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Github: https://github.com/aryalaashish121/STW300CEM_Second_Assignment.git

1. Body Mass Index(BMI) Calculator

Layout file:

```
activity_main.xml x MainActivity.java x CalculatorGetterAndSetter.java x
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout 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   android:orientation="vertical"
9   android:padding="15dp">
10
11   <TextView
12     android:layout_width="match_parent"
13     android:layout_height="wrap_content"
14     android:text="Test You BMI"
15     android:textColor="#4D17AA"
16     android:textSize="36dp"
17     android:fontFamily="sans-serif-black"
18     app:layout_constraintBottom_toBottomOf="parent"
19     app:layout_constraintLeft_toLeftOf="parent"
20     app:layout_constraintRight_toRightOf="parent"
21     app:layout_constraintTop_toTopOf="parent"
22     android:textAlignment="center"/>
23
```

```
activity_main.xml x MainActivity.java x CalculatorGetterAndSetter.java x
24 <LinearLayout
25   android:layout_marginTop="20dp"
26   android:layout_width="wrap_content"
27   android:layout_height="wrap_content"
28   android:orientation="horizontal"
29   android:paddingBottom="20px">
30
31   <TextView
32     android:layout_width="match_parent"
33     android:layout_height="wrap_content"
34     android:text="Your Height:"
35     android:textAlignment="center"
36     android:layout_marginEnd="25dp"
37     android:textSize="30dp"
38     android:fontFamily="sans-serif-black"/>
39
40   <EditText
41     android:layout_width="wrap_content"
42     android:layout_height="wrap_content"
43     android:hint="Height here.."
44     android:id="@+id/user_height"
45     android:textSize="20dp"/>
46
47 </LinearLayout>
48
49 <LinearLayout
```

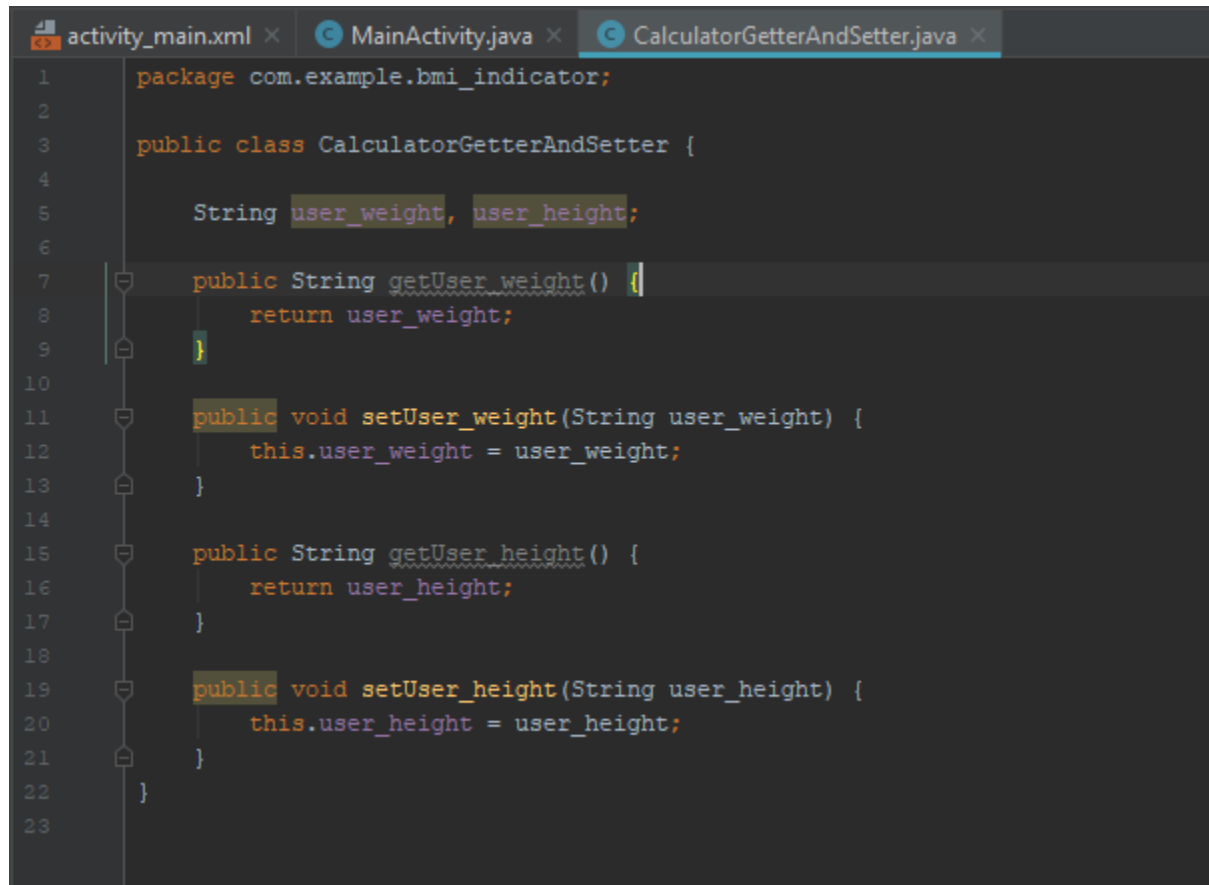
```
activity_main.xml x MainActivity.java x CalculatorGetterAndSetter.java x
48
49 <LinearLayout
50     android:layout_marginTop="20dp"
51     android:layout_width="wrap_content"
52     android:layout_height="wrap_content"
53     android:orientation="horizontal"
54     android:paddingBottom="20px">
55
56     <TextView
57         android:layout_width="match_parent"
58         android:layout_height="wrap_content"
59         android:text="Your Weight:"
60         android:textAlignment="center"
61         android:layout_marginEnd="25dp"
62         android:textSize="30dp"
63         android:fontFamily="sans-serif-black"/>
64
65     <EditText
66         android:layout_width="wrap_content"
67         android:layout_height="wrap_content"
68         android:hint="Weight"
69         android:id="@+id/user_weight"
70         android:textSize="20dp"/>
71
72 </LinearLayout>
73
```

```
activity_main.xml x MainActivity.java x CalculatorGetterAndSetter.java x
73
74 <Button
75     android:layout_width="match_parent"
76     android:layout_height="wrap_content"
77     android:text="Compute BMI"
78     android:textSize="25dp"
79     android:id="@+id/btn_bmi"/>
80
81 <LinearLayout
82     android:layout_width="wrap_content"
83     android:layout_height="wrap_content"
84     android:layout_marginTop="100dp"
85     android:orientation="vertical"
86     android:textAlignment="center">
87
88     <TextView
89         android:layout_width="wrap_content"
90         android:layout_height="wrap_content"
91         android:text="You BMI"
92         android:textSize="25dp"
93         android:layout_marginLeft="100dp"
94         android:textColor="#253"
95         android:fontFamily="sans-serif-condensed-medium"/>
96
97     <TextView
98         android:layout_width="100dp"
99         android:layout_height="100dp"
100        android:hint="Your Value"
101        android:layout_marginLeft="100dp"
102        android:id="@+id/bmi_result"/>
103
104 </LinearLayout>
105
```

Main Activity file:

```
activity_main.xml x MainActivity.java x CalculatorGetterAndSetter.java x
4      import android.view.View;
5      import android.widget.Button;
6      import android.widget.EditText;
7      import android.widget.TextView;
8      import android.widget.Toast;
9      public class MainActivity extends AppCompatActivity {
10         EditText u_height, u_weight;
11         TextView bmi;
12         float h,w,res;
13         Button btn_Calculate;
14         CalculatorGetterAndSetter values = new CalculatorGetterAndSetter();
15
16         @Override
17         protected void onCreate(Bundle savedInstanceState) {
18             super.onCreate(savedInstanceState);
19             setContentView(R.layout.activity_main);
20
21             u_height = findViewById(R.id.user_height);
22             u_weight = findViewById(R.id.user_weight);
23             btn_Calculate = findViewById(R.id.btn_bmi);
24             bmi = findViewById(R.id.bmi_result);
25
26             btn_Calculate.setOnClickListener((v) -> {
29                 values.setUser_weight(u_weight.getText().toString());
30                 values.setUser_height(u_height.getText().toString());
31                 w=Float.parseFloat(u_weight.getText().toString());
32                 h=Float.parseFloat(u_height.getText().toString());
33                 h=h/100;
34                 h=Float.parseFloat(u_height.getText().toString());
35                 h=h/100;
36                 res=w/(h*h);
37                 if(res<18.5)
38                 {
39                     Toast.makeText(context MainActivity.this, text "You are underweight.", Toast.LENGTH_SHORT).show();
40                 }
41                 else if(res>=18.5 && res<=24.9)
42                 {
43                     Toast.makeText(context MainActivity.this, text "Congratulations!! you got Normal weight.", Toast.LENGTH_SHORT).show();
44                 }
45                 else if(res==25 || res<=29.9)
46                 {
47                     Toast.makeText(context MainActivity.this, text "You are overweight", Toast.LENGTH_SHORT).show();
48                 }
49                 else if(res>30)
50                 {
51                     Toast.makeText(context MainActivity.this, text "Sorry but you got some serious obesity problem", Toast.LENGTH_SHORT).show();
52                 }
53             });
54         }
55     }
```

Controller file:

A screenshot of an IDE window showing the 'CalculatorGetterAndSetter.java' file. The window has three tabs: 'activity_main.xml', 'MainActivity.java', and 'CalculatorGetterAndSetter.java'. The code is in Java and defines a class 'CalculatorGetterAndSetter' with two attributes, 'user_weight' and 'user_height', and four methods: 'getUser_weight()', 'setUser_weight()', 'getUser_height()', and 'setUser_height()'. The code is as follows:

```
1 package com.example.bmi_indicator;
2
3 public class CalculatorGetterAndSetter {
4
5     String user_weight, user_height;
6
7     public String getUser_weight() {
8         return user_weight;
9     }
10
11     public void setUser_weight(String user_weight) {
12         this.user_weight = user_weight;
13     }
14
15     public String getUser_height() {
16         return user_height;
17     }
18
19     public void setUser_height(String user_height) {
20         this.user_height = user_height;
21     }
22 }
23
```

1. Number to Figure conversion

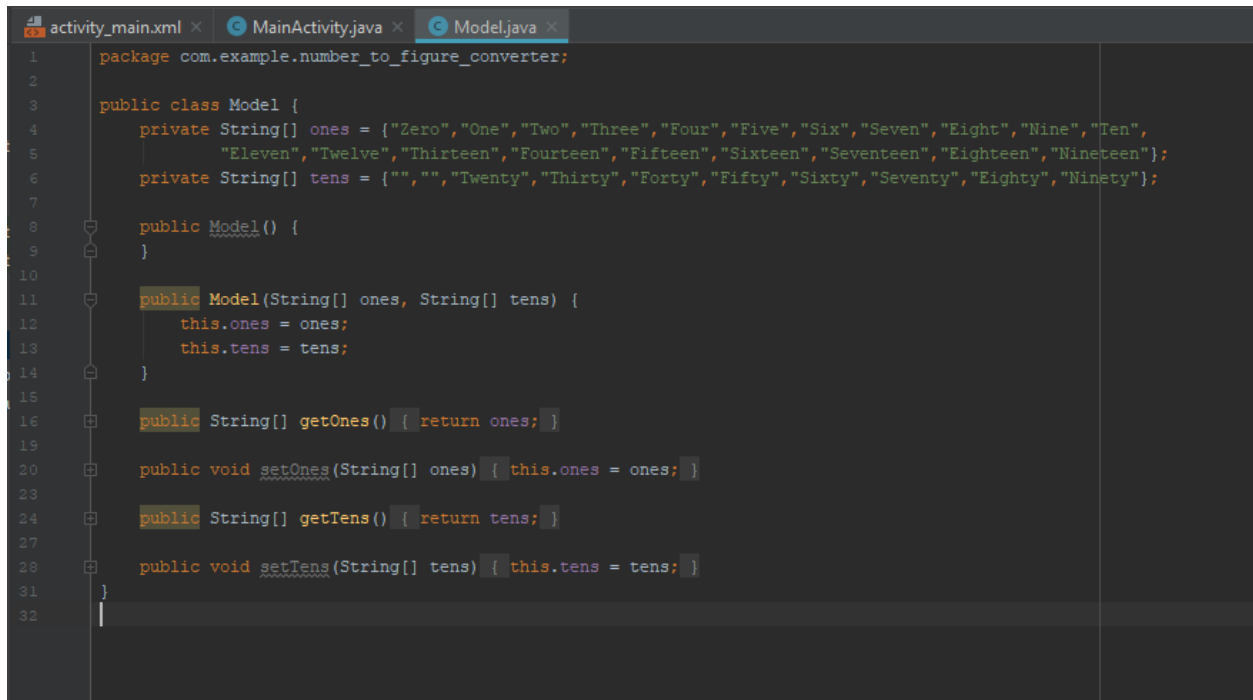
Layout File:

```
activity_main.xml x MainActivity.java x Model.java x
1 <?xml version="1.0" encoding="utf-8"?>
2 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:app="http://schemas.android.com/apk/res-auto"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity">
8
9     <ImageView
10         android:id="@+id/image"
11         android:layout_width="100dp"
12         android:layout_height="100dp"
13         android:src="@drawable/number"/>
14
15     <TextView
16         android:id="@+id/txtHeading"
17         android:layout_width="wrap_content"
18         android:layout_height="wrap_content"
19         android:text="Numbers To Words"
20         android:layout_toRightOf="@+id/image"
21         android:textSize="25dp"
22         android:textAlignment="center"
23         android:layout_marginTop="15dp"/>
24
25     <EditText
26         android:id="@+id/user_number"
27         android:layout_width="match_parent"
28         android:layout_height="wrap_content"
29         android:hint="Enter any number from 1-999"
30         android:inputType="number"
31         android:layout_below="@+id/image"
32         android:layout_marginTop="10dp"
33         android:textAlignment="center"
34         android:textStyle="italic"/>
35
36     <Button
37         android:id="@+id/btn_convert"
38         android:layout_width="match_parent"
39         android:layout_height="wrap_content"
40         android:text="Convert"
41         android:layout_below="@+id/user_number"
42         android:layout_marginTop="5dp"
43         android:textSize="25dp"/>
44
45     <TextView
46         android:id="@+id/display_figure"
47         android:layout_width="match_parent"
48         android:layout_height="wrap_content"
49         android:layout_below="@+id/btn_convert"
50         android:layout_marginTop="10dp"
51         android:textSize="25dp"
52         android:textAlignment="center"/>
53 </RelativeLayout>
```

Main Activity:

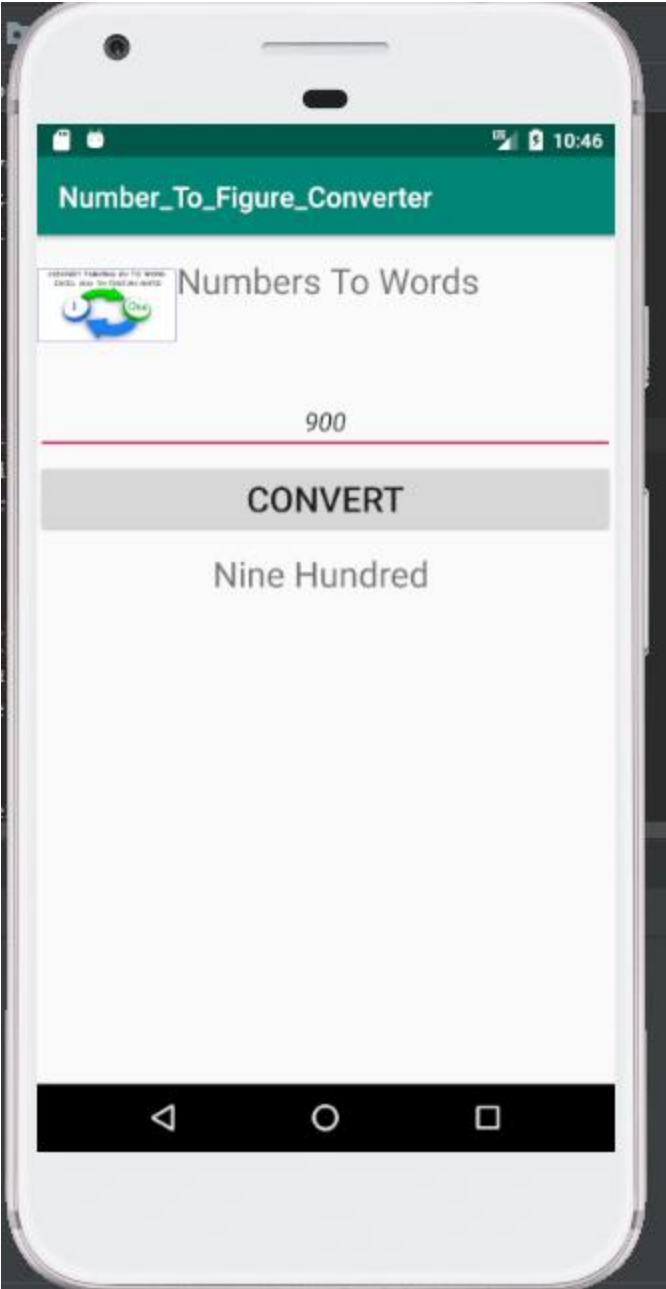
```
activity_main.xml x MainActivity.java x Model.java x
1 package com.example.number_to_figure_converter;
2
3 import ...
9
10 public class MainActivity extends AppCompatActivity {
11     private EditText user_Number;
12     private TextView display_Words;
13     private Button btn_Convert;
14     private String[] ones = {"Zero","One","Two","Three","Four","Five","Six","Seven","Eight","Nine",
15         "Eleven","Twelve","Thirteen","Fourteen","Fifteen","Sixteen","Seventeen","Eighteen","Ni
16     private String[] tens = {"","","Twenty","Thirty","Forty","Fifty","Sixty","Seventy","Eighty","N
17
18     @Override
19     protected void onCreate(Bundle savedInstanceState) {
20         super.onCreate(savedInstanceState);
21         setContentView(R.layout.activity_main);
22         initiate();
23         setAction();
24     }
25     private void initiate()
26     {
27         user_Number = findViewById(R.id.user_number);
28         display_Words = findViewById(R.id.display_figure);
29         btn_Convert = findViewById(R.id.btn_convert);
30     }
31     private void setAction()
32     {
33         btn_Convert.setOnClickListener((v) -> {
34             int input = Integer.parseInt(user_Number.getText().toString());
35             Model model = new Model(ones,tens);
36             if (input < 20) {
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```

Controller:



```
1 package com.example.number_to_figure_converter;
2
3 public class Model {
4     private String[] ones = {"Zero", "One", "Two", "Three", "Four", "Five", "Six", "Seven", "Eight", "Nine", "Ten",
5         "Eleven", "Twelve", "Thirteen", "Fourteen", "Fifteen", "Sixteen", "Seventeen", "Eighteen", "Nineteen"};
6     private String[] tens = {"", "", "Twenty", "Thirty", "Forty", "Fifty", "Sixty", "Seventy", "Eighty", "Ninety"};
7
8     public Model() {
9     }
10
11     public Model(String[] ones, String[] tens) {
12         this.ones = ones;
13         this.tens = tens;
14     }
15
16     public String[] getOnes() { return ones; }
17
18
19
20     public void setOnes(String[] ones) { this.ones = ones; }
21
22
23     public String[] getTens() { return tens; }
24
25
26
27     public void setTens(String[] tens) { this.tens = tens; }
28
29 }
30
31
32
```

Result:



2. Tax Calculation Application

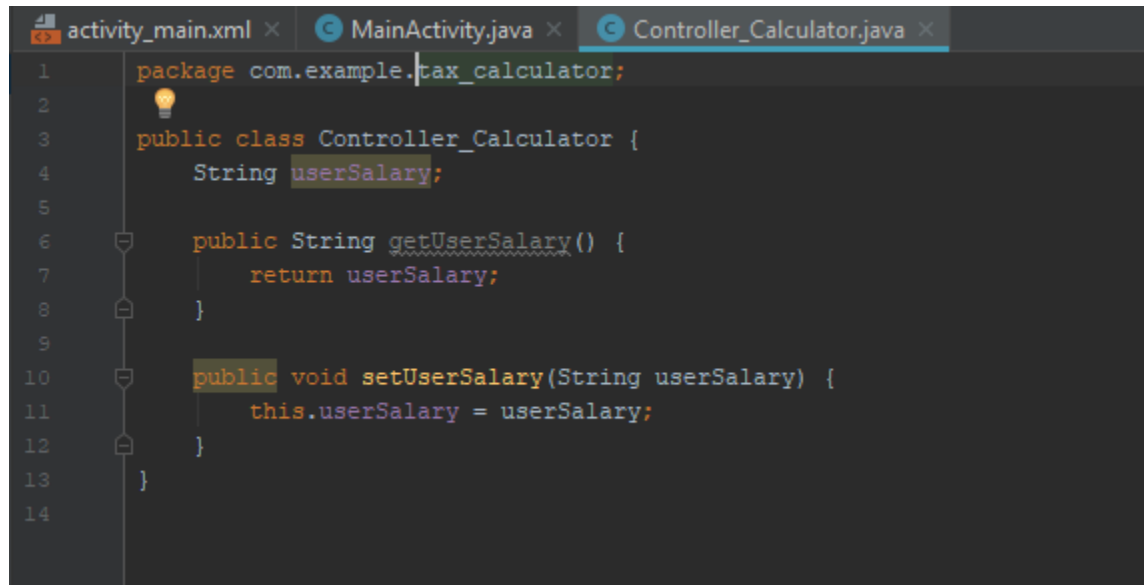
Layout file

```
activity_main.xml x MainActivity.java x Controller_Calculator.java x
2 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   tools:context=".MainActivity">
8
9   <ImageView
10     android:id="@+id/taxImage"
11     android:layout_width="wrap_content"
12     android:layout_height="wrap_content"
13     android:src="@drawable/tax_calculator"/>
14
15   <TextView
16     android:id="@+id/textAmount"
17     android:layout_width="wrap_content"
18     android:layout_height="wrap_content"
19     android:text="Enter your monthly salary: "
20     android:layout_below="@+id/taxImage"
21     android:layout_centerHorizontal="true"
22     android:textSize="30dp" />
23
24   <EditText
25     android:id="@+id/inputSalary"
26     android:layout_width="match_parent"
27     android:layout_height="wrap_content"
28     android:hint="Your Monthly salary Here"
29     android:inputType="number"
30     android:layout_below="@id/textAmount"
31     android:textColorHint="#6200EA"
32     android:textSize="20dp"
33     android:layout_below="@id/textAmount"
34     android:textColorHint="#6200EA"
35     android:textSize="20dp"
36     android:textAlignment="center"
37     android:layout_marginTop="5dp"/>
38
39   <Button
40     android:id="@+id/calculateTax"
41     android:layout_width="wrap_content"
42     android:layout_height="wrap_content"
43     android:text="Calculate TAX"
44     android:layout_below="@id/inputSalary"
45     android:layout_centerHorizontal="true"
46     android:textSize="20dp"
47     android:layout_marginTop="20dp"/>
48
49   <TextView
50     android:id="@+id/displayTax"
51     android:layout_width="match_parent"
52     android:layout_height="wrap_content"
53     android:textSize="20dp"
54     android:layout_below="@id/calculateTax"
55     android:layout_marginTop="10dp"
56     android:textAlignment="center"/>
57 </RelativeLayout>
```

Main Activity file:

```
activity_main.xml × MainActivity.java × Controller_Calculator.java ×
1 package com.example.tax_calculator;
2
3 import ...
13
14 public class MainActivity extends AppCompatActivity {
15     EditText salary;
16     TextView taxDisplay;
17     Button btnTaxCalculate;
18     Float taxCalculate, taxAmount;
19     Controller_Calculator userSalary = new Controller_Calculator();
20     @Override
21     protected void onCreate(Bundle savedInstanceState) {
22         super.onCreate(savedInstanceState);
23         setContentView(R.layout.activity_main);
24
25         salary=findViewById(R.id.inputSalary);
26         taxDisplay=findViewById(R.id.displayTax);
27         btnTaxCalculate=findViewById(R.id.calculateTax);
28
29         btnTaxCalculate.setOnClickListener((v) -> {
32
33             userSalary.setUserSalary(salary.getText().toString());
34             taxCalculate=Float.parseFloat(salary.getText().toString());
35             taxCalculate=taxCalculate*12;
36             if(taxCalculate<=200000)
37             {
38                 taxAmount=(taxCalculate)/100;
39                 taxDisplay.setText("Your yearly tax amount is Rs." +taxAmount.toString());
40                 Toast.makeText( context: MainActivity.this, text: ""+taxAmount.toString(), Toast.LENGTH_SHORT).show();
41             }
42             Toast.makeText( context: MainActivity.this, text: ""+taxAmount.toString(), toast.LENGTH_SHORT
43         }
44         else if(taxCalculate>200000 && taxCalculate<=350000)
45         {
46             taxCalculate=taxCalculate-200000;
47             taxAmount=2000+((taxCalculate*15)/100);
48             taxDisplay.setText("Your yearly tax amount is Rs." +taxAmount.toString());
49         }
50         else if(taxCalculate>350000)
51         {
52             taxCalculate=taxCalculate-350000;
53             taxAmount=24500+((taxCalculate*25)/100);
54             taxDisplay.setText("Your yearly tax amount is Rs." +taxAmount.toString());
55         }
56     });
57 }
58 }
```

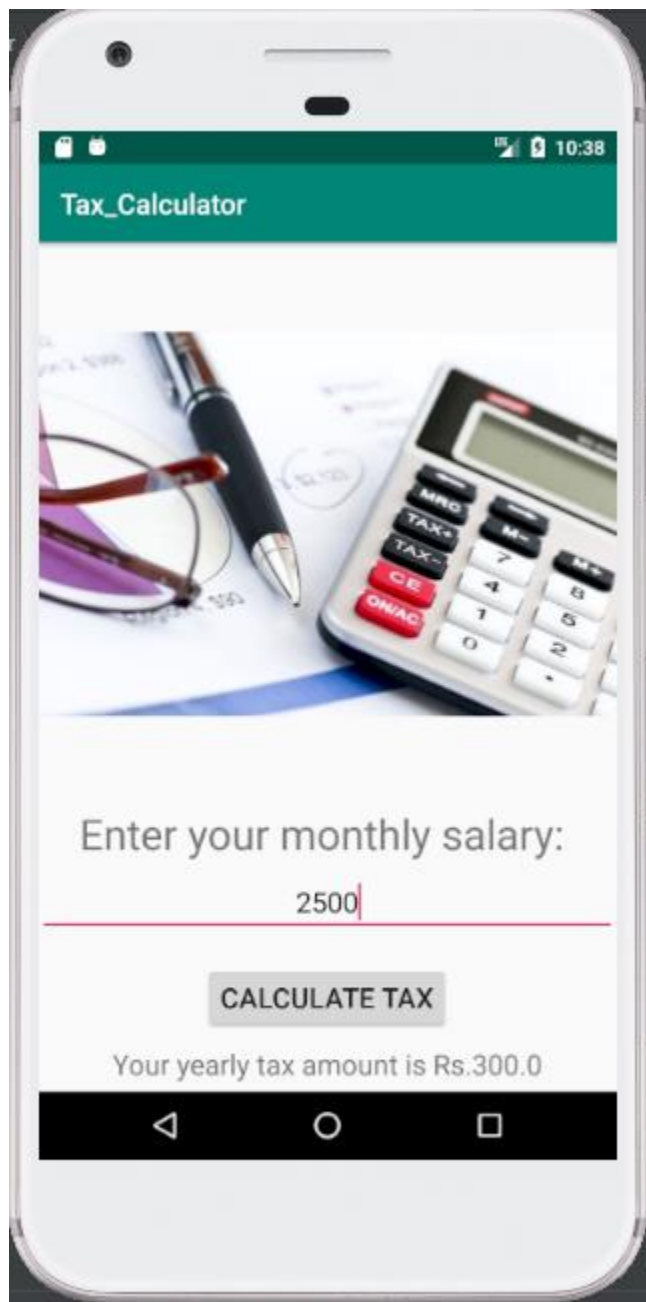
Controller File:



The screenshot shows an IDE with three tabs: activity_main.xml, MainActivity.java, and Controller_Calculator.java. The Controller_Calculator.java tab is active, displaying the following Java code:

```
1 package com.example.tax_calculator;
2
3 public class Controller_Calculator {
4     String userSalary;
5
6     public String getUserSalary() {
7         return userSalary;
8     }
9
10    public void setUserSalary(String userSalary) {
11        this.userSalary = userSalary;
12    }
13 }
14
```

Result:



3. Application to enter car details and show them

Layout files:

```
activity_main.xml x MainActivity.java x Car_Controller.java x
1 <?xml version="1.0" encoding="utf-8"?>
2 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:app="http://schemas.android.com/apk/res-auto"
4   xmlns:tools="http://schemas.android.com/tools"
5   android:layout_width="match_parent"
6   android:layout_height="match_parent"
7   tools:context=".MainActivity"
8   android:background="#BCD3F8">
9
10  <TextView
11      android:id="@+id/top"
12      android:layout_width="match_parent"
13      android:layout_height="wrap_content"
14      android:text="Type and Run"
15      android:textAlignment="center"
16      android:textSize="30dp"
17      android:textColor="#070707"
18      android:layout_marginTop="10dp"
19      android:background="#B8A81A"/>
20
21  <TextView
22      android:id="@+id/txtCName"
23      android:layout_width="wrap_content"
24      android:layout_height="wrap_content"
25      android:text="Make:"
26      android:layout_below="@+id/top"/>
27
28  <EditText
29      android:id="@+id/car_name"
30      android:layout_width="match_parent"
31      android:layout_height="wrap_content"
32      android:layout_below="@+id/txtCName"
33      android:hint="Car Name.."
34      android:inputType="text"/>
35
36  <TextView
37      android:id="@+id/txtYear"
38      android:layout_width="wrap_content"
39      android:layout_height="wrap_content"
40      android:text="Year"
41      android:layout_below="@+id/car_name"/>
42
43  <EditText
44      android:id="@+id/manufacture_year"
45      android:layout_width="match_parent"
46      android:layout_height="wrap_content"
47      android:layout_below="@+id/txtYear"
48      android:hint="Manufactured year.."
49
50      android:inputType="number"/>
51
52  <TextView
53      android:id="@+id/txtColor"
54      android:layout_width="wrap_content"
55      android:layout_height="wrap_content"
56      android:text="Colour:"
57      android:layout_below="@+id/manufacture_year" />
58
```

```
activity_main.xml x MainActivity.java x Car_Controller.java x
58
59 <EditText
60     android:id="@+id/car_color"
61     android:layout_width="match_parent"
62     android:layout_height="wrap_content"
63     android:hint="Enter colour.."
64
65     android:layout_below="@+id/txtColor"
66     android:inputType="text"/>
67
68 <TextView
69     android:id="@+id/txtPrice"
70     android:layout_width="wrap_content"
71     android:layout_height="wrap_content"
72     android:text="Purchase Price (£):"
73
74     android:layout_below="@+id/car_color"/>
75
76 <EditText
77     android:id="@+id/car_price"
78     android:layout_width="match_parent"
79     android:layout_height="wrap_content"
80     android:hint="Enter price"
81     android:layout_below="@+id/txtPrice"
82
83     android:inputType="number" />
84
```

```
activity_main.xml x MainActivity.java x Car_Controller.java x
85
86 <TextView
87     android:id="@+id/txtEngine"
88     android:layout_width="wrap_content"
89     android:layout_height="wrap_content"
90     android:text="Engine Size (Litres):"
91     android:layout_below="@+id/car_price"/>
92
93 <EditText
94     android:id="@+id/engine_Capacity"
95     android:layout_width="match_parent"
96     android:layout_height="wrap_content"
97     android:hint="Engine Size..."
98     android:layout_below="@+id/txtEngine"
99     android:inputType="number"/>
100
101 <Button
102     android:id="@+id/add_Cars"
103     android:layout_width="match_parent"
104     android:layout_height="wrap_content"
105     android:layout_below="@+id/engine_Capacity"
106     android:textStyle="bold"
107     android:textColor="#0DA1EC"
108     android:text="ADD CAR"
109     android:textSize="25dp"/>
110
111 <ScrollView
112     android:id="@+id/scroll"
113     android:layout_width="match_parent"
114     android:layout_height="wrap_content"
115     android:layout_below="@+id/add_Cars">
```

```
        android:layout_below="@+id/add_Cars">

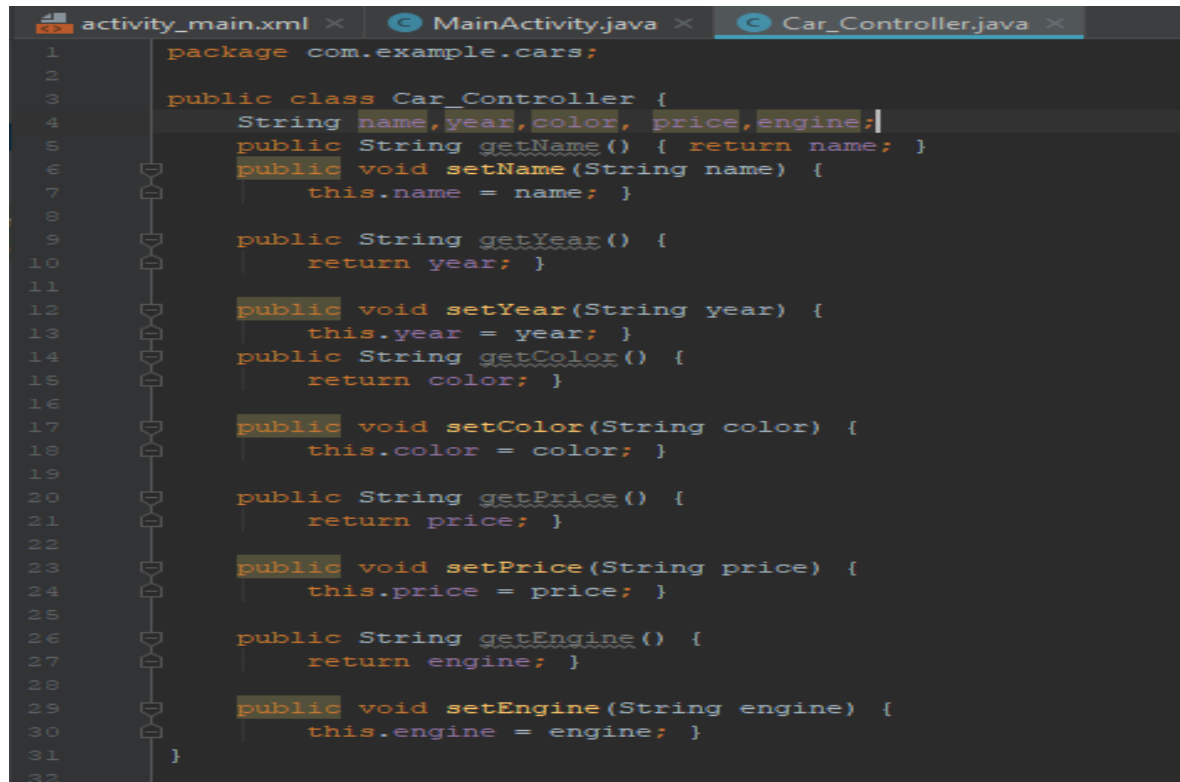
        <TextView
            android:id="@+id/output"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="20dp" />

    </ScrollView>
</RelativeLayout>
```


Main Activity File

```
activity_main.xml × MainActivity.java × Car_Controller.java ×
1 package com.example.cars;
2
3 import android.support.v7.app.AppCompatActivity;
4 import android.os.Bundle;
5 import android.text.TextUtils;
6 import android.view.View;
7 import android.widget.Button;
8 import android.widget.EditText;
9 import android.widget.TextView;
10
11 public class MainActivity extends AppCompatActivity {
12     EditText car_Name, manu_year, car_Color, car_Price, engine_Capacity;
13     TextView dis_cars;
14     Button btn_add_Car;
15     Car_Controller car=new Car_Controller();
16     @Override
17     protected void onCreate(Bundle savedInstanceState) {
18         super.onCreate(savedInstanceState);
19         setContentView(R.layout.activity_main);
20         car_Name =findViewById(R.id.car_name);
21         manu_year =findViewById(R.id.manufacture_year);
22         car_Color =findViewById(R.id.car_color);
23         car_Price =findViewById(R.id.car_price);
24         engine_Capacity =findViewById(R.id.engine_Capacity);
25         dis_cars =findViewById(R.id.output);
26         btn_add_Car =findViewById(R.id.add_Cars);
27
28         car.setName(car_Name.getText().toString());
29         car.setYear(manu_year.getText().toString());
30         car.setColor(car_Color.getText().toString());
31         car.setPrice(car_Price.getText().toString());
32         car.setEngine(engine_Capacity.getText().toString());
33
34         car.setEngine(engine_Capacity.getText().toString());
35         btn_add_Car.setOnClickListener((OnClickListener) (v) -> {
36
37             if(TextUtils.isEmpty(car_Name.getText().toString())) {
38                 car_Name.setError("Car name cannot be empty");
39                 return;
40             }
41             else if(TextUtils.isEmpty(manu_year.getText().toString())) {
42                 manu_year.setError("Manufactured year cannot be empty");
43                 return;
44             }
45             else if(TextUtils.isEmpty(car_Color.getText().toString())) {
46                 car_Color.setError("Colour of car cannot be empty");
47                 return;
48             }
49             else if(TextUtils.isEmpty(car_Price.getText().toString())) {
50                 car_Price.setError("Price of car cannot be empty");
51                 return;
52             }
53             else if(TextUtils.isEmpty(engine_Capacity.getText().toString())) {
54                 engine_Capacity.setError("Engine size of car cannot be empty");
55                 return;
56             }
57             else {
58                 dis_cars.append("Car Name: " + car_Name.getText().toString() + "\n");
59                 dis_cars.append("Manufactured Year: " + manu_year.getText().toString() + "\n");
60                 dis_cars.append("Colour: " + car_Color.getText().toString() + "\n");
61                 dis_cars.append("Purchased Price (Rs.): " + car_Price.getText().toString() + "\n");
62                 dis_cars.append("Engine Size (Ltrs.): " + engine_Capacity.getText().toString() + "\n");
63             }
64         });
65     }
66 }
67 }
```

Controller file



```
1 package com.example.cars;
2
3 public class Car_Controller {
4     String name, year, color, price, engine;
5     public String getName() { return name; }
6     public void setName(String name) {
7         this.name = name; }
8
9     public String getYear() {
10         return year; }
11
12     public void setYear(String year) {
13         this.year = year; }
14     public String getColor() {
15         return color; }
16
17     public void setColor(String color) {
18         this.color = color; }
19
20     public String getPrice() {
21         return price; }
22
23     public void setPrice(String price) {
24         this.price = price; }
25
26     public String getEngine() {
27         return engine; }
28
29     public void setEngine(String engine) {
30         this.engine = engine; }
31 }
32
```

Result:

