



Hand Coded

SimpleCalculatorByCodeAppDelegate

```

NSWindow *_window;
NSTextField *_display;
double operandOne;
double operandTwo;
BOOL operationPressed;
NSString *operator;

```

```

- (IBAction)clear:sender;
- (IBAction)digitPressed:sender;
- (IBAction)operationPressed:sender;
- (double)performOperation;
- (void)generateButtons:(NSView *)newView
withButtonWidth:(int)buttonWidth
andbuttonHeight:(int)buttonHeight
andWhiteSpace:(int)whiteSpace andYPos:(int)
yPos withAdder:(int)adder;
- (void)generateButtons:(NSView *)newView
withButtonWidth:(int)buttonWidth
andbuttonHeight:(int)buttonHeight
andWhiteSpace:(int)whiteSpace withXPos:(int)
xPos andYPos:(int)yPos withAdder:(int)adder
andValue:(NSString *)stringVal;

```



GUI Builder

SimpleCalculatorIntBuilderAppDelegate

```

NSWindow *_window;
NSTextField *_display;
double operandOne;
double operandTwo;
BOOL operationPressed;
NSString *operator;

```

```

- (IBAction)clear:sender;
- (IBAction)digitPressed:sender;
- (IBAction)operationPressed:sender;
- (double)performOperation;

```



GUI Builder

SimpleCalculatorIntBuilder

```

- jButton1: javax.swing.JButton
- jButton2: javax.swing.JButton
- jButton3: javax.swing.JButton
- jButton4: javax.swing.JButton
- jButton5: javax.swing.JButton
- jButton6: javax.swing.JButton
- jButton7: javax.swing.JButton
- jButton8: javax.swing.JButton
- jButton9: javax.swing.JButton
- jButton10: javax.swing.JButton
- jButton11: javax.swing.JButton
- jButton12: javax.swing.JButton
- jButton13: javax.swing.JButton
- jButton14: javax.swing.JButton
- jButton15: javax.swing.JButton
- jTextField1: javax.swing.JTextField
- operandOne: double
- operandTwo: double
- operationPressed: boolean
- operator: String

```

```

+ CalculatorIntBuilderView(SingleFrameApplication)
+ addButton(int, int, int, int) : JButton
+ addExpression(int, int, String, int) : JButton
- clean(java.awt.event.ActionEvent) : void
- digitPressed(java.awt.event.MouseEvent) : void
+ initComponents() : void
+ layOutButtons(JFrame) : void
+ main(String[]) : void
- operationPressed(java.awt.event.ActionEvent) : void
+ performOperation() : double

```



Hand Coded

SimpleCalculatorInCode

```

- btnExp: JButton ([]) = new JButton[exp.length]
- btnKeyPad: JButton ([]) = new JButton[keys.length]
- exp: String ([]) = {"+", "-", "*", "/"}
- keys: String ([]) = {"1", "2", "3", "4", "5", "6", "7", "8", "9"}
- jTextField1: javax.swing.JTextField
- operandOne: double
- operandTwo: double
- operationPressed: boolean
- operator: String

```

```

+ addButton(int, int, int, int) : JButton
+ addExpression(int, int, String, int) : JButton
- clean(java.awt.event.ActionEvent) : void
- digitPressed(java.awt.event.MouseEvent) : void
+ initComponents() : void
+ layOutButtons(JFrame) : void
+ main(String[]) : void
- operationPressed(java.awt.event.ActionEvent) : void
+ performOperation() : double

```