
    startActivity ( new Intent ( this , LayoutFrameActivity . class ) ) ) ;
    listButton . setOnClickListener ( v -> startActivity ( new Intent ( this ,
    LayoutListActivity . class ) ) ) ; grid Button . setOnClickListener ( v ->
    startActivity ( new Intent ( this , LayoutGridActivity . class ) ) ) ; web
    Button . setOnClickListener ( v -> startActivity ( new Intent ( this ,
    LayoutWebActivity . class ) ) ) ; scrollButton . setOnClickListener ( v ->
    startActivity ( new Intent ( this , LayoutScrollActivity . class ) ) ) ; }
20 }
```

activity_main.xml:

```
1 <? xml version ="1.0" encoding ="utf-8" ? >
2 < LinearLayout xmlns:android ="http://schemas.android.com/apk/res/
    android" android:layout_width ="match_parent" android:layout_height ="
    match_parent"
3 android:orientation ="vertical" android:padding ="16dp" >
4 <Button
5 android:id ="@+id/linearButton" android:layout_width ="
6 match_parent" android:layout_height ="wrap_content"
7 android:text ="LinearLayout" / >
8 <Button
9 android:id ="@+id/relativeButton" android:layout_width ="
10 match_parent" android:layout_height ="wrap_content"
11 android:text ="RelativeLayout" / >
12 <Button
13 android:id ="@+id/constraintButton" android:layout_width
14 ="match_parent" android:layout_height ="wrap_content"
```

```

15 android:text = "ConstraintLayout" / >
16 <Button
17 android:id = "@+id/tableButton" android:layout_width = "
18 match_parent" android:layout_height = "wrap_content"
19 android:text = "TableLayout" / >
20 <Button
21 android:id = "@+id/frameButton" android:layout_width = "
22 match_parent" android:layout_height = "wrap_content"
23 android:text = "FrameLayout" / >
24 <Button
25 android:id = "@+id/listButton" android:layout_width = "
26 match_parent" android:layout_height = "wrap_content"
27 android:text = "ListView" / >
28 <Button
29 android:id = "@+id/gridButton" android:layout_width = "
30 match_parent" android:layout_height = "wrap_content"
31 android:text = "GridView" / >
32 <Button
33 android:id = "@+id/webButton" android:layout_width = "
34 match_parent" android:layout_height = "wrap_content"
35 android:text = "WebView" / >
36 <Button
37 android:id = "@+id/scrollButton" android:layout_width = "
38 match_parent" android:layout_height = "wrap_content"
39 android:text = "ScrollView" / >
40 </ Line

```

Output:

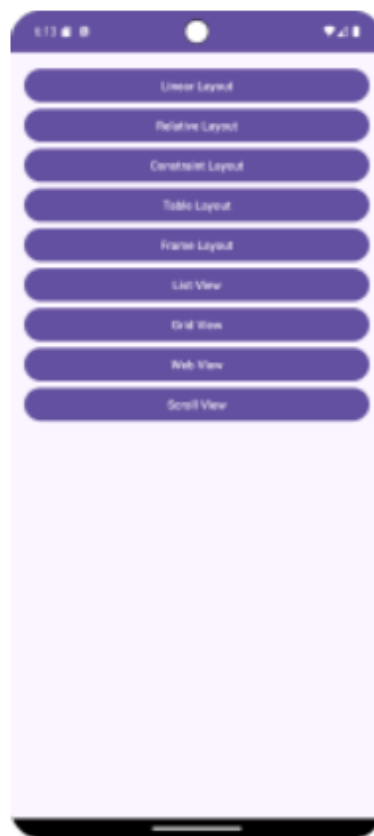


Figure 1: Home Page

Mobile Computing

Assignment 10

Aim: Write a Program for simple quiz competition Android/other.

Code:

MainActivity.java:

```
1 package com.example.simplequizcompetition;
2 import android.os.Bundle;
3 import android.view.View;
4 import android.widget.Button;
5 import android.widget.RadioButton;
6 import android.widget.RadioGroup;
7 import android.widget.TextView;
8 import android.widget.Toast;
9 import androidx.appcompat.app.AppCompatActivity;
10 public class MainActivity extends AppCompatActivity {
11     private TextView questionTextView;
12     private RadioGroup optionsGroup;
13     private Button submitButton;
14     private String[] questions = {
15         "What is the capital of India?",
16         "Which river is considered the holiest in India?",
17         "Who is known as the Father of the Nation in India?",
18         "What is the national animal of India?",
19         "Which is the largest state in India by area?"
20     };
21     private String[][] options = {
22         {"New Delhi", "Mumbai", "Kolkata", "Chennai"},
23         {"Ganga", "Yamuna", "Godavari", "Narmada"},
24         {"Mahatma Gandhi", "Jawaharlal Nehru", "Subhash Chandra Bose", "Sardar Patel"},
25         {"Tiger", "Elephant", "Lion", "Peacock"},
26         {"Rajasthan", "Madhya Pradesh", "Uttar Pradesh", "Maharashtra"}
27     };
28     private int currentQuestionIndex = 0;
29     private int score = 0;
30     @Override
31     protected void onCreate(Bundle savedInstanceState) {
32         super.onCreate(savedInstanceState);
33         setContentView(R.layout.activity_main);
34         questionTextView = findViewById(R.id.questionTextView);
35         optionsGroup = findViewById(R.id.optionsGroup);
36         submitButton = findViewById(R.id.submitButton);
37         loadQuestion();
38         submitButton.setOnClickListener(new View.OnClickListener() { @Override
39             public void onClick(View v) {
40                 int selectedOptionId = optionsGroup.getCheckedRadioButtonId(); if (
41                     selectedOptionId == -1) {
42                     Toast.makeText(MainActivity.this, "Please select an
43                         answer!", Toast.LENGTH_SHORT).show();
44                     return;
45                 }
46                 // Check if the selected answer is correct
47                 int selectedAnswerIndex =
48                     optionsGroup.indexOfChild(findViewById(selectedOptionId)); if (
49                     selectedAnswerIndex ==
50                     correctAnswers[currentQuestionIndex]) {
51                     score++;
52                 }
53             }
54         });
55     }
56 }
```

```

51 // Move to the next question or finish the quiz
52 currentQuestionIndex++;
53 if (currentQuestionIndex < questions.length) {
54 loadQuestion();
55 } else {
56 Toast.makeText(MainActivity.this, "Quiz finished! Your
57 score: " + score, Toast.LENGTH_LONG).show();
58 finish(); // Ends the activity
59 }
60 }
61 });
62 }
63 private void loadQuestion() {
64 // Set the current question and options
65 questionTextView.setText(questions[currentQuestionIndex]); ((RadioButton)
66 optionsGroup.getChildAt(0)).setText(options[currentQuestionIndex][0]); ((
67 RadioButton)
68 optionsGroup.getChildAt(1)).setText(options[currentQuestionIndex][1]); ((
69 RadioButton)
70 optionsGroup.getChildAt(2)).setText(options[currentQuestionIndex][2]); ((
71 RadioButton)
72 optionsGroup.getChildAt(3)).setText(options[currentQuestionIndex][3]);
73 // Clear any previously selected option
74 optionsGroup.clearCheck();
75 }
76 }

```

activity_main.xml:

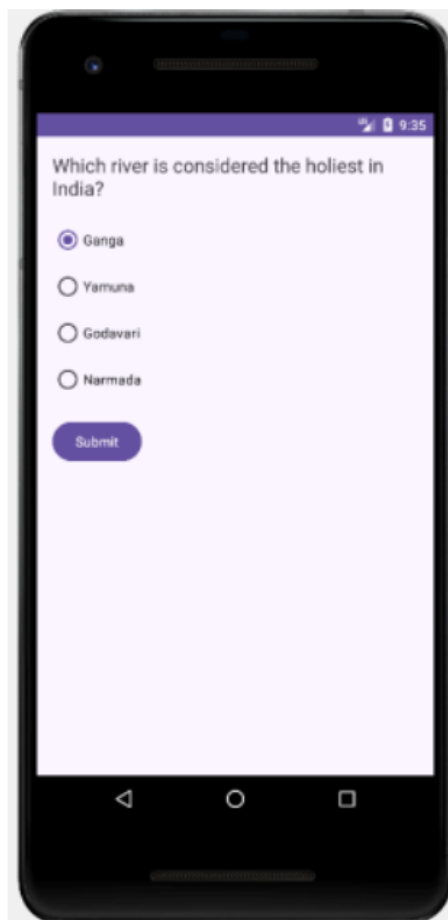
```

1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout
3 xmlns:android="http://schemas.android.com/apk/res/android" android:layout_width
4 ="match_parent"
5 android:layout_height="match_parent"
6 android:orientation="vertical"
7 android:padding="16dp">
8 <TextView
9 android:id="@+id/questionTextView"
10 android:layout_width="match_parent"
11 android:layout_height="wrap_content"
12 android:text="Question will appear here"
13 android:textSize="20sp"
14 android:layout_marginBottom="16dp"/>
15 <RadioGroup
16 android:id="@+id/optionsGroup"
17 android:layout_width="match_parent"
18 android:layout_height="wrap_content">
19 <RadioButton
20 android:id="@+id/option1"
21 android:layout_width="wrap_content"
22 android:layout_height="wrap_content"
23 android:text="Option 1"/>
24 <RadioButton
25 android:id="@+id/option2"
26 android:layout_width="wrap_content"
27 android:layout_height="wrap_content"
28 android:text="Option 2"/>
29 <RadioButton
30 android:id="@+id/option3"
31 android:layout_width="wrap_content"
32 android:layout_height="wrap_content"
33 android:text="Option 3"/>
34 <RadioButton
35 android:id="@+id/option4"

```

```
35 android:layout_width="wrap_content "  
36 android:layout_height="wrap_content "  
37 android:text="Option_4"/>  
38 </RadioGroup>  
39 <Button  
40 android:id="@+id/submitButton"  
41 android:layout_width="wrap_content "  
42 android:layout_height="wrap_content "  
43 android:text="Submit "  
44 android:layout_marginTop="16dp"/>  
45 </LinearLayout>
```

Output:



Mobile Computing

Assignment 11

Aim: Write a Program to demonstrate simple Animation Android/other.

Code:

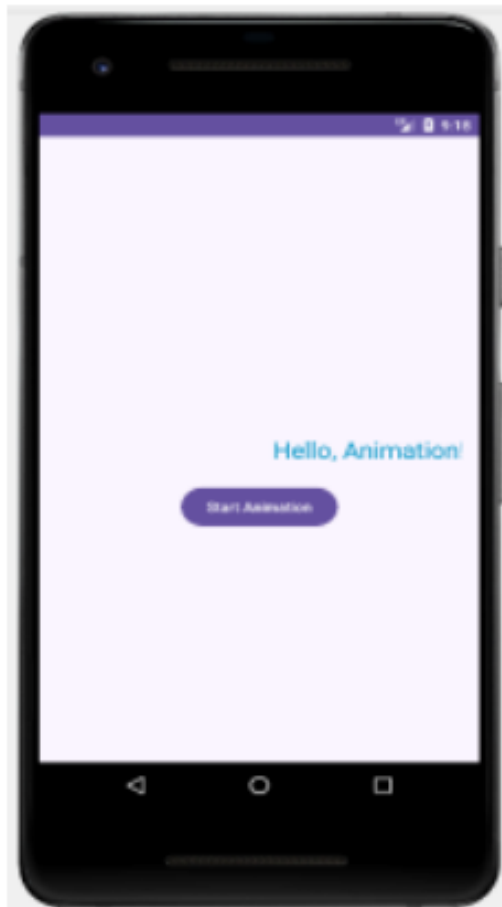
MainActivity.java:

```
1 package com.example.simpleanimationproject;
2 import android.animation.ObjectAnimator;
3 import android.os.Bundle;
4 import android.view.View;
5 import android.widget.Button;
6 import android.widget.TextView;
7 import androidx.appcompat.app.AppCompatActivity;
8 public class MainActivity extends AppCompatActivity {
9     @Override
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main);
13        TextView animatedText = findViewById(R.id.animatedText);
14        Button startAnimation = findViewById(R.id.startAnimation);
15        startAnimation.setOnClickListener(new View.OnClickListener() { @Override
16        public void onClick(View v) {
17            // Animate the TextView horizontally
18            ObjectAnimator animator = ObjectAnimator.ofFloat(
19                animatedText, "translationX", 0f, 500f);
20            animator.setDuration(2000); // Animation duration in
21            milliseconds
22            animator.start();
23        }
24    });
25    }
26    }
```

activity_main.xml:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <RelativeLayout
3     xmlns:android="http://schemas.android.com/apk/res/android" android:layout_width
4         ="match_parent"
5     android:layout_height="match_parent"
6     android:padding="16dp">
7     <TextView
8         android:id="@+id/animatedText"
9         android:layout_width="wrap_content"
10        android:layout_height="wrap_content"
11        android:text="Hello, Animation!"
12        android:textSize="24sp"
13        android:layout_centerInParent="true"
14        android:textColor="@android:color/holo_blue_dark"/>
15    <Button
16        android:id="@+id/startAnimation"
17        android:layout_width="wrap_content"
18        android:layout_height="wrap_content"
19        android:text="Start Animation"
20        android:layout_below="@id/animatedText"
21        android:layout_centerHorizontal="true"
22        android:layout_marginTop="20dp"/>
23 </RelativeLayout>
```


Output:



Mobile Computing

Assignment 12

Aim: Write a Program to insert and display data from database using Android/other.

Code:

MainActivity.java:

```
1 package com . example . mongodbapp ;
2 import ...
3 public class MainActivity extends AppCompatActivity {
4     private EditText nameInput , emailInput , ageInput ;
5     private Button insertButton , updateButton , deleteButton , fetchButton ;
6     private final ExecutorService executorService = Executors .
7         , newSingleThreadExecutor () ;
8     @Override
9     protected void onCreate ( Bundle savedInstanceState ) {
10         super . onCreate ( savedInstanceState ) ;
11         setContentView ( R . layout . activity_main ) ;
12         nameInput = findViewById ( R . id . nameInput ) ;
13         emailInput = findViewById ( R . id . emailInput ) ;
14         ageInput = findViewById ( R . id . ageInput ) ;
15         insertButton = findViewById ( R . id . insertButton ) ;
16         updateButton = findViewById ( R . id . updateButton ) ;
17         deleteButton = findViewById ( R . id . deleteButton ) ;
18         fetchButton = findViewById ( R . id . fetchButton ) ;
19     }
20     protected void onCreate ( Bundle savedInstanceState ) {
21         insertButton . setOnClickListener ( v -> executorService . execute ( this ::
22             , insertDocument ) ) ;
23         updateButton . setOnClickListener ( v -> executorService . execute ( this ::
24             , updateDocument ) ) ;
25         deleteButton . setOnClickListener ( v -> executorService . execute ( this ::
26             , deleteDocument ) ) ;
27         fetchButton . setOnClickListener ( v -> executorService . execute ( this ::
28             , fetchDocument ) ) ;}
29     private void insertDocument () {
30         try ( MongoClient mongoClient = MongoDBConnection . getMongoClient () ) {
31             MongoDB database = mongoClient . getDatabase ( "hospital_management
32                 , " ) ;
33             MongoCollection < Document > collection = database . getCollection ( "users" )
34             ,
35             Document document = new Document ( "name" , nameInput . getText () . toString
36                 ,
37                 . append ( "email" , emailInput . getText () . toString () )
38                 . append ( "age" , Integer . parseInt ( ageInput . getText () . toString () )
39                 ,
40             collection . insertOne ( document ) ;
41             runOnUiThread (() -> Toast . makeText ( this , "DocumentInserted!" , Toast .
42                 , LENGTH_SHORT ) . show () ) ;
43         } catch ( Exception e ) {
44             runOnUiThread (() -> Toast . makeText ( this , "Error:" + e . getMessage ()
45                 ,
46                 , Toast . LENGTH_SHORT ) . show () ) ;
47         }
48     }
49     private void updateDocument () {
50         try ( MongoClient mongoClient = MongoDBConnection . getMongoClient () ) {
51             MongoDB database = mongoClient . getDatabase ( "
52                 , "hospital_management" ) ;
53             MongoCollection < Document > collection = database . getCollection ( "
```

```

52 ,    _users_");
53 Document query = new Document ("_name_" , nameInput . getText () . toString
54 ,    () );
55 Document update = new Document ("_$set_" , new Document ("_email_" ,
56 ,    emailInput . getText () . toString () )
57 . append ("_age_" , Integer . parseInt ( ageInput . getText () .
58 ,    toString () ) ) );
59 collection . updateOne ( query , update );
60 runOnUiThread (() -> Toast . makeText ( this , "_Document_Updated_" ,
61 ,    Toast . LENGTH_SHORT ) . show () );
62 } catch ( Exception e ) {
63 runOnUiThread (() -> Toast . makeText ( this , "_Error_:_" + e . getMessage
64 ,    () , Toast . LENGTH_SHORT ) . show () );
65 }}
66 private void deleteDocument () {
67 try ( MongoClient mongoClient = MongoDBConnection . getMongoClient () ) {
68 MongoDB database = mongoClient . getDatabase ( "
69 ,    _hospital_management_" );
70 MongoCollection < Document > collection = database . getCollection ( "
71 ,    _users_" );
72 Document query = new Document ("_name_" , nameInput . getText () . toString
73 ,    () );
74 collection . deleteOne ( query );
75 }}
76 private void fetchDocument () {
77 try ( MongoClient mongoClient = MongoDBConnection . getMongoClient () ) {
78 MongoDB database = mongoClient . getDatabase ( "
79 ,    _hospital_management_" );
80 MongoCollection < Document > collection = database . getCollection ( "
81 ,    _users_" );
82 Document query = new Document ("_name_" , nameInput . getText () . toString
83 ,    () );
84 Document document = collection . find ( query ) . first ();
85 if ( document != null ) {
86 runOnUiThread (() -> {
87 emailInput . setText ( document . getString ("_email_" ) );
88 ageInput . setText ( String . valueOf ( document . getInteger ("_age_" )
89 ,    ) );
90 Toast . makeText ( this , "_Document_Fetched_" , Toast .
91 ,    LENGTH_SHORT ) . show () ;
92 } );
93 } else {
94 runOnUiThread (() -> Toast . makeText ( this , "_No_Document_Found_" ,
95 ,    Toast . LENGTH_SHORT ) . show () );
96 }
97 } catch ( Exception e ) {
98 runOnUiThread (() -> Toast . makeText ( this , "_Error_:_" + e . getMessage
99 ,    () , Toast . LENGTH_SHORT ) . show () );
100 }
101 }}

```

MongoDBConnecction.java:

```

1 package com . example . mongodbapp ;
2 import ...
3 public class MongoDBConnection {
4 private static final String CONNECTION_STRING = "_mongodb
5 ,    _://10.0.2.2:27017";
6 public static MongoClient getMongoClient () {
7 return MongoClients . create ( CONNECTION_STRING ) ;
8 }
9 }

```

activity_main.xml:

```

1 < LinearLayout
2 android : id = "_@_+id_/linearLayout_"
3 android : layout_width = "_match_parent_"
4 android : layout_height = "_wrap_content_"
5 android : orientation = "_vertical_" >
6 < Button
7 android : id = "_@_+id_/insertButton_"
8 android : layout_width = "_match_parent_"
9 android : layout_height = "_wrap_content_"
10 android : text = "_Insert_" / >
11 < Button
12 android : id = "_@_+id_/updateButton_"
13 android : layout_width = "_match_parent_"
14 android : layout_height = "_wrap_content_"
15 android : text = "_Update_" / >
16 < Button
17 android : id = "_@_+id_/deleteButton_"
18 android : layout_width = "_match_parent_"
19 android : layout_height = "_wrap_content_"
20 android : text = "_Delete_" / >
21 < Button
22 android : id = "_@_+id_/fetchButton_"
23 android : layout_width = "_match_parent_"
24 android : layout_height = "_wrap_content_"
25 android : text = "_Fetch_" / >
26 </ LinearLayout >
27 < LinearLayout
28 xmlns : android = "_http://schemas.android.com/apk/res/android_"
29 android : layout_width = "_match_parent_"
30 android : layout_height = "_match_parent_"
31 android : orientation = "_vertical_"
32 android : padding = "16dp" >
33 < EditText
34 android : id = "_@_+id_/nameInput_"
35 android : layout_width = "_match_parent_"
36 android : layout_height = "_wrap_content_"
37 android : hint = "_Name_"
38 android : inputType = "_text_" / >
39 < EditText
40 android : id = "_@_+id_/emailInput_"
41 android : layout_width = "_match_parent_"
42 android : layout_height = "_wrap_content_"
43 android : hint = "_Email_"
44 android : inputType = "_textEmailAddress_" / >
45 < EditText
46 android : id = "_@_+id_/ageInput_"
47 android : layout_width = "_match_parent_"
48 android : layout_height = "_wrap_content_"
49 android : hint = "_Age_"
50 android : inputType = "_number_" / >
51 </ LinearLayout >

```

Output:

