IT2010 – Mobile Application Development
BSc (Hons) in Information Technology
2nd Year
Faculty of Computing
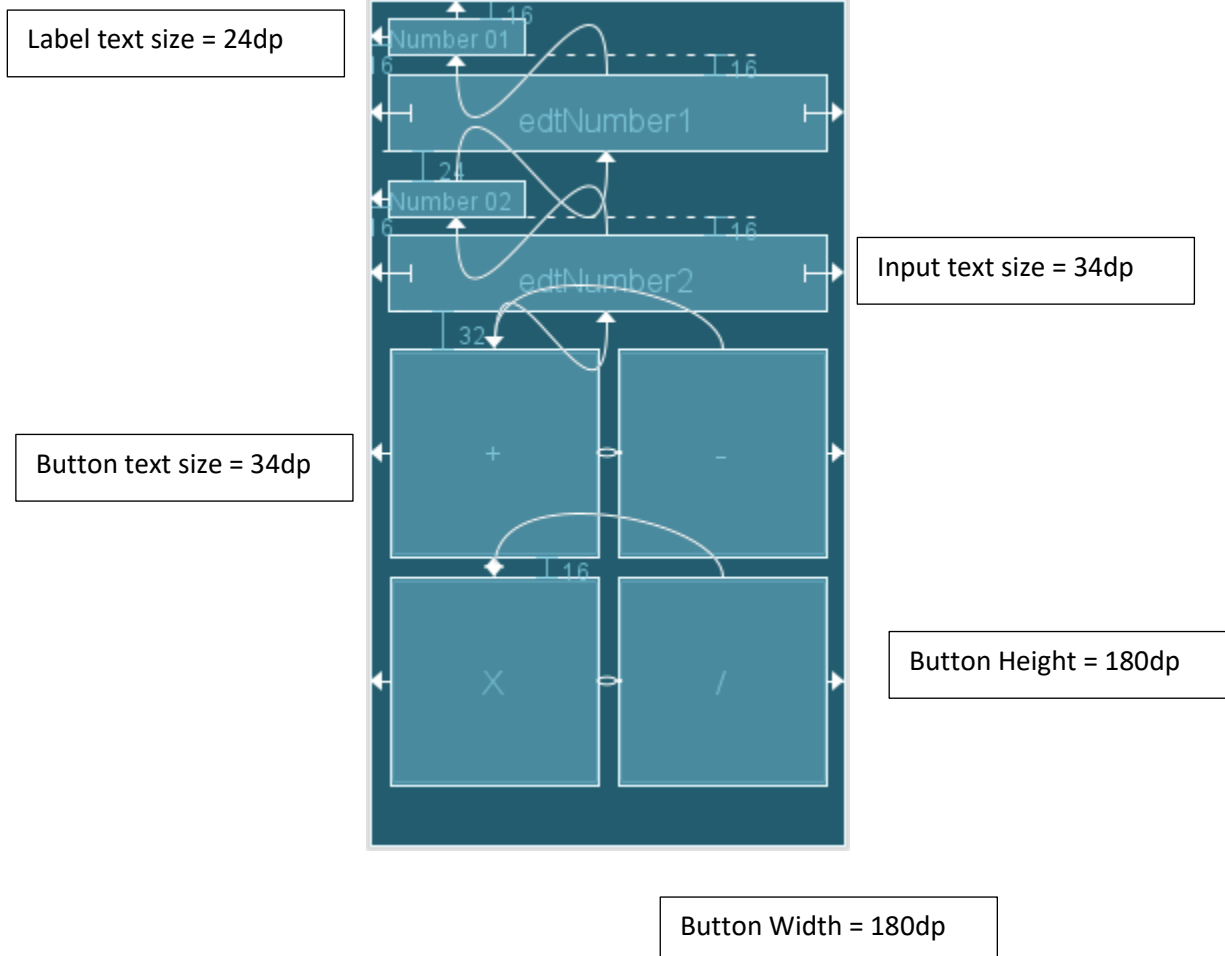**SLIIT**
2023 - Tutorial

Android App Development

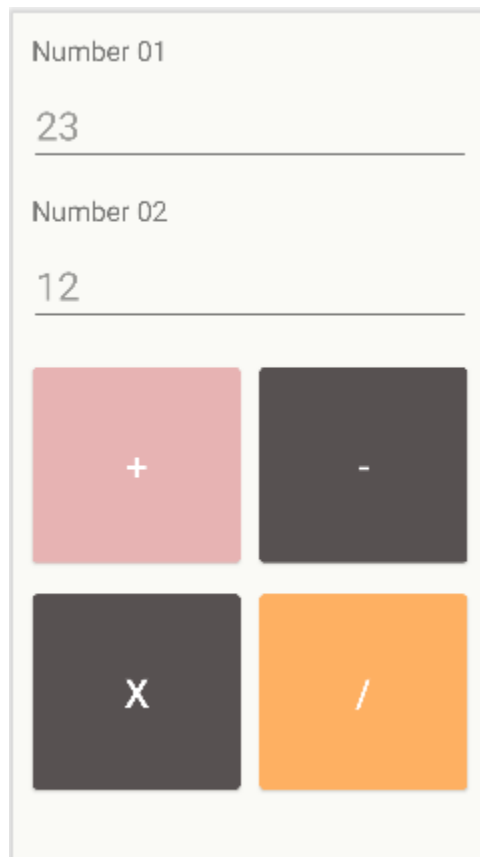In this tutorial we will create a simple calculator using android studio.

Tasks

1. Design activity_main.xml
2. Implement calculator functions
3. Design activity_display.xml to display the output of the calculation with back navigation
4. Implement the Navigation

Design activity_main.xml

Design the following User interface

Label text size = 24dp

Input text size = 34dp

Button text size = 34dp

Button Height = 180dp

Button Width = 180dp

- String resources

```xml
<string name="app_name">Tutorial 03 Sample</string>
<string name="label_Number1">Number 01</string>
<string name="label_Number2">Number 02</string>
<string name="edt_Number1">23</string>
<string name="edt_Number2">12</string>
<string name="btn_Plus">+</string>
<string name="btn_Minus">-</string>
<string name="btn_Multiply">x</string>
<string name="btn_Divide">/</string>
```
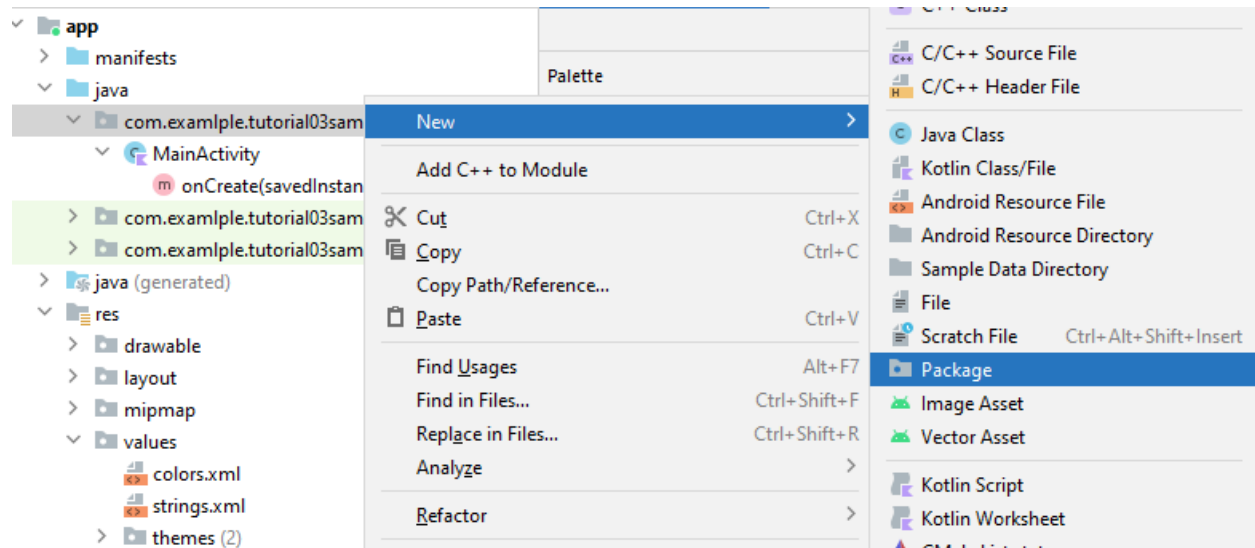
- Color resources

```xml
<color name="btnPlus">#e7b3b3</color>
<color name="btnMinus">#575151</color>
<color name="btnMultiply">#575151</color>
<color name="btnDivide">#feb062</color>
<color name="background">#fafaf6</color>
```

Implement calculator functions

1. Create a new package called "models".

2. Create a Kotlin class named 'Calculator' inside the 'models' package

```kotlin
class Calculator (private val number1:Double, private val number2:Double){
    fun add() = number1 + number2
    fun subtract() = number1 - number2
    fun divide() = number1 * number2
    fun multiply() = number1 / number2
}
```

3. Initialize the views in the MainActivity. Note that in this tutorial we are not using data binding technics like in the LAB 03.

```kotlin
lateinit var edtNumber1:EditText
lateinit var edtNumber2:EditText

override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_main)

    edtNumber1 = findViewById(R.id.edtNumber1)
    edtNumber2 = findViewById(R.id.edtNumber2)
}
```

4. Implement a function passing the view as a parameter to implement the calculation.

```kotlin
fun buttonClick(v:View){
    var ans = 0.0
    val calculator = Calculator(
        edtNumber1.text.toString().toDouble(),
        edtNumber2.text.toString().toDouble())

    when(v.id){
        R.id.btnPlus -> ans = calculator.add()
        R.id.btnMinus -> ans = calculator.subtract()
        R.id.btnMultiply -> ans = calculator.multiply()
        R.id.btnDivide -> ans = calculator.divide()
    }

    println(ans)//this will print the output on the terminal
}
```

Design activity_display.xml
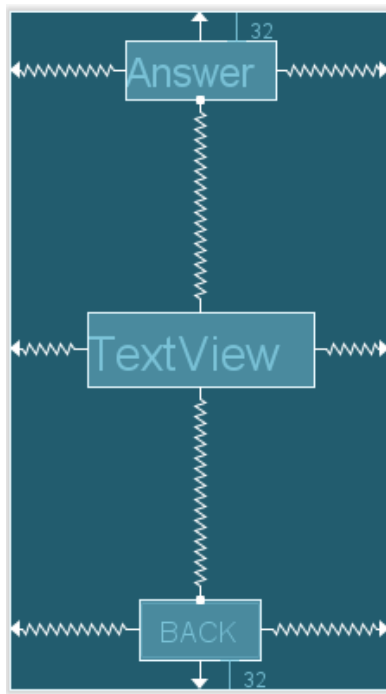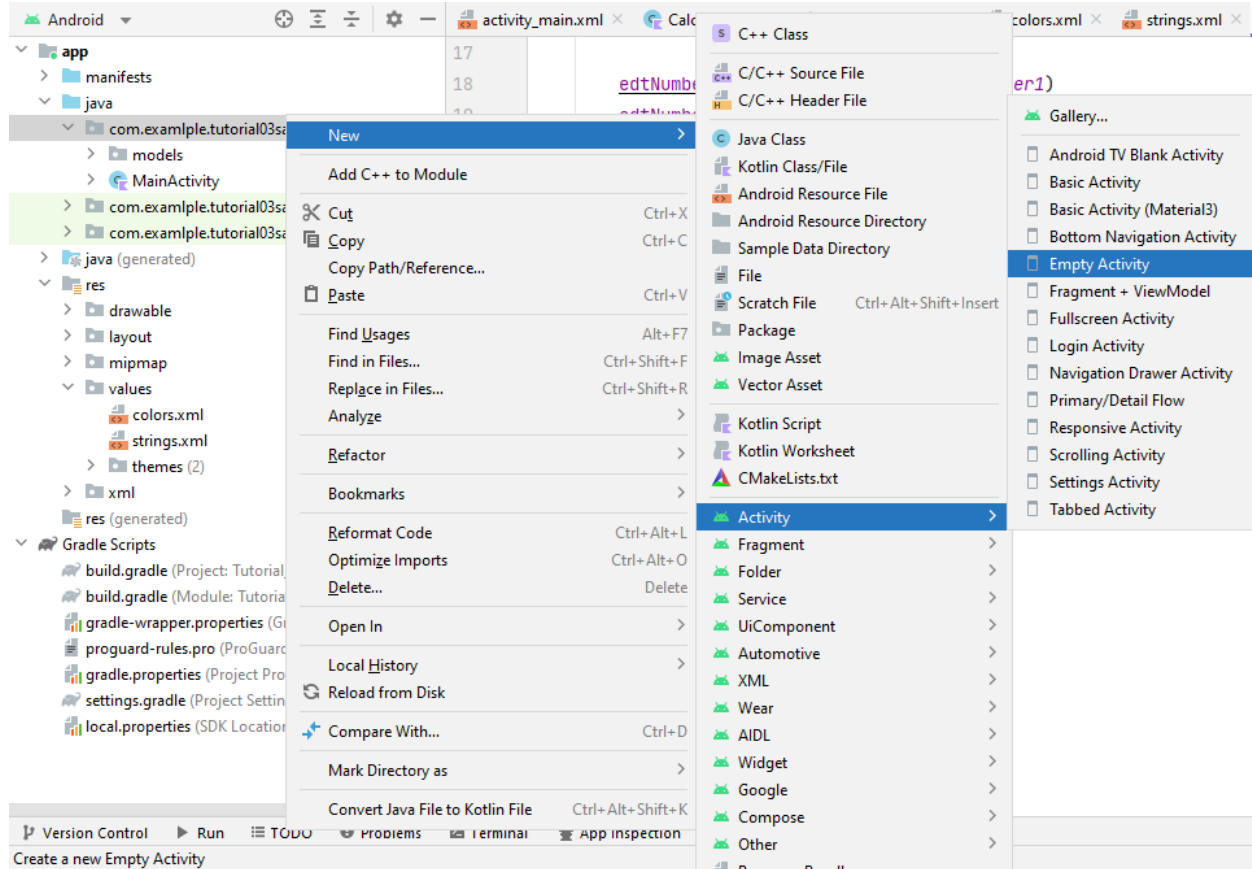
Label text size = 48dp

Label text size = 60dp

Answer

TextView

BACK

- Strings

```
<string name="answer">Answer</string>
<string name="btn_back">Back</string>
```

- Colors

```
<color name="second_background">#28c7fa</color>
<color name="answer_text">#002651</color>
<color name="back_button">#ff304f</color>
```

Implement the Navigation

1. Implement the navigation in MainActivity, buttonClick function

```kotlin
val intent = Intent(this, DisplayActivity::class.java)
intent.putExtra("answer", ans)
startActivity(intent)
finish()
```

2. Implement the following code to display the text on the DisplayActivity, in the ActivityDisplay.kt

```kotlin
var txtAnswer = findViewById<TextView>(R.id.txtAnswer)
txtAnswer.setText(intent.getDoubleExtra("answer",0.0).toString())
var btnBack = findViewById<Button>(R.id.btnBack)
btnBack.setOnClickListener {
    var intent = Intent(this,MainActivity::class.java)
    startActivity(intent)
    finish()
}
```