```java
1 package simmi.calculator;
2
3     import java.awt.Cursor;
12
13     public class Calculator {
14
15         JFrame window; // This is Main Window
16         JTextField inText,affichageCalc; // Input Text
17         JButton
   btnC,btnBack,btnMod,btnDiv,btn7,btn8,btn9,btnMul,btn4,btn5,btn6,btnSub,btn1,btn2,btn3,btnAd
   d,btnPoint,btn0,btnEqual,choixColor;
18         char opt = ' ';                  // Storage Oparator
19         boolean go = true,              // Faire Calcule Avec Opt != (=)
20                 addWrite = true;         // Racordé des Nombres dans l'Affichage
21         double val = 0; // Storage Values For Calcule
22         boolean bool = false;
23         /*
24             Mx Calculator:
25             X = Ligne
26             Y = Column
27
28             +------------------+
29             |   +----------+    |    y[0]
30             |   |          |    |
31             |   +----------+    |
32             |                   |
33             |   C   <-   %   /  |    y[1]
34             |   7   8    9   *  |    y[2]
35             |   4   5    6   -  |    y[3]
36             |   1   2    3   +  |    y[4]
37             |   .   0       =  |    y[5]
38             +------------------+
39              x[0] x[1] x[2] x[3]
40
41         */
42
43         /*
44             +------------------+
45             |   +----------+    |    y[0]
46             |   |          |    |
47             |   +----------+    |
48             |                   |
49             |   0   1    1   3  |    y[1]
50             |   4   5    6   7  |    y[2]
51             |   8   9   10  11  |    y[3]
52             |   12  13  14  15  |    y[4]
53             |   16  17    18   |    y[5]
54             +------------------+
55              x[0] x[1] x[2] x[3]
56
57         */
58
59         Calculator () {
60             window = new JFrame("Calculator");
61             window.setSize(410,600); // Height And Width Of Window
62             window.setLocationRelativeTo(null); // Move Window To Center
63
64             Font btnFont = new Font("Comic Sans MS", Font.PLAIN, 28);
65
66             choixColor = new JButton();
67             choixColor.setBounds(330, 30, 38, 18);
68             choixColor.setCursor(new Cursor(Cursor.HAND_CURSOR));
```

```java
 69            choixColor.addActionListener(new ActionListener(){
 70                @Override
 71                public void actionPerformed(ActionEvent e){
 72                    themeColor();
 73                }
 74            });
 75            window.add(choixColor);
 76
 77            int wBtn = 80,        // Width Button
 78                hBtn = 70,        // Height Button
 79                marginX = 20,
 80                marginY = 60,
 81                j = -1,
 82                k = -1,
 83                x[] = {marginX, marginX+90, 200, 290},
 84                y[] = {marginY, marginY+100, marginY+180, marginY+260, marginY+340,
    marginY+420};
 85
 86            inText = new JTextField("0");
 87            inText.setBounds(x[0],y[0],350,70);
 88            inText.setFont(new Font("Comic Sans MS", Font.PLAIN, 33));
 89            inText.setEnabled(true);
 90            window.add(inText);
 91
 92            btnC = new JButton("->");
 93            btnC.setBounds(x[0],y[1],wBtn,hBtn);
 94            btnC.setFont(btnFont);
 95            btnC.setCursor(new Cursor(Cursor.HAND_CURSOR));
 96            btnC.addActionListener(new ActionListener() {
 97                @Override
 98                public void actionPerformed(ActionEvent e) {
 99                    inText.setText("0");
100                    opt = ' ';
101                    val = 0;
102                }
103            });
104            window.add(btnC);
105
106            btnBack = new JButton("C");
107            btnBack.setBounds(x[1],y[1],wBtn,hBtn);
108            btnBack.setFont(btnFont);
109            btnBack.setCursor(new Cursor(Cursor.HAND_CURSOR));
110            btnBack.addActionListener(new ActionListener() {
111                @Override
112                public void actionPerformed(ActionEvent e) {
113                    String str = inText.getText();
114                    String str2 = "";
115                    for(int i = 0; i < (str.length() - 1); i++) {
116                        str2 += str.charAt(i);
117                    }
118                    if(str2 == "") {
119                        inText.setText("0");
120                    } else {
121                        inText.setText(str2);
122                    }
123                }
124            });
125            window.add(btnBack);
126
127            btnMod = new JButton("%");
128            btnMod.setBounds(x[2],y[1],wBtn,hBtn);
129            btnMod.setFont(btnFont);
```

```java
130            btnMod.setCursor(new Cursor(Cursor.HAND_CURSOR));
131            btnMod.addActionListener(new ActionListener() {
132                @Override
133                public void actionPerformed(ActionEvent e) {
134                    if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
135                        if (go) {
136                            val = calc(val, inText.getText(),opt);
137                            if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val)) ) {
138                                inText.setText(String.valueOf((int)val));
139                            } else {
140                                inText.setText(String.valueOf(val));
141                            }
142                            opt = '%';
143                            go = false;
144                            addWrite = false;
145                        }
146                }
147            });
148            window.add(btnMod);
149
150            btnDiv = new JButton("/");
151            btnDiv.setBounds(x[3],y[1],wBtn,hBtn);
152            btnDiv.setFont(btnFont);
153            btnDiv.setCursor(new Cursor(Cursor.HAND_CURSOR));
154            btnDiv.addActionListener(new ActionListener() {
155                @Override
156                public void actionPerformed(ActionEvent e) {
157                    if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
158                        if (go) {
159                            val = calc(val, inText.getText(),opt);
160                            if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val)) ) {
161                                inText.setText(String.valueOf((int)val));
162                            } else {
163                                inText.setText(String.valueOf(val));
164                            }
165                            opt = '/';
166                            go = false;
167                            addWrite = false;
168                        }
169                }
170            });
171            window.add(btnDiv);
172
173            btn7 = new JButton("7");
174            btn7.setBounds(x[0],y[2],wBtn,hBtn);
175            btn7.setFont(btnFont);
176            btn7.setCursor(new Cursor(Cursor.HAND_CURSOR));
177            btn7.addActionListener(new ActionListener() {
178                @Override
179                public void actionPerformed(ActionEvent e) {
180                    if (addWrite) {
181                        if(Pattern.matches("[0]*", inText.getText())){
182                            inText.setText("7");
183                        } else {
184                            inText.setText(inText.getText() + "7");
185                        }
186                    } else {
187                        inText.setText("7");
188                        addWrite = true;
189                    }
```

```java
190                    go = true;
191                }
192            });
193            window.add(btn7);
194
195            btn8 = new JButton("8");
196            btn8.setBounds(x[1],y[2],wBtn,hBtn);
197            btn8.setFont(btnFont);
198            btn8.setCursor(new Cursor(Cursor.HAND_CURSOR));
199            btn8.addActionListener(new ActionListener() {
200                @Override
201                public void actionPerformed(ActionEvent e) {
202                    if (addWrite) {
203                        if(Pattern.matches("[0]*", inText.getText())){
204                            inText.setText("8");
205                        } else {
206                            inText.setText(inText.getText() + "8");
207                        }
208                    } else {
209                        inText.setText("8");
210                        addWrite = true;
211                    }
212                    go = true;
213                }
214            });
215            window.add(btn8);
216
217            btn9 = new JButton("9");
218            btn9.setBounds(x[2],y[2],wBtn,hBtn);
219            btn9.setFont(btnFont);
220            btn9.setCursor(new Cursor(Cursor.HAND_CURSOR));
221            btn9.addActionListener(new ActionListener() {
222                @Override
223                public void actionPerformed(ActionEvent e) {
224                    if (addWrite) {
225                        if(Pattern.matches("[0]*", inText.getText())){
226                            inText.setText("9");
227                        } else {
228                            inText.setText(inText.getText() + "9");
229                        }
230                    } else {
231                        inText.setText("9");
232                        addWrite = true;
233                    }
234                    go = true;
235                }
236            });
237            window.add(btn9);
238
239            btnMul = new JButton("*");
240            btnMul.setBounds(x[3],y[2],wBtn,hBtn);
241            btnMul.setFont(btnFont);
242            btnMul.setCursor(new Cursor(Cursor.HAND_CURSOR));
243            btnMul.addActionListener(new ActionListener() {
244                @Override
245                public void actionPerformed(ActionEvent e) {
246                    if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
247                        if (go) {
248                            val = calc(val, inText.getText(), opt);
249                            if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val)) ) {
250                                inText.setText(String.valueOf((int)val));
```

```java
251                          } else {
252                              inText.setText(String.valueOf(val));
253                          }
254                          opt = '*';
255                          go = false;
256                          addWrite = false;
257                      } else {
258                          opt = '*';
259                      }
260                  }
261              });
262              window.add(btnMul);
263
264              btn4 = new JButton("4");
265              btn4.setBounds(x[0],y[3],wBtn,hBtn);
266              btn4.setFont(btnFont);
267              btn4.setCursor(new Cursor(Cursor.HAND_CURSOR));
268              btn4.addActionListener(new ActionListener() {
269                  @Override
270                  public void actionPerformed(ActionEvent e) {
271                      if (addWrite) {
272                          if(Pattern.matches("[0]*", inText.getText())){
273                              inText.setText("4");
274                          } else {
275                              inText.setText(inText.getText() + "4");
276                          }
277                      } else {
278                          inText.setText("4");
279                          addWrite = true;
280                      }
281                      go = true;
282                  }
283              });
284              window.add(btn4);
285
286              btn5 = new JButton("5");
287              btn5.setBounds(x[1],y[3],wBtn,hBtn);
288              btn5.setFont(btnFont);
289              btn5.setCursor(new Cursor(Cursor.HAND_CURSOR));
290              btn5.addActionListener(new ActionListener() {
291                  @Override
292                  public void actionPerformed(ActionEvent e) {
293                      if (addWrite) {
294                          if(Pattern.matches("[0]*", inText.getText())){
295                              inText.setText("5");
296                          } else {
297                              inText.setText(inText.getText() + "5");
298                          }
299                      } else {
300                          inText.setText("5");
301                          addWrite = true;
302                      }
303                      go = true;
304                  }
305              });
306              window.add(btn5);
307
308              btn6 = new JButton("6");
309              btn6.setBounds(x[2],y[3],wBtn,hBtn);
310              btn6.setFont(btnFont);
311              btn6.setCursor(new Cursor(Cursor.HAND_CURSOR));
312              btn6.addActionListener(new ActionListener() {
```

```java
313            @Override
314            public void actionPerformed(ActionEvent e) {
315                if (addWrite) {
316                    if(Pattern.matches("[0]*", inText.getText())){
317                        inText.setText("6");
318                    } else {
319                        inText.setText(inText.getText() + "6");
320                    }
321                } else {
322                    inText.setText("6");
323                    addWrite = true;
324                }
325                go = true;
326            }
327        });
328        window.add(btn6);
329
330        btnSub = new JButton("-");
331        btnSub.setBounds(x[3],y[3],wBtn,hBtn);
332        btnSub.setFont(btnFont);
333        btnSub.setCursor(new Cursor(Cursor.HAND_CURSOR));
334        btnSub.addActionListener(new ActionListener() {
335            @Override
336            public void actionPerformed(ActionEvent e) {
337                if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
338                    if (go) {
339                        val = calc(val, inText.getText(), opt);
340                        if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val)) ) {
341                            inText.setText(String.valueOf((int)val));
342                        } else {
343                            inText.setText(String.valueOf(val));
344                        }
345
346                        opt = '-';
347                        go = false;
348                        addWrite = false;
349                    } else {
350                        opt = '-';
351                    }
352            }
353        });
354        window.add(btnSub);
355
356        btn1 = new JButton("1");
357        btn1.setBounds(x[0],y[4],wBtn,hBtn);
358        btn1.setFont(btnFont);
359        btn1.setCursor(new Cursor(Cursor.HAND_CURSOR));
360        btn1.addActionListener(new ActionListener() {
361            @Override
362            public void actionPerformed(ActionEvent e) {
363                if (addWrite) {
364                    if(Pattern.matches("[0]*", inText.getText())){
365                        inText.setText("1");
366                    } else {
367                        inText.setText(inText.getText() + "1");
368                    }
369                } else {
370                    inText.setText("1");
371                    addWrite = true;
372                }
373                go = true;
```

```
374                    }
375                });
376            window.add(btn1);
377
378            btn2 = new JButton("2");
379            btn2.setBounds(x[1],y[4],wBtn,hBtn);
380            btn2.setFont(btnFont);
381            btn2.setCursor(new Cursor(Cursor.HAND_CURSOR));
382            btn2.addActionListener(new ActionListener() {
383                @Override
384                public void actionPerformed(ActionEvent e) {
385                    if (addWrite) {
386                        if(Pattern.matches("[0]*", inText.getText())){
387                            inText.setText("2");
388                        } else {
389                            inText.setText(inText.getText() + "2");
390                        }
391                    } else {
392                        inText.setText("2");
393                        addWrite = true;
394                    }
395                    go = true;
396                }
397            });
398            window.add(btn2);
399
400            btn3 = new JButton("3");
401            btn3.setBounds(x[2], y[4], wBtn, hBtn);
402            btn3.setFont(btnFont);
403            btn3.setCursor(new Cursor(Cursor.HAND_CURSOR));
404            btn3.addActionListener(new ActionListener() {
405                @Override
406                public void actionPerformed(ActionEvent e) {
407                    if (addWrite) {
408                        if(Pattern.matches("[0]*", inText.getText())){
409                            inText.setText("3");
410                        } else {
411                            inText.setText(inText.getText() + "3");
412                        }
413                    } else {
414                        inText.setText("3");
415                        addWrite = true;
416                    }
417                    go = true;
418                }
419            });
420            window.add(btn3);
421
422            btnAdd = new JButton("+");
423            btnAdd.setBounds(x[3], y[4], wBtn, hBtn);
424            btnAdd.setFont(btnFont);
425            btnAdd.setCursor(new Cursor(Cursor.HAND_CURSOR));
426            btnAdd.addActionListener(new ActionListener() {
427                @Override
428                public void actionPerformed(ActionEvent e) {
429                    if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
430                        if (go) {
431                            val = calc(val, inText.getText(),opt);
432                            if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val))
    ) {
433                                inText.setText(String.valueOf((int)val));
434                            } else {
```

```
435                        inText.setText(String.valueOf(val));
436                    }
437                    opt = '+';
438                    go = false;
439                    addWrite = false;
440                } else {
441                    opt = '+';
442                }
443            }
444        });
445        window.add(btnAdd);
446
447        btnPoint = new JButton(".");
448        btnPoint.setBounds(x[0],y[5],wBtn,hBtn);
449        btnPoint.setFont(new Font("Comic Sans MS", Font.BOLD, 32));
450        btnPoint.setCursor(new Cursor(Cursor.HAND_CURSOR));
451        btnPoint.addActionListener(new ActionListener() {
452            @Override
453            public void actionPerformed(ActionEvent e) {
454                if (addWrite) {
455                inText.setText(inText.getText() + ".");
456                } else {
457                    inText.setText("0.");
458                    addWrite = true;
459                }
460                go = true;
461            }
462        });
463        window.add(btnPoint);
464
465        btn0 = new JButton("0");
466        btn0.setBounds(x[1],y[5],wBtn,hBtn);
467        btn0.setFont(btnFont);
468        btn0.setCursor(new Cursor(Cursor.HAND_CURSOR));
469        btn0.addActionListener(new ActionListener() {
470            @Override
471            public void actionPerformed(ActionEvent e) {
472                if (addWrite) {
473                    if(Pattern.matches("[0]*", inText.getText())){
474                        inText.setText("0");
475                    } else {
476                        inText.setText(inText.getText() + "0");
477                    }
478                } else {
479                    inText.setText("0");
480                    addWrite = true;
481                }
482                go = true;
483            }
484        });
485        window.add(btn0);
486
487        btnEqual = new JButton("=");
488        btnEqual.setBounds(x[2],y[5],2*wBtn+10,hBtn);
489        btnEqual.setFont(btnFont);
490        btnEqual.setCursor(new Cursor(Cursor.HAND_CURSOR));
491        btnEqual.addActionListener(new ActionListener() {
492            @Override
493            public void actionPerformed(ActionEvent e) {
494                if (Pattern.matches("([-]?\\d+[.]\\d*)|(\\d+)", inText.getText()))
495                    if (go) {
496                        val = calc(val, inText.getText(),opt);
```

```java
497                         if ( Pattern.matches("[-]?[\\d]+[.][0]*", String.valueOf(val))
     ) {
498                             inText.setText(String.valueOf((int)val));
499                         } else {
500                             inText.setText(String.valueOf(val));
501                         }
502                         opt = '=';
503                         addWrite = false;
504                     }
505                 }
506             });
507         window.add(btnEqual);
508
509         window.setLayout(null);
510         window.setResizable(false);
511         window.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE); // If Click into The Red
     Button => End The Processus
512         window.setVisible(true);
513     }
514
515     static double calc(double x, String input, char opt) {
516         double y = Double.parseDouble(input);
517         switch(opt) {
518             case '+': return x + y;
519             case '-': return x - y;
520             case '*': return x * y;
521             case '/': return x / y;
522             case '%': return x % y;
523             default: return y;
524         }
525     }
526
527     public void themeColor() {
528
529         if (bool) {
530
531             btnC.setBackground(Color.getColor(""));
532             btnBack.setBackground(Color.getColor(""));
533             btnMod.setBackground(Color.getColor(""));
534             btnDiv.setBackground(Color.getColor(""));
535             btnMul.setBackground(Color.getColor(""));
536             btnSub.setBackground(Color.getColor(""));
537             btnAdd.setBackground(Color.getColor(""));
538             btnEqual.setBackground(Color.getColor(""));
539             btn0.setBackground(Color.getColor(""));
540             btn1.setBackground(Color.getColor(""));
541             btn2.setBackground(Color.getColor(""));
542             btn3.setBackground(Color.getColor(""));
543             btn4.setBackground(Color.getColor(""));
544             btn5.setBackground(Color.getColor(""));
545             btn6.setBackground(Color.getColor(""));
546             btn7.setBackground(Color.getColor(""));
547             btn8.setBackground(Color.getColor(""));
548             btn9.setBackground(Color.getColor(""));
549             btnPoint.setBackground(Color.getColor(""));
550
551             btnC.setForeground(Color.BLACK);
552             btnBack.setForeground(Color.BLACK);
553             btnMod.setForeground(Color.BLACK);
554             btnDiv.setForeground(Color.BLACK);
555             btnMul.setForeground(Color.BLACK);
556             btnSub.setForeground(Color.BLACK);
```

```java
557                    btnAdd.setForeground(Color.BLACK);
558                    btnEqual.setForeground(Color.BLACK);
559
560                    bool = false;
561                } else {
562                    btnC.setBackground(Color.RED);
563                    btnBack.setBackground(Color.ORANGE);
564                    btnMod.setBackground(Color.GREEN);
565                    btnDiv.setBackground(Color.PINK);
566                    btnMul.setBackground(Color.PINK);
567                    btnSub.setBackground(Color.PINK);
568                    btnAdd.setBackground(Color.PINK);
569                    btnEqual.setBackground(Color.BLUE);
570                    btn0.setBackground(Color.WHITE);
571                    btn1.setBackground(Color.WHITE);
572                    btn2.setBackground(Color.WHITE);
573                    btn3.setBackground(Color.WHITE);
574                    btn4.setBackground(Color.WHITE);
575                    btn5.setBackground(Color.WHITE);
576                    btn6.setBackground(Color.WHITE);
577                    btn7.setBackground(Color.WHITE);
578                    btn8.setBackground(Color.WHITE);
579                    btn9.setBackground(Color.WHITE);
580                    btnPoint.setBackground(Color.WHITE);
581
582                    btnC.setForeground(Color.pink);
583                    btnBack.setForeground(Color.pink);
584                    btnMod.setForeground(Color.pink);
585                    btnDiv.setForeground(Color.pink);
586                    btnMul.setForeground(Color.pink);
587                    btnSub.setForeground(Color.pink);
588                    btnAdd.setForeground(Color.pink);
589                    btnEqual.setForeground(Color.pink);
590
591                    bool = true;
592                }
593        }
594
595
596    public static void main(String[] args) {
597
598        new Calculator();
599    }
600 }
601
```