

学号：2013458

姓名：刘嗣旸

专业：计算机科学与技术

## 一、源代码截图



```
1 package homework;
2
3 import java.awt.*;
4
5
6
7
8 public class MyCalculator extends JFrame implements ActionListener{
9     String result = new String("");
10    String str = new String("");
11    String pre = new String("start");
12    JLabel label = new JLabel("0");
13
14    Stack nu = new Stack();
15    Stack op = new Stack();
16
17    public void calculate(String btn) {
18        if(btn == "1" || btn == "2" || btn == "3"
19           || btn == "4" || btn == "5" || btn == "6"
20           || btn == "7" || btn == "8" || btn == "9"
21           || btn == "0" || btn == "." || btn == "+" || btn == "-"
22           || btn == "*" || btn == "/" || btn == "(" || btn == ")" || btn == "="){
23            if(btn == "1" || btn == "2" || btn == "3"
24               || btn == "4" || btn == "5" || btn == "6"
25               || btn == "7" || btn == "8" || btn == "9"
26               || btn == "0" || btn == "." ) {
27                result+=btn;
28                str+=btn;
29                label.setText(str);
30                pre = btn;
31            }
32            else if(btn == "+" || btn == "-" || btn == "*" || btn == "/" || btn == "(" || btn == ")" || btn == "=") {
33                if(btn != "=") {
34                    str+=btn;
35                    label.setText(str);
36                }
37
38                if(pre == "1" || pre == "2" || pre == "3"
39                   || pre == "4" || pre == "5" || pre == "6"
40                   || pre == "7" || pre == "8" || pre == "9"
41                   || pre == "0" || pre == "." ) {
42                    double num = Double.parseDouble(result);
43                    nu.push(num);
44                    result = "";
45                }
46                pre = btn;
47
48                if((btn == "(" || op.empty()) && btn != "=") {
49                    op.push(btn);
50                } else if(btn == ")" && !op.empty()) {
51                    while (true) {
52
53                        String tmp = new String();
54                        tmp = (String)op.pop();
55                        if(tmp == "(") {
56                            break;
57                        }
58                        double a, b;
59                        a = (double)nu.pop();
60                        b = (double)nu.pop();
61                        if(tmp == "+") {
62                            double m = a+b;
63                            nu.push(m);
64                        } else if(tmp == "-") {
65                            double m = b-a;
66                            nu.push(m);
67                        } else if(tmp == "*") {
68                            double m = a*b;
69                            nu.push(m);
70                        } else if(tmp == "/") {
71                            double m = b/a;
72                            nu.push(m);
73                        }
74                    }
75                }
76
77            } else if((btn == "+" || btn == "-" || btn == "*" || btn == "/" ) && !op.empty()){
78                String tmp = new String();
79                tmp = (String)op.peek();
```



```
80         if (btn == "*" || btn == "/") {
81             if (tmp == "+" || tmp == "-" || tmp == "(") {
82                 op.push(btn);
83             } else {
84                 tmp = (String)op.pop();
85                 double a, b;
86                 a = (double)nu.pop();
87                 b = (double)nu.pop();
88                 if (tmp == "*") {
89                     double m = a*b;
90                     nu.push(m);
91                 } else {
92                     double m = b/a;
93                     nu.push(m);
94                 }
95                 op.push(btn);
96             }
97         } else {
98             if (tmp == "(") {
99                 op.push(btn);
100             } else {
101                 tmp = (String)op.pop();
102                 double a, b;
103                 a = (double)nu.pop();
104                 b = (double)nu.pop();
105                 if (tmp == "+") {
106                     double m = a+b;
107                     nu.push(m);
108                 } else if (tmp == "-") {
109                     double m = b-a;
110                     nu.push(m);
111                 } else if (tmp == "*") {
112                     double m = a*b;
113                     nu.push(m);
114                 } else if (tmp == "/") {
115                     double m = b/a;
116                     nu.push(m);
117                 }
118                 op.push(btn);
119             }
120         }
121     }
122     } else if (btn == "=") {
123         while (!op.empty()) {
124             String tmp = new String();
125             tmp = (String)op.pop();
126             double a, b;
127             a = (double)nu.pop();
128             b = (double)nu.pop();
129             if (tmp == "+") {
130                 double m = a+b;
131                 nu.push(m);
132             } else if (tmp == "-") {
133                 double m = b-a;
134                 nu.push(m);
135             } else if (tmp == "*") {
136                 double m = a*b;
137                 nu.push(m);
138             } else if (tmp == "/") {
139                 double m = b/a;
140                 nu.push(m);
141             }
142         }
143         double number = (double)nu.pop();
144         Double Number = number;
145         str = Number.toString();
146         label.setText(str);
147         str="";
148         result="";
149     }
150 }
151 }
152 }
153 }
154 } else if (btn == "1/x") {
```

```

155         double num2 = Double.parseDouble(result);
156         Double Num2 = 1/num2;
157         label.setText(Num2.toString());
158     }else if(btn == "x^2"){
159         double num3 = Double.parseDouble(result);
160         Double Num3 = num3*num3;
161         label.setText(Num3.toString());
162
163     }else if(btn == "x^(1/2)"){
164         double num3 = Double.parseDouble(result);
165         Double Num3 = Math.pow(num3, 0.5);
166         label.setText(Num3.toString());
167
168     }else if(btn == "C"){
169         label.setText("0");
170         str = "";
171         result = "";
172         pre = "start";
173         while(!nu.empty()) {
174             nu.pop();
175         }
176         while(!op.empty()) {
177             op.pop();
178         }
179
180     }else if(btn == "Delete"){
181         if(op.empty()||(String)op.peek()!="(") {
182             String tmp = new String();
183             tmp = result;
184             result = "";
185             for (int i = 0; i < tmp.length()-1; i++) {
186                 result+=tmp.charAt(i);
187             }
188             str = result;
189             if(str == "") {
190                 label.setText("0");
191             }else {
192                 label.setText(str);
193             }
194         }
195     }else if(btn == "+/-"){
196         double num3 = Double.parseDouble(result);
197         Double Num3 = -num3;
198         label.setText(Num3.toString());
199         result = Num3.toString();
200     }
201 }
202
203 @Override
204 public void actionPerformed(ActionEvent e) {
205     String btn = e.getActionCommand();
206     calculate(btn);
207 }
208
209 public MyCalculator(int x, int y, int w, int h, Color color) {
210     super("Calculator");
211
212     label.setBackground(new Color(245,255,255));
213     label.setFont(new Font(null, Font.PLAIN, 60));
214
215     JButton []b = new JButton[11]; //grey button
216     for (int i = 0; i < 11; i++) {
217         b[i] = new JButton();
218         b[i].setBackground(new Color(242,242,242));
219         b[i].setFont(new Font(null, Font.PLAIN, 25));
220     }
221     b[1].setText("(");b[2].setText(")");
222     b[3].setText("C");b[4].setText("Delete");
223     b[5].setText("1/x");b[6].setText("x^2");
224     b[7].setText("x^(1/2)");b[8].setText("/");
225     b[9].setText("*");b[10].setText("-");
226     b[0].setText("+");
227     for (int i = 0; i < 11; i++) {
228         b[i].addActionListener(this);
229     }
230     JButton []bb = new JButton[13]; //white button

```

```

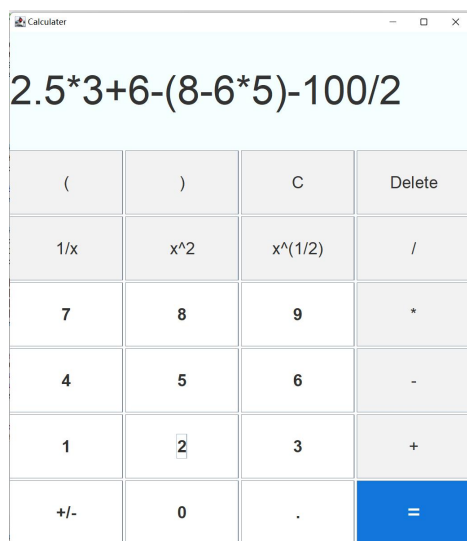
230 JButton []bb = new JButton[13]; //white button
231 for (int i = 1; i < bb.length; i++) {
232     bb[i] = new JButton();
233     bb[i].setBackground(new Color(255,255,255));
234     bb[i].setFont(new Font(null, Font.BOLD, 25));
235 }
236 bb[0] = new JButton();
237 bb[0].setText("=");
238 bb[0].setBackground(new Color(17, 119, 221));
239 bb[0].setForeground(new Color(255,255,255));
240 bb[0].setFont(new Font(null,Font.PLAIN,35));
241 bb[1].setText("7");bb[2].setText("8");bb[3].setText("9");
242 bb[4].setText("4");bb[5].setText("5");bb[6].setText("6");
243 bb[7].setText("1");bb[8].setText("2");bb[9].setText("3");
244 bb[10].setText("/-");bb[11].setText("0");bb[12].setText(".");
245 for (int i = 0; i < 13; i++) {
246     bb[i].addActionListener(this);
247 }
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999

```

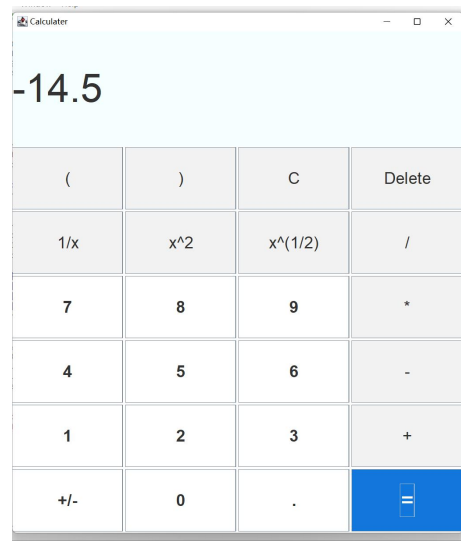
## 二、运行结果截图

## (一) 计算功能：

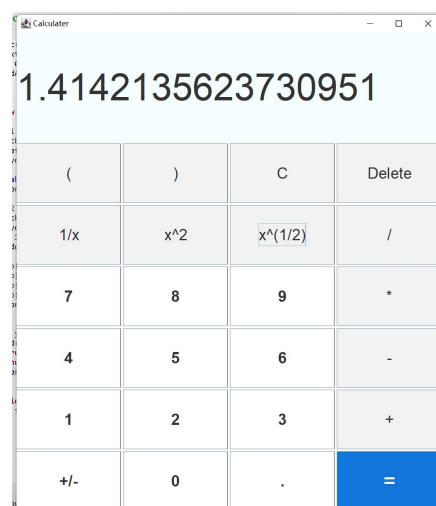
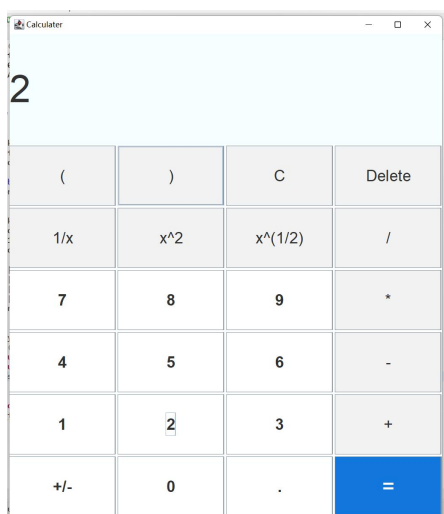
计算式：



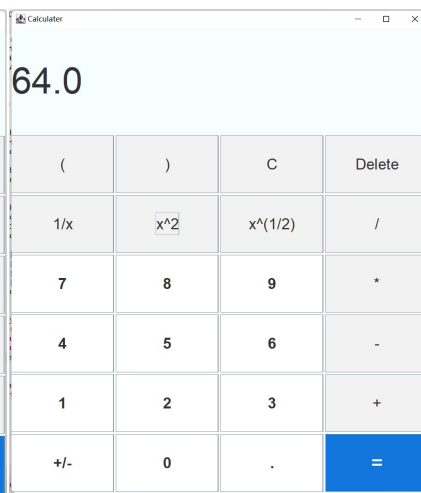
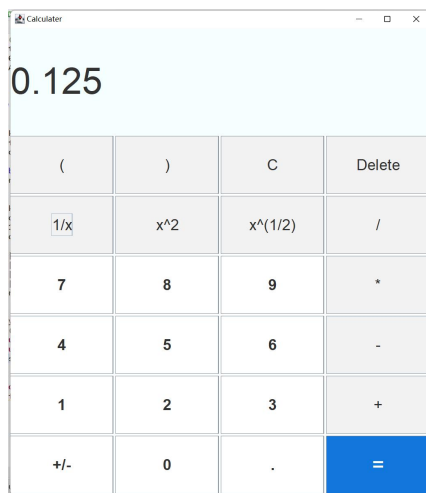
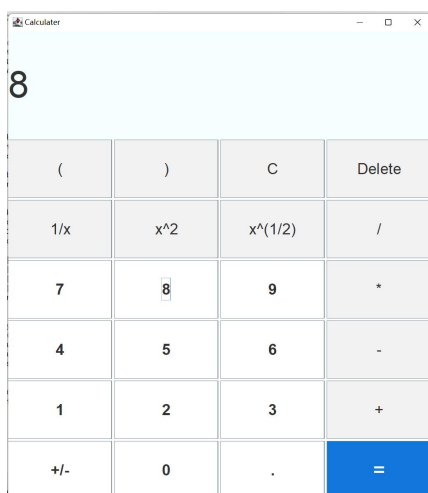
计算结果：



## (二) 开根号（以 2 为例）

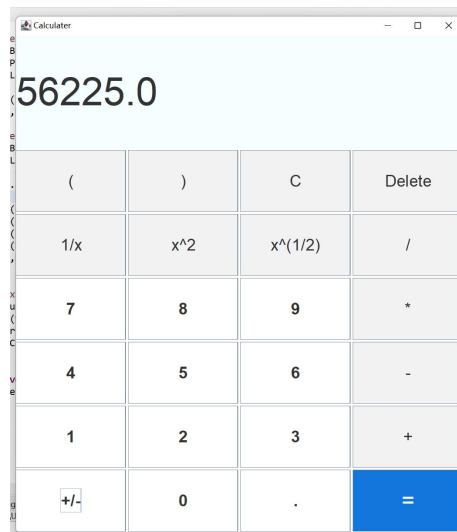
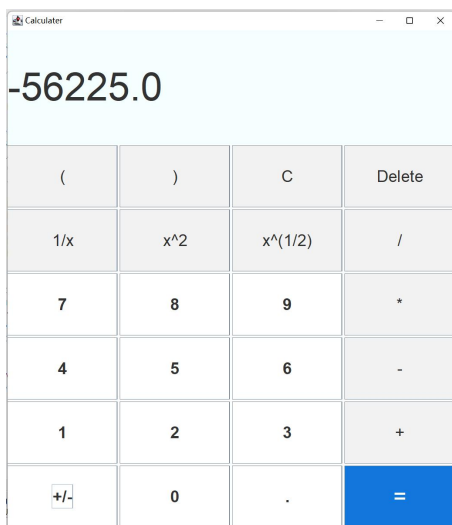


## (三) 取倒数及平方（以 8 为例）





#### (四) 正负转换键+/-



#### (五) 全屏最大化



#### (六) C 键清零

