

Department of Computer Science and Engineering

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30 August 2021

UCS1711 - Mobile Application Development Lab

Exercise 4: Android Application Development using Database

Aim:

To create an application using a database with buttons for Create, Insert, Update, Delete, Retrieve. Perform appropriate operations for each.

Code:

Main Activity:

Design:

```

1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   tools:context=".MainActivity">
8
9   <Button
10     android:id="@+id/btn_insert"
11     android:layout_width="137dp"
12     android:layout_height="50dp"
13     android:layout_marginStart="44dp"
14     android:layout_marginLeft="44dp"
15     android:layout_marginTop="212dp"
16     android:text="INSERT"
17     app:layout_constraintStart_toStartOf="parent"
18     app:layout_constraintTop_toBottomOf="@+id/textView" /
19   >
20
21   <Button
22     android:id="@+id/btn_update"
23     android:layout_width="137dp"
24     android:layout_height="50dp"
25     android:layout_marginStart="204dp"
26     android:layout_marginLeft="204dp"
27     android:layout_marginTop="212dp"
28     android:text="UPDATE"
29     app:layout_constraintStart_toStartOf="parent"
30     app:layout_constraintTop_toBottomOf="@+id/textView" /
31   >
32
33   <Button
34     android:id="@+id/btn_delete"
35     android:layout_width="137dp"
36     android:layout_height="50dp"
37     android:layout_marginStart="44dp"
38     android:layout_marginLeft="44dp"
39     android:layout_marginTop="308dp"
40     android:text="DELETE"
41     app:layout_constraintStart_toStartOf="parent"
42     app:layout_constraintTop_toBottomOf="@+id/textView" /
43   >

```

```

42     <Button
43         android:id="@+id/btn_retrieve"
44         android:layout_width="137dp"
45         android:layout_height="50dp"
46         android:layout_marginStart="204dp"
47         android:layout_marginLeft="204dp"
48         android:layout_marginTop="308dp"
49         android:text="RETRIEVE"
50         app:layout_constraintStart_toStartOf="parent"
51         app:layout_constraintTop_toBottomOf="@+id/textView" /
>
52
53     <TextView
54         android:id="@+id/textView"
55         android:layout_width="221dp"
56         android:layout_height="45dp"
57         android:text="Employee Database"
58         android:textAppearance="@style/TextAppearance.
AppCompat.Large"
59         android:textSize="24sp"
60         app:layout_constraintBottom_toBottomOf="parent"
61         app:layout_constraintHorizontal_bias="0.449"
62         app:layout_constraintLeft_toLeftOf="parent"
63         app:layout_constraintRight_toRightOf="parent"
64         app:layout_constraintTop_toTopOf="parent"
65         app:layout_constraintVertical_bias="0.084" />
66
67     <Button
68         android:id="@+id/btn_create"
69         android:layout_width="137dp"
70         android:layout_height="50dp"
71         android:layout_marginStart="124dp"
72         android:layout_marginLeft="124dp"
73         android:layout_marginTop="104dp"
74         android:text="CREATE"
75         app:layout_constraintStart_toStartOf="parent"
76         app:layout_constraintTop_toBottomOf="@+id/textView" /
>
77
78 </androidx.constraintlayout.widget.ConstraintLayout>

```

Behaviour:

```

1 package com.example.database;
2

```

```

3 import androidx.appcompat.app.AlertDialog;
4 import androidx.appcompat.app.AppCompatActivity;
5
6 import android.content.DialogInterface;
7 import android.content.Intent;
8 import android.os.Bundle;
9
10 import android.view.View;
11 import android.widget.Button;
12
13 public class MainActivity extends AppCompatActivity {
14
15     private DBHelper dbHelper;
16     private Button btn_create, btn_insert, btn_update,
17     btn_delete, btn_retrieve;
18
19     @Override
20     protected void onCreate(Bundle savedInstanceState) {
21         super.onCreate(savedInstanceState);
22         setContentView(R.layout.activity_main);
23
24         btn_create = findViewById(R.id.btn_create);
25         btn_insert = findViewById(R.id.btn_insert);
26         btn_update = findViewById(R.id.btn_update);
27         btn_delete = findViewById(R.id.btn_delete);
28         btn_retrieve = findViewById(R.id.btn_retrieve);
29
30         btn_create.setOnClickListener(new View.
31         OnClickListener() {
32             @Override
33             public void onClick(View v) {
34                 dbHelper = new DBHelper(MainActivity.this);
35
36                 AlertDialog.Builder builder1 = new
37                 AlertDialog.Builder(MainActivity.this);
38                 builder1.setMessage("Table Employees created
39                 successfully!!");
40                 builder1.setCancelable(true);
41
42                 builder1.setPositiveButton(
43                     "GG",
44                     new DialogInterface.OnClickListener()
45                     {
46                         public void onClick(
47                         DialogInterface dialog, int id) {

```

```

42         dialog.cancel();
43     }
44     });
45     AlertDialog alert11 = builder1.create();
46     alert11.show();
47 }
48 });
49
50 btn_insert.setOnClickListener(new View.
OnClickListener() {
51     @Override
52     public void onClick(View v) {
53         Intent intent = new Intent(MainActivity.this,
InsertActivity.class);
54         startActivity(intent);
55     }
56 });
57
58 btn_update.setOnClickListener(new View.
OnClickListener() {
59     @Override
60     public void onClick(View v) {
61         Intent intent = new Intent(MainActivity.this,
UpdateActivity.class);
62         startActivity(intent);
63     }
64 });
65
66 btn_delete.setOnClickListener(new View.
OnClickListener() {
67     @Override
68     public void onClick(View v) {
69         Intent intent = new Intent(MainActivity.this,
DeleteActivity.class);
70         startActivity(intent);
71     }
72 });
73
74 btn_retrieve.setOnClickListener(new View.
OnClickListener() {
75     @Override
76     public void onClick(View v) {
77         Intent intent = new Intent(MainActivity.this,
RetrieveActivity.class);
78         startActivity(intent);

```

```
79         }  
80     });  
81  
82     }  
83 }
```

Insert Activity:

Design:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   app:layout_constraintTop_toTopOf="parent"
8   tools:context=".MainActivity">
9
10  <RadioButton
11      android:id="@+id/radioButtonOther"
12      android:layout_width="wrap_content"
13      android:layout_height="wrap_content"
14      android:layout_marginStart="4dp"
15      android:layout_marginLeft="4dp"
16      android:layout_marginTop="216dp"
17      android:text="Other"
18      app:layout_constraintStart_toEndOf="@+id/
radioButtonFemale"
19      app:layout_constraintTop_toTopOf="parent" />
20
21  <TextView
22      android:id="@+id/textView10"
23      android:layout_width="87dp"
24      android:layout_height="45dp"
25      android:layout_marginStart="40dp"
26      android:layout_marginLeft="40dp"
27      android:layout_marginTop="360dp"
28      android:text="Salary"
29      app:layout_constraintStart_toStartOf="parent"
30      app:layout_constraintTop_toTopOf="parent" />
31
32  <TextView
33      android:id="@+id/textView7"
34      android:layout_width="87dp"
35      android:layout_height="45dp"
36      android:layout_marginStart="40dp"
37      android:layout_marginLeft="40dp"
```

```

38         android:layout_marginTop="288dp"
39         android:text="Department"
40         app:layout_constraintStart_toStartOf="parent"
41         app:layout_constraintTop_toTopOf="parent" />
42
43     <TextView
44         android:id="@+id/textView6"
45         android:layout_width="87dp"
46         android:layout_height="45dp"
47         android:layout_marginStart="40dp"
48         android:layout_marginLeft="40dp"
49         android:layout_marginTop="220dp"
50         android:text="Gender"
51         app:layout_constraintStart_toStartOf="parent"
52         app:layout_constraintTop_toTopOf="parent" />
53
54     <TextView
55         android:id="@+id/textView3"
56         android:layout_width="87dp"
57         android:layout_height="45dp"
58         android:layout_marginStart="36dp"
59         android:layout_marginLeft="36dp"
60         android:layout_marginTop="144dp"
61         android:text="Employee Name"
62         app:layout_constraintStart_toStartOf="parent"
63         app:layout_constraintTop_toTopOf="parent" />
64
65     <androidx.appcompat.widget.Toolbar
66         android:id="@+id/toolbar"
67         android:layout_width="match_parent"
68         android:layout_height="?attr/actionBarSize"
69         android:background="?attr/colorPrimary"
70         app:layout_anchor="@+id/toolbar"
71         app:layout_anchorGravity="center"
72         tools:layout_editor_absoluteX="0dp"
73         tools:layout_editor_absoluteY="0dp" />
74
75     <TextView
76         android:id="@+id/textView"
77         android:layout_width="87dp"
78         android:layout_height="45dp"
79         android:layout_marginStart="36dp"
80         android:layout_marginLeft="36dp"
81         android:layout_marginTop="80dp"
82         android:text="Employee Code"

```



```

83         app:layout_constraintStart_toStartOf="parent"
84         app:layout_constraintTop_toTopOf="parent" />
85
86     <EditText
87         android:id="@+id/empcode_upd"
88         android:layout_width="wrap_content"
89         android:layout_height="wrap_content"
90         android:layout_marginStart="24dp"
91         android:layout_marginLeft="24dp"
92         android:layout_marginTop="25dp"
93         android:ems="10"
94         android:inputType="textPersonName"
95         app:layout_constraintStart_toEndOf="@+id/textView"
96         app:layout_constraintTop_toBottomOf="@+id/toolbar" />
97
98     <TextView
99         android:id="@+id/textView4"
100        android:layout_width="410dp"
101        android:layout_height="54dp"
102        android:fontFamily="sans-serif-condensed-medium"
103        android:gravity="center"
104        android:text="Insert Page"
105        android:textAppearance="@style/TextAppearance.
AppCompat.Body1"
106        android:textSize="20sp"
107        app:autoSizeTextType="uniform"
108        tools:layout_editor_absoluteX="0dp"
109        tools:layout_editor_absoluteY="1dp" />
110
111    <Spinner
112        android:id="@+id/spinner"
113        android:layout_width="208dp"
114        android:layout_height="31dp"
115        android:layout_marginStart="20dp"
116        android:layout_marginLeft="20dp"
117        android:layout_marginTop="288dp"
118        android:entries="@array/department"
119        app:layout_constraintStart_toEndOf="@+id/textView7"
120        app:layout_constraintTop_toTopOf="parent" />
121
122    <EditText
123        android:id="@+id/empsalary_upd"
124        android:layout_width="wrap_content"
125        android:layout_height="wrap_content"
126        android:layout_marginStart="20dp"

```

```

127         android:layout_marginLeft="20dp"
128         android:layout_marginTop="364dp"
129         android:ems="10"
130         android:inputType="time"
131         app:layout_constraintStart_toEndOf="@+id/textView10"
132         app:layout_constraintTop_toTopOf="parent" />
133
134     <Button
135         android:id="@+id/button_search"
136         android:layout_width="wrap_content"
137         android:layout_height="wrap_content"
138         android:layout_marginStart="144dp"
139         android:layout_marginLeft="144dp"
140         android:layout_marginTop="464dp"
141         android:onClick="submitFields"
142         android:text="Insert"
143         app:layout_constraintStart_toStartOf="parent"
144         app:layout_constraintTop_toTopOf="parent" />
145
146     <EditText
147         android:id="@+id/empname_upd"
148         android:layout_width="wrap_content"
149         android:layout_height="wrap_content"
150         android:layout_marginStart="24dp"
151         android:layout_marginLeft="24dp"
152         android:layout_marginTop="144dp"
153         android:ems="10"
154         android:inputType="textPersonName"
155         app:layout_constraintStart_toEndOf="@+id/textView3"
156         app:layout_constraintTop_toTopOf="parent" />
157
158     <RadioButton
159         android:id="@+id/radioButtonMale"
160         android:layout_width="wrap_content"
161         android:layout_height="wrap_content"
162         android:layout_marginStart="20dp"
163         android:layout_marginLeft="20dp"
164         android:layout_marginTop="216dp"
165         android:text="Male"
166         app:layout_constraintStart_toEndOf="@+id/textView6"
167         app:layout_constraintTop_toTopOf="@+id/toolbar" />
168
169     <RadioButton
170         android:id="@+id/radioButtonFemale"
171         android:layout_width="wrap_content"

```

```

172         android:layout_height="wrap_content"
173         android:layout_marginStart="8dp"
174         android:layout_marginLeft="8dp"
175         android:layout_marginTop="216dp"
176         android:text="Female"
177         app:layout_constraintStart_toEndOf="@+id/
radioButtonMale"
178         app:layout_constraintTop_toTopOf="parent" />
179
180 </androidx.constraintlayout.widget.ConstraintLayout>

```

Behaviour:

```

1 package com.example.database;
2
3 import androidx.appcompat.app.AlertDialog;
4 import androidx.appcompat.app.AppCompatActivity;
5
6 import android.content.DialogInterface;
7 import android.content.Intent;
8 import android.database.sqlite.SQLiteException;
9 import android.os.Bundle;
10 import android.view.View;
11 import android.widget.Button;
12 import android.widget.EditText;
13 import android.widget.RadioButton;
14 import android.widget.Spinner;
15 import android.widget.Toast;
16
17 public class InsertActivity extends AppCompatActivity {
18
19     EditText code, name, salary;
20     RadioButton male, female, other;
21     Spinner spin;
22     Button insert;
23     private DBHelper dbHelper;
24
25     @Override
26     protected void onCreate(Bundle savedInstanceState) {
27         super.onCreate(savedInstanceState);
28         setContentView(R.layout.activity_insert);
29
30         Intent intent = getIntent();
31
32         code = findViewById(R.id.empcode_upd);

```

```

33     name = findViewById(R.id.empname_upd);
34     salary = findViewById(R.id.empsalary_upd);
35     male = findViewById(R.id.radioButtonMale);
36     female = findViewById(R.id.radioButtonFemale);
37     other = findViewById(R.id.radioButtonOther);
38     spin = findViewById(R.id.spinner);
39     insert = findViewById(R.id.button_search);
40
41     male.setOnClickListener(new View.OnClickListener() {
42         @Override
43         public void onClick(View v) {
44             female.setChecked(false);
45             other.setChecked(false);
46         }
47     });
48     female.setOnClickListener(new View.OnClickListener()
49 {
50         @Override
51         public void onClick(View v) {
52             male.setChecked(false);
53             other.setChecked(false);
54         }
55     });
56     other.setOnClickListener(new View.OnClickListener() {
57         @Override
58         public void onClick(View v) {
59             male.setChecked(false);
60             female.setChecked(false);
61         }
62     });
63     insert.setOnClickListener(new View.OnClickListener()
64 {
65         @Override
66         public void onClick(View v) {
67             String empcode = code.getText().toString();
68             String empname = name.getText().toString();
69             String gender;
70             if (male.isChecked()) {
71                 gender = male.getText().toString();
72             } else if (female.isChecked()) {
73                 gender = female.getText().toString();
74             } else {
75                 gender = other.getText().toString();

```

```

76         String dept = spin.getSelectedItem().toString
77         ();
78         String sal = salary.getText().toString();
79         if (empname.length() == 0) {
80             name.requestFocus();
81             name.setError("FIELD CANNOT BE EMPTY");
82         } else if (!empname.matches("[a-zA-Z ]+")) {
83             name.requestFocus();
84             name.setError("ENTER ONLY ALPHABETICAL
85 CHARACTER");
86         } else if (empcode.length() == 0) {
87             code.requestFocus();
88             code.setError("FIELD CANNOT BE EMPTY");
89         } else if (!empcode.matches("[a-zA-Z0-9 ]+")) {
90             {
91                 code.requestFocus();
92                 code.setError("ENTER ONLY ALPHANUMERICAL
93 CHARACTER");
94             } else if (sal.length() == 0) {
95                 code.requestFocus();
96                 code.setError("FIELD CANNOT BE EMPTY");
97             } else if (!sal.matches("[0-9. ]+")) {
98                 code.requestFocus();
99                 code.setError("ENTER ONLY ALPHANUMERICAL
100 CHARACTER");
101             } else {
102                 dbHelper = new DBHelper(InsertActivity.
103 this);
104                 try {
105                     dbHelper.insertEmployee(empcode,
106 empname, gender, dept, sal);
107                     AlertDialog.Builder builder1 = new
108 AlertDialog.Builder(InsertActivity.this);
109                     builder1.setMessage("Record inserted
110 successfully!!");
111                     builder1.setCancelable(true);
112                     builder1.setPositiveButton(
113                         "GG",
114                         new DialogInterface.
115 OnClickListener() {
116                             public void onClick(
117 DialogInterface dialog, int id) {

```

```

110             dialog.cancel();
111         }
112     });
113     AlertDialog alert11 = builder1.create
114 ();
115     alert11.show();
116
117     code.setText("");
118     name.setText("");
119     male.setChecked(false);female.
120 setChecked(false);other.setChecked(false);
121     spin.setSelection(0);
122     salary.setText("");
123 }
124 catch(SQLiteException e){
125     Toast.makeText(InsertActivity.this,e.
126 toString(), Toast.LENGTH_LONG).show();
127 }
128 }
129 });
130 }

```

Update Activity:

Design:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   app:layout_constraintTop_toTopOf="parent"
8   tools:context=".MainActivity">
9
10  <RadioButton
11      android:id="@+id/radioButtonOther"
12      android:layout_width="wrap_content"
13      android:layout_height="wrap_content"
14      android:layout_marginStart="4dp"
15      android:layout_marginLeft="4dp"
16      android:layout_marginTop="216dp"
17      android:text="Other"
18      app:layout_constraintStart_toEndOf="@+id/
radioButtonFemale"
19      app:layout_constraintTop_toTopOf="parent" />
20
21  <TextView
22      android:id="@+id/textView10"
23      android:layout_width="87dp"
24      android:layout_height="45dp"
25      android:layout_marginStart="40dp"
26      android:layout_marginLeft="40dp"
27      android:layout_marginTop="360dp"
28      android:text="Salary"
29      app:layout_constraintStart_toStartOf="parent"
30      app:layout_constraintTop_toTopOf="parent" />
31
32  <TextView
33      android:id="@+id/textView7"
34      android:layout_width="87dp"
35      android:layout_height="45dp"
36      android:layout_marginStart="40dp"
37      android:layout_marginLeft="40dp"
```

```

38         android:layout_marginTop="288dp"
39         android:text="Department"
40         app:layout_constraintStart_toStartOf="parent"
41         app:layout_constraintTop_toTopOf="parent" />
42
43     <TextView
44         android:id="@+id/textView6"
45         android:layout_width="87dp"
46         android:layout_height="45dp"
47         android:layout_marginStart="40dp"
48         android:layout_marginLeft="40dp"
49         android:layout_marginTop="220dp"
50         android:text="Gender"
51         app:layout_constraintStart_toStartOf="parent"
52         app:layout_constraintTop_toTopOf="parent" />
53
54     <TextView
55         android:id="@+id/textView3"
56         android:layout_width="87dp"
57         android:layout_height="45dp"
58         android:layout_marginStart="36dp"
59         android:layout_marginLeft="36dp"
60         android:layout_marginTop="144dp"
61         android:text="Employee Name"
62         app:layout_constraintStart_toStartOf="parent"
63         app:layout_constraintTop_toTopOf="parent" />
64
65     <androidx.appcompat.widget.Toolbar
66         android:id="@+id/toolbar"
67         android:layout_width="match_parent"
68         android:layout_height="?attr/actionBarSize"
69         android:background="?attr/colorPrimary"
70         app:layout_anchor="@+id/toolbar"
71         app:layout_anchorGravity="center"
72         tools:layout_editor_absoluteX="0dp"
73         tools:layout_editor_absoluteY="0dp" />
74
75     <TextView
76         android:id="@+id/textView"
77         android:layout_width="87dp"
78         android:layout_height="45dp"
79         android:layout_marginStart="36dp"
80         android:layout_marginLeft="36dp"
81         android:layout_marginTop="80dp"
82         android:text="Employee Code"

```



```

83         app:layout_constraintStart_toStartOf="parent"
84         app:layout_constraintTop_toTopOf="parent" />
85
86     <EditText
87         android:id="@+id/empcode_upd"
88         android:layout_width="wrap_content"
89         android:layout_height="wrap_content"
90         android:layout_marginStart="24dp"
91         android:layout_marginLeft="24dp"
92         android:layout_marginTop="25dp"
93         android:ems="10"
94         android:inputType="textPersonName"
95         app:layout_constraintStart_toEndOf="@+id/textView"
96         app:layout_constraintTop_toBottomOf="@+id/toolbar" />
97
98     <TextView
99         android:id="@+id/textView4"
100        android:layout_width="410dp"
101        android:layout_height="54dp"
102        android:fontFamily="sans-serif-condensed-medium"
103        android:gravity="center"
104        android:text="Update Page"
105        android:textAppearance="@style/TextAppearance.
AppCompat.Body1"
106        android:textSize="20sp"
107        app:autoSizeTextType="uniform"
108        tools:layout_editor_absoluteX="0dp"
109        tools:layout_editor_absoluteY="1dp" />
110
111    <Spinner
112        android:id="@+id/spinner"
113        android:layout_width="208dp"
114        android:layout_height="31dp"
115        android:layout_marginStart="20dp"
116        android:layout_marginLeft="20dp"
117        android:layout_marginTop="288dp"
118        android:entries="@array/department"
119        app:layout_constraintStart_toEndOf="@+id/textView7"
120        app:layout_constraintTop_toTopOf="parent" />
121
122    <EditText
123        android:id="@+id/empsalary_upd"
124        android:layout_width="wrap_content"
125        android:layout_height="wrap_content"
126        android:layout_marginStart="20dp"

```

```

127         android:layout_marginLeft="20dp"
128         android:layout_marginTop="364dp"
129         android:ems="10"
130         android:inputType="time"
131         app:layout_constraintStart_toEndOf="@+id/textView10"
132         app:layout_constraintTop_toTopOf="parent" />
133
134     <Button
135         android:id="@+id/button_search"
136         android:layout_width="wrap_content"
137         android:layout_height="wrap_content"
138         android:layout_marginStart="144dp"
139         android:layout_marginLeft="144dp"
140         android:layout_marginTop="464dp"
141         android:onClick="submitFields"
142         android:text="Update"
143         app:layout_constraintStart_toStartOf="parent"
144         app:layout_constraintTop_toTopOf="parent" />
145
146     <EditText
147         android:id="@+id/empname_upd"
148         android:layout_width="wrap_content"
149         android:layout_height="wrap_content"
150         android:layout_marginStart="24dp"
151         android:layout_marginLeft="24dp"
152         android:layout_marginTop="144dp"
153         android:ems="10"
154         android:inputType="textPersonName"
155         app:layout_constraintStart_toEndOf="@+id/textView3"
156         app:layout_constraintTop_toTopOf="parent" />
157
158     <RadioButton
159         android:id="@+id/radioButtonMale"
160         android:layout_width="wrap_content"
161         android:layout_height="wrap_content"
162         android:layout_marginStart="20dp"
163         android:layout_marginLeft="20dp"
164         android:layout_marginTop="216dp"
165         android:text="Male"
166         app:layout_constraintStart_toEndOf="@+id/textView6"
167         app:layout_constraintTop_toTopOf="@+id/toolbar" />
168
169     <RadioButton
170         android:id="@+id/radioButtonFemale"
171         android:layout_width="wrap_content"

```

```

172         android:layout_height="wrap_content"
173         android:layout_marginStart="8dp"
174         android:layout_marginLeft="8dp"
175         android:layout_marginTop="216dp"
176         android:text="Female"
177         app:layout_constraintStart_toEndOf="@+id/
radioButtonMale"
178         app:layout_constraintTop_toTopOf="parent" />
179
180 </androidx.constraintlayout.widget.ConstraintLayout>

```

Behaviour:

```

1 package com.example.database;
2
3 import androidx.appcompat.app.AlertDialog;
4 import androidx.appcompat.app.AppCompatActivity;
5
6 import android.content.DialogInterface;
7 import android.content.Intent;
8 import android.database.sqlite.SQLiteException;
9 import android.os.Bundle;
10 import android.view.View;
11 import android.widget.Button;
12 import android.widget.EditText;
13 import android.widget.RadioButton;
14 import android.widget.Spinner;
15 import android.widget.Toast;
16
17 public class UpdateActivity extends AppCompatActivity {
18
19     EditText code, name, salary;
20     RadioButton male, female, other;
21     Spinner spin;
22     Button insert;
23     private DBHelper dbHelper;
24
25     @Override
26     protected void onCreate(Bundle savedInstanceState) {
27         super.onCreate(savedInstanceState);
28         setContentView(R.layout.activity_update);
29
30         Intent intent = getIntent();
31
32         code = findViewById(R.id.empcode_upd);

```

```

33     name = findViewById(R.id.empname_upd);
34     salary = findViewById(R.id.empsalary_upd);
35     male = findViewById(R.id.radioButtonMale);
36     female = findViewById(R.id.radioButtonFemale);
37     other = findViewById(R.id.radioButtonOther);
38     spin = findViewById(R.id.spinner);
39     insert = findViewById(R.id.button_search);
40
41     male.setOnClickListener(new View.OnClickListener() {
42         @Override
43         public void onClick(View v) {
44             female.setChecked(false);
45             other.setChecked(false);
46         }
47     });
48     female.setOnClickListener(new View.OnClickListener()
49 {
50         @Override
51         public void onClick(View v) {
52             male.setChecked(false);
53             other.setChecked(false);
54         }
55     });
56     other.setOnClickListener(new View.OnClickListener() {
57         @Override
58         public void onClick(View v) {
59             male.setChecked(false);
60             female.setChecked(false);
61         }
62     });
63     insert.setOnClickListener(new View.OnClickListener()
64 {
65         @Override
66         public void onClick(View v) {
67             String empcode = code.getText().toString();
68             String empname = name.getText().toString();
69             String gender;
70             if (male.isChecked()) {
71                 gender = male.getText().toString();
72             } else if (female.isChecked()) {
73                 gender = female.getText().toString();
74             } else {
75                 gender = other.getText().toString();

```

```

76         String dept = spin.getSelectedItem().toString
77         ();
78         String sal = salary.getText().toString();
79         if (empname.length() == 0) {
80             name.requestFocus();
81             name.setError("FIELD CANNOT BE EMPTY");
82         } else if (!empname.matches("[a-zA-Z ]+")) {
83             name.requestFocus();
84             name.setError("ENTER ONLY ALPHABETICAL
85 CHARACTER");
86         } else if (empcode.length() == 0) {
87             code.requestFocus();
88             code.setError("FIELD CANNOT BE EMPTY");
89         } else if (!empcode.matches("[a-zA-Z0-9 ]+")) {
90             code.requestFocus();
91             code.setError("ENTER ONLY ALPHANUMERICAL
92 CHARACTER");
93         } else if (sal.length() == 0) {
94             code.requestFocus();
95             code.setError("FIELD CANNOT BE EMPTY");
96         } else if (!sal.matches("[0-9. ]+")) {
97             code.requestFocus();
98             code.setError("ENTER ONLY ALPHANUMERICAL
99 CHARACTER");
100         } else {
101             try{
102                 dbHelper = new DBHelper(
103 UpdateActivity.this);
104                 dbHelper.updateEmployee(empcode,
105 empname, gender, dept, sal);
106
107                 AlertDialog.Builder builder1 = new
108 AlertDialog.Builder(UpdateActivity.this);
109                 builder1.setMessage("Record updated
110 successfully!!");
111                 builder1.setCancelable(true);
112
113                 builder1.setPositiveButton(
114                     "GG",
115                     new DialogInterface.
116 OnClickListner() {
117
118                     public void onClick(
119 DialogInterface dialog, int id) {

```

```

110             dialog.cancel();
111         }
112     });
113     AlertDialog alert11 = builder1.create
114 ();
115     alert11.show();
116     code.setText("");
117     name.setText("");
118     male.setChecked(false);female.
119 setChecked(false);other.setChecked(false);
120     spin.setSelection(0);
121     salary.setText("");
122 }
123     catch(SQLiteException e){
124         Toast.makeText(UpdateActivity.this,e.
125 toString(), Toast.LENGTH_LONG).show();
126     }
127 }
128 });
129 }
130 }

```

Delete Activity:

Design:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   app:layout_constraintTop_toTopOf="parent"
8   tools:context=".MainActivity">
9
10  <androidx.appcompat.widget.Toolbar
11      android:id="@+id/toolbar"
12      android:layout_width="match_parent"
13      android:layout_height="?attr/actionBarSize"
14      android:background="?attr/colorPrimary"
15      app:layout_anchor="@+id/toolbar"
16      app:layout_anchorGravity="center"
17      tools:layout_editor_absoluteX="0dp"
18      tools:layout_editor_absoluteY="0dp" />
19
20  <TextView
21      android:id="@+id/textView"
22      android:layout_width="87dp"
23      android:layout_height="45dp"
24      android:layout_marginStart="36dp"
25      android:layout_marginLeft="36dp"
26      android:layout_marginTop="80dp"
27      android:text="Employee Code"
28      app:layout_constraintStart_toStartOf="parent"
29      app:layout_constraintTop_toTopOf="parent" />
30
31  <EditText
32      android:id="@+id/empcode_upd"
33      android:layout_width="wrap_content"
34      android:layout_height="wrap_content"
35      android:layout_marginStart="24dp"
36      android:layout_marginLeft="24dp"
37      android:layout_marginTop="25dp"
38      android:ems="10"
```

```

39         android:inputType="textPersonName"
40         app:layout_constraintStart_toEndOf="@+id/textView"
41         app:layout_constraintTop_toBottomOf="@+id/toolbar" />
42
43     <TextView
44         android:id="@+id/textView4"
45         android:layout_width="410dp"
46         android:layout_height="54dp"
47         android:fontFamily="sans-serif-condensed-medium"
48         android:gravity="center"
49         android:text="Delete Page"
50         android:textAppearance="@style/TextAppearance.
AppCompat.Body1"
51         android:textSize="20sp"
52         app:autoSizeTextType="uniform"
53         tools:layout_editor_absoluteX="0dp"
54         tools:layout_editor_absoluteY="1dp" />
55
56     <Button
57         android:id="@+id/button_search"
58         android:layout_width="wrap_content"
59         android:layout_height="wrap_content"
60         android:layout_marginStart="128dp"
61         android:layout_marginLeft="128dp"
62         android:layout_marginTop="184dp"
63         android:text="Delete"
64         app:layout_constraintStart_toStartOf="parent"
65         app:layout_constraintTop_toTopOf="parent" />
66
67 </androidx.constraintlayout.widget.ConstraintLayout>

```

Behaviour:

```

1 package com.example.database;
2
3 import androidx.appcompat.app.AlertDialog;
4 import androidx.appcompat.app.AppCompatActivity;
5
6 import android.content.DialogInterface;
7 import android.content.Intent;
8 import android.database.sqlite.SQLiteException;
9 import android.os.Bundle;
10 import android.view.View;
11 import android.widget.Button;
12 import android.widget.EditText;

```



```

13 import android.widget.TextView;
14 import android.widget.Toast;
15
16 public class DeleteActivity extends AppCompatActivity {
17
18     EditText code;
19     Button delete;
20     private DBHelper dbHelper;
21
22     @Override
23     protected void onCreate(Bundle savedInstanceState) {
24         super.onCreate(savedInstanceState);
25         setContentView(R.layout.activity_delete);
26
27         Intent intent = getIntent();
28
29         code = findViewById(R.id.empcode_upd);
30         delete = findViewById(R.id.button_search);
31
32         delete.setOnClickListener(new View.OnClickListener()
33         {
34             @Override
35             public void onClick(View v) {
36                 String empcode = code.getText().toString();
37
38                 if (empcode.length() == 0) {
39                     code.requestFocus();
40                     code.setError("FIELD CANNOT BE EMPTY");
41                 } else if (!empcode.matches("[a-zA-Z0-9 ]+"))
42                 {
43                     code.requestFocus();
44                     code.setError("ENTER ONLY ALPHANUMERICAL
45 CHARACTER");
46                 }
47
48                 dbHelper = new DBHelper(DeleteActivity.this);
49                 try{
50                     dbHelper.deleteEmployee(empcode);
51
52                     AlertDialog.Builder builder1 = new
53 AlertDialog.Builder(DeleteActivity.this);
54                     builder1.setMessage("Record deleted
55 successfully!!");
56                     builder1.setCancelable(true);

```

```

53         builder1.setPositiveButton(
54             "GG",
55             new DialogInterface.
OnClickListener() {
56                 public void onClick(
57                     DialogInterface dialog, int id) {
58                     dialog.cancel();
59                 }
60                 });
61                 AlertDialog alert11 = builder1.create();
62                 alert11.show();
63                 code.setText("");
64             }
65             catch(SQLException e){
66                 Toast.makeText(DeleteActivity.this,e.
toString(), Toast.LENGTH_LONG).show();
67             }
68         });
69     }
70 }

```

Retrieve Activity:

Design:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   app:layout_constraintTop_toTopOf="parent"
8   tools:context=".MainActivity">
9
10  <TextView
11      android:id="@+id/salary_display"
12      android:layout_width="193dp"
13      android:layout_height="46dp"
14      android:layout_marginStart="144dp"
15      android:layout_marginLeft="144dp"
16      android:layout_marginTop="520dp"
17      app:layout_constraintStart_toStartOf="parent"
18      app:layout_constraintTop_toTopOf="parent" />
19
20  <TextView
21      android:id="@+id/dept_display"
22      android:layout_width="193dp"
23      android:layout_height="46dp"
24      android:layout_marginStart="144dp"
25      android:layout_marginLeft="144dp"
26      android:layout_marginTop="464dp"
27      app:layout_constraintStart_toStartOf="parent"
28      app:layout_constraintTop_toTopOf="parent" />
29
30  <TextView
31      android:id="@+id/gender_display"
32      android:layout_width="193dp"
33      android:layout_height="46dp"
34      android:layout_marginStart="144dp"
35      android:layout_marginLeft="144dp"
36      android:layout_marginTop="400dp"
37      app:layout_constraintStart_toStartOf="parent"
38      app:layout_constraintTop_toTopOf="parent" />
```

```

39
40 <TextView
41     android:id="@+id/empname_display"
42     android:layout_width="193dp"
43     android:layout_height="46dp"
44     android:layout_marginStart="152dp"
45     android:layout_marginLeft="152dp"
46     android:layout_marginTop="336dp"
47     app:layout_constraintStart_toStartOf="parent"
48     app:layout_constraintTop_toTopOf="parent" />
49
50 <TextView
51     android:id="@+id/textView10"
52     android:layout_width="87dp"
53     android:layout_height="45dp"
54     android:layout_marginStart="44dp"
55     android:layout_marginLeft="44dp"
56     android:layout_marginTop="520dp"
57     android:text="Salary"
58     app:layout_constraintStart_toStartOf="parent"
59     app:layout_constraintTop_toTopOf="parent" />
60
61 <TextView
62     android:id="@+id/textView7"
63     android:layout_width="87dp"
64     android:layout_height="45dp"
65     android:layout_marginStart="44dp"
66     android:layout_marginLeft="44dp"
67     android:layout_marginTop="464dp"
68     android:text="Department"
69     app:layout_constraintStart_toStartOf="parent"
70     app:layout_constraintTop_toTopOf="parent" />
71
72 <TextView
73     android:id="@+id/textView6"
74     android:layout_width="87dp"
75     android:layout_height="45dp"
76     android:layout_marginStart="44dp"
77     android:layout_marginLeft="44dp"
78     android:layout_marginTop="404dp"
79     android:text="Gender"
80     app:layout_constraintStart_toStartOf="parent"
81     app:layout_constraintTop_toTopOf="parent" />
82
83 <TextView

```

```

84         android:id="@+id/textView3"
85         android:layout_width="87dp"
86         android:layout_height="45dp"
87         android:layout_marginStart="44dp"
88         android:layout_marginLeft="44dp"
89         android:layout_marginTop="340dp"
90         android:text="Employee Name"
91         app:layout_constraintStart_toStartOf="parent"
92         app:layout_constraintTop_toTopOf="parent" />
93
94     <androidx.appcompat.widget.Toolbar
95         android:id="@+id/toolbar"
96         android:layout_width="match_parent"
97         android:layout_height="?attr/actionBarSize"
98         android:background="?attr/colorPrimary"
99         app:layout_anchor="@+id/toolbar"
100        app:layout_anchorGravity="center"
101        tools:layout_editor_absoluteX="0dp"
102        tools:layout_editor_absoluteY="0dp" />
103
104    <TextView
105        android:id="@+id/textView"
106        android:layout_width="87dp"
107        android:layout_height="45dp"
108        android:layout_marginStart="36dp"
109        android:layout_marginLeft="36dp"
110        android:layout_marginTop="80dp"
111        android:text="Employee Code"
112        app:layout_constraintStart_toStartOf="parent"
113        app:layout_constraintTop_toTopOf="parent" />
114
115    <EditText
116        android:id="@+id/empcode_upd"
117        android:layout_width="wrap_content"
118        android:layout_height="wrap_content"
119        android:layout_marginStart="24dp"
120        android:layout_marginLeft="24dp"
121        android:layout_marginTop="25dp"
122        android:ems="10"
123        android:inputType="textPersonName"
124        app:layout_constraintStart_toEndOf="@+id/textView"
125        app:layout_constraintTop_toBottomOf="@+id/toolbar" />
126
127    <TextView
128        android:id="@+id/textView4"

```

```

129         android:layout_width="410dp"
130         android:layout_height="54dp"
131         android:fontFamily="sans-serif-condensed-medium"
132         android:gravity="center"
133         android:text="Retrieve Page"
134         android:textAppearance="@style/TextAppearance.
    AppCompatActivity.Body1"
135         android:textSize="20sp"
136         app:autoSizeTextType="uniform"
137         tools:layout_editor_absoluteX="0dp"
138         tools:layout_editor_absoluteY="1dp" />
139
140     <Button
141         android:id="@+id/button_search"
142         android:layout_width="wrap_content"
143         android:layout_height="wrap_content"
144         android:layout_marginStart="128dp"
145         android:layout_marginLeft="128dp"
146         android:layout_marginTop="184dp"
147         android:text="Search"
148         app:layout_constraintStart_toStartOf="parent"
149         app:layout_constraintTop_toTopOf="parent" />
150
151 </androidx.constraintlayout.widget.ConstraintLayout>

```

Behaviour:

```

1 package com.example.database;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.content.Intent;
6 import android.database.Cursor;
7 import android.database.sqlite.SQLiteException;
8 import android.os.Bundle;
9 import android.view.View;
10 import android.widget.Button;
11 import android.widget.EditText;
12 import android.widget.TextView;
13 import android.widget.Toast;
14
15 public class RetrieveActivity extends AppCompatActivity {
16
17     EditText code;
18     TextView name, gender, dept, salary;

```

```

19     Button search;
20     private DBHelper dbHelper;
21     @Override
22     protected void onCreate(Bundle savedInstanceState) {
23         super.onCreate(savedInstanceState);
24         setContentView(R.layout.activity_retrieve);
25
26         Intent intent = getIntent();
27
28         code = findViewById(R.id.empcode_upd);
29         search = findViewById(R.id.button_search);
30
31         name = findViewById(R.id.empname_display);
32         gender = findViewById(R.id.gender_display);
33         dept = findViewById(R.id.dept_display);
34         salary = findViewById(R.id.salary_display);
35
36         search.setOnClickListener(new View.OnClickListener()
37         {
38             @Override
39             public void onClick(View v) {
40                 String empcode = code.getText().toString();
41
42                 if (empcode.length() == 0) {
43                     code.requestFocus();
44                     code.setError("FIELD CANNOT BE EMPTY");
45                 } else if (!empcode.matches("[a-zA-Z0-9 ]+"))
46                 {
47                     code.requestFocus();
48                     code.setError("ENTER ONLY ALPHANUMERICAL
49 CHARACTER");
50                 }
51
52                 dbHelper = new DBHelper(RetrieveActivity.this
53 );
54
55                 String[] vals = dbHelper.retrieveEmployee(
56 empcode);
57
58                 // Cursor c = dbHelper.retrieveEmployee(
59 empcode);
60
61                 // if(c.moveToNext()){
62                 //     name.setText(c.getString(0));
63                 // }
64                 if(vals == null) {
65                     Toast.makeText(RetrieveActivity.this, "

```

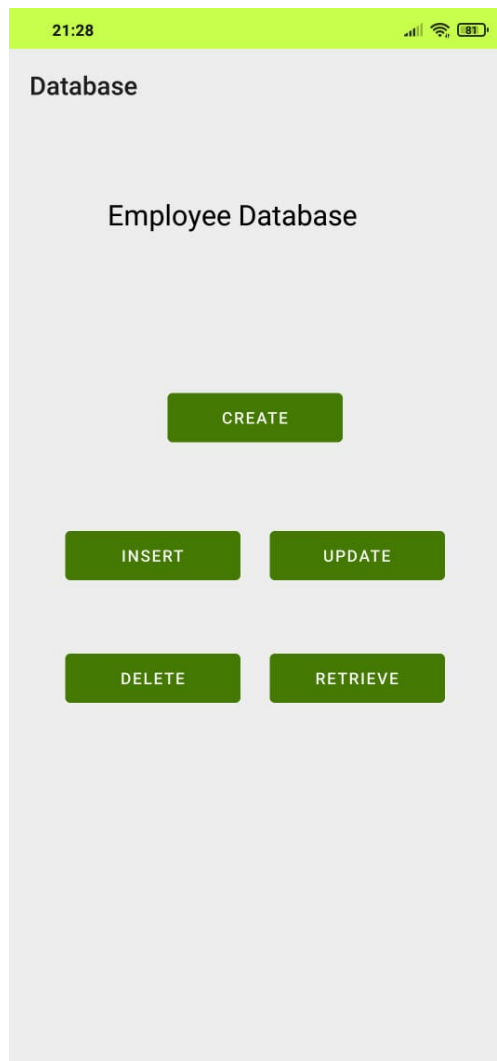
```

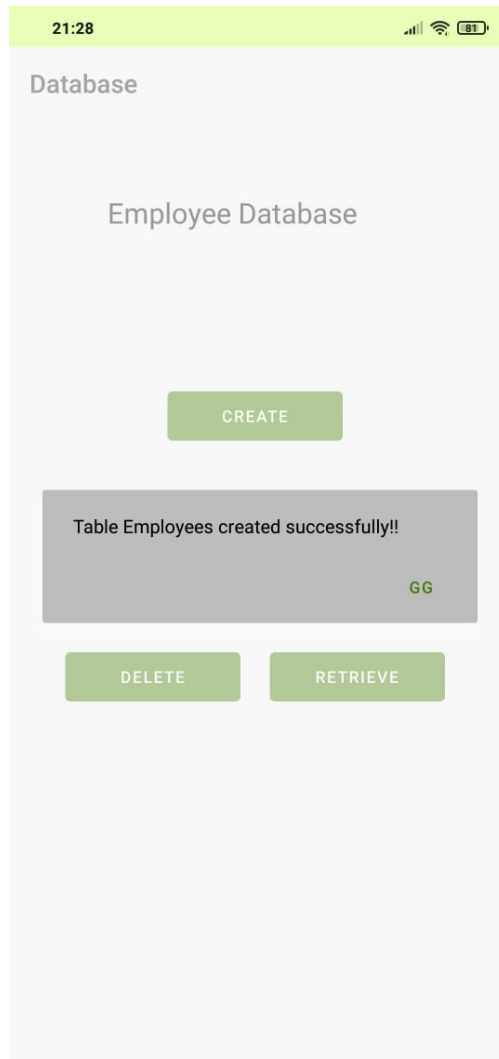
58         Nothing returned", Toast.LENGTH_LONG).show();
59         return;
60     }
61     else {
62         String empname = vals[0];
63         String sex = vals[1];
64         String department = vals[2];
65         String sal = vals[3];
66
67         name.setText(empname);
68         gender.setText(sex);
69         dept.setText(department);
70         salary.setText(sal);
71
72         code.setText("");
73     }
74 }));
75
76 }
77 }

```


Output:

Main Activity:





Insert Activity:

21:28

← Database

Insert Page

Employee Code

Employee Name




Gender ☐ Male ☐ Female ☐ Other


Department

Salary

INSERT

21:29

 Database

Insert Page

Employee Code

E005


Employee Name

shiva

Gender

☒ Male ☐ Female ☐ Other

Department

CSE 

Salary

100000

INSERT

21:30

BT

←

Database

Insert Page

Employee Code

Employee Name

Gender

☐

 Male

☐

 Female

☐

 Other

Record inserted successfully!!

GG

INSERT

Update Activity:

21:29

← Database

Update Page

Employee Code

Employee Name

Gender ☐ Male ☐ Female ☐ Other

Department

Salary

UPDATE

21:29

Database

Update Page

Employee Code

E005

Employee Name

shiva

Gender

☒ Male ☐ Female ☐ Other

Department

IT

Salary

110000

UPDATE

21:30

5G

←

Database

Update Page

Employee Code

Employee Name

Gender

☐

 Male

☐

 Female

☐

 Other

Record updated successfully!!

GG

UPDATE

Delete Activity:

The screenshot shows a mobile application interface for deleting a record. At the top, a status bar displays the time 21:30 and signal icons. Below this is a navigation bar with a back arrow and the text 'Database'. The main content area has a dark green header with the text 'Delete Page'. Below the header, there is a form with a label 'Employee Code' and a text input field containing 'E005'. A red underline is visible under the input field. Below the input field is a green button with the text 'DELETE'.

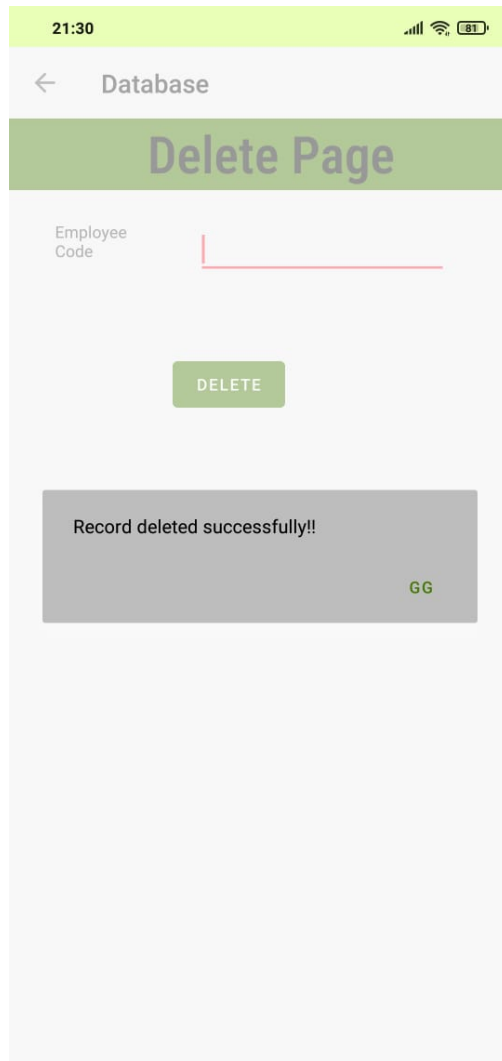
21:30

← Database

Delete Page

Employee Code E005

DELETE



Retrieve Activity:

The screenshot shows a mobile application interface. At the top, a status bar displays the time 21:31, signal strength, Wi-Fi, and battery level. Below this is a navigation bar with a back arrow and the text "Database". The main content area has a dark green header with the text "Retrieve Page" in white. Below the header, there is a form with the following elements:

- A label "Employee Code" followed by a text input field containing "E005".
- A green button labeled "SEARCH".
- A list of labels for data retrieval: "Employee Name", "Gender", "Department", and "Salary".

21:31

Database

Retrieve Page

Employee Code

SEARCH

Employee Name

shiva

Gender

Male

Department

CSE

Salary

100000