

LAB 05 REPORT

GUI Programming with Java Swing

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Course: Object-Oriented Programming (OOP)

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1 Introduction

Lab 05 focuses on building a graphical user interface (GUI) for the AIMS system developed in Lab 04. In this lab, Java Swing is used to design interactive windows, while reusing the core object-oriented classes such as `Store`, `Cart`, and `Media`.

2 Objectives

The main objectives of Lab 05 are:

- To become familiar with GUI programming using Java Swing
- To build `Store` and `Cart` interfaces for the AIMS system
- To connect GUI components with the business logic implemented in Lab 04
- To practice event handling in Java

3 Development Environment

- Programming Language: Java
- IDE: Eclipse
- GUI Library: Java Swing (AWT & Swing)
- Operating System: Windows

4 System Architecture

4.1 Relationship with Lab 04

Lab 05 reuses all model classes implemented in Lab 04, including:

- `Media`, `Book`, `CompactDisc`, `DigitalVideoDisc`
- `Store`
- `Cart`

No changes are made to the core logic of these classes; they are only integrated into the GUI layer.

4.2 Package Structure

- `hust.soict.cs.dsai.aims.media`: Media-related classes
- `hust.soict.cs.dsai.aims.store`: Store class
- `hust.soict.cs.dsai.aims.cart`: Cart class
- `hust.soict.cs.dsai.aims.screen`: GUI classes (Lab 05)

5 Implementation

5.1 StoreScreen Class

The `StoreScreen` class extends `JFrame` and represents the main window of the application. It displays all available media in the store and allows users to:

- View media information
- Add media to the cart
- Play media if it implements the `Playable` interface

```
1 public class StoreScreen extends JFrame {  
2  
3     private Store store;  
4     private Cart cart;  
5  
6     public StoreScreen(Store store) {  
7         this.store = store;  
8         this.cart = new Cart();  
9         setTitle("AIMS_Store");  
10        setSize(1024, 768);  
11        setVisible(true);  
12    }  
13}
```

5.2 MediaStore Class

The `MediaStore` class extends `JPanel` and represents a single media item displayed in the `StoreScreen`. Each `MediaStore` panel includes:

- Media title
- Media cost
- An `Add to Cart` button
- A `Play` button (if applicable)

```
1 public class MediaStore extends JPanel {  
2  
3     public MediaStore(Media media) {  
4         JLabel title = new JLabel(media.getTitle());  
5         JButton addToCart = new JButton("Add_to_Cart");  
6     }  
7 }
```

5.3 CartScreen Class

The CartScreen class extends JFrame and displays all media items currently stored in the cart, along with the total cost.

```
1 public class CartScreen extends JFrame {  
2  
3     private Cart cart;  
4  
5     public CartScreen(Cart cart) {  
6         this.cart = cart;  
7         setTitle("Cart");  
8         setSize(600, 400);  
9         setVisible(true);  
10    }  
11}
```

6 Results

6.1 Store Interface

Figure 1 shows the StoreScreen interface displaying available media items.

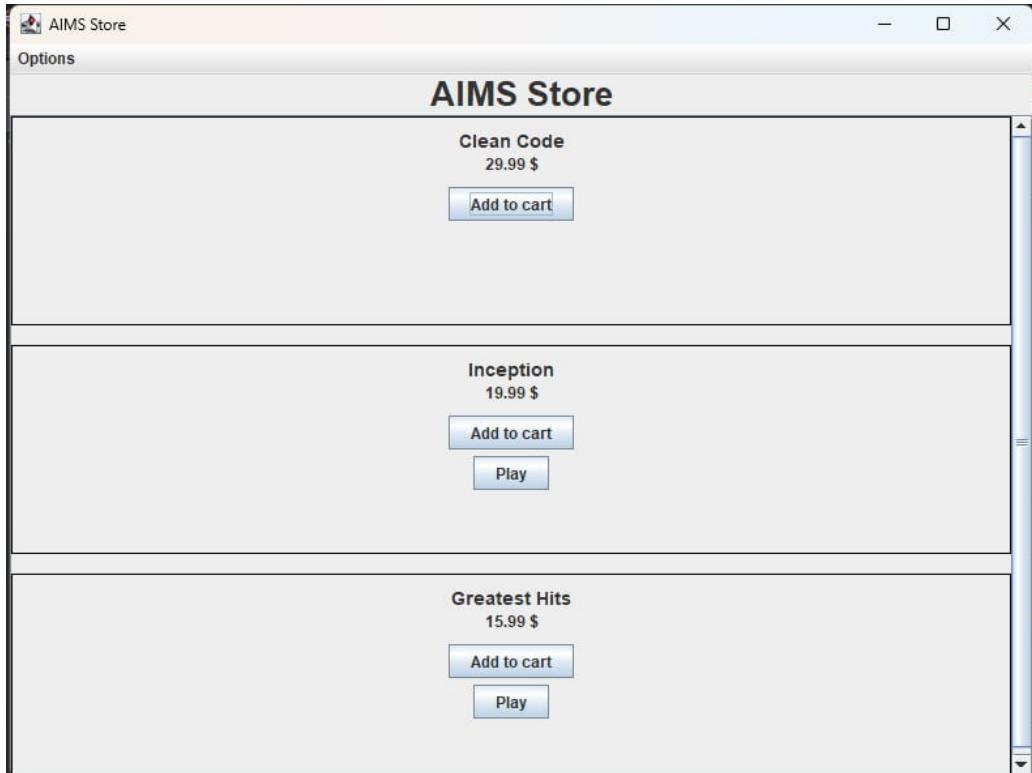


Figure 1: StoreScreen Interface

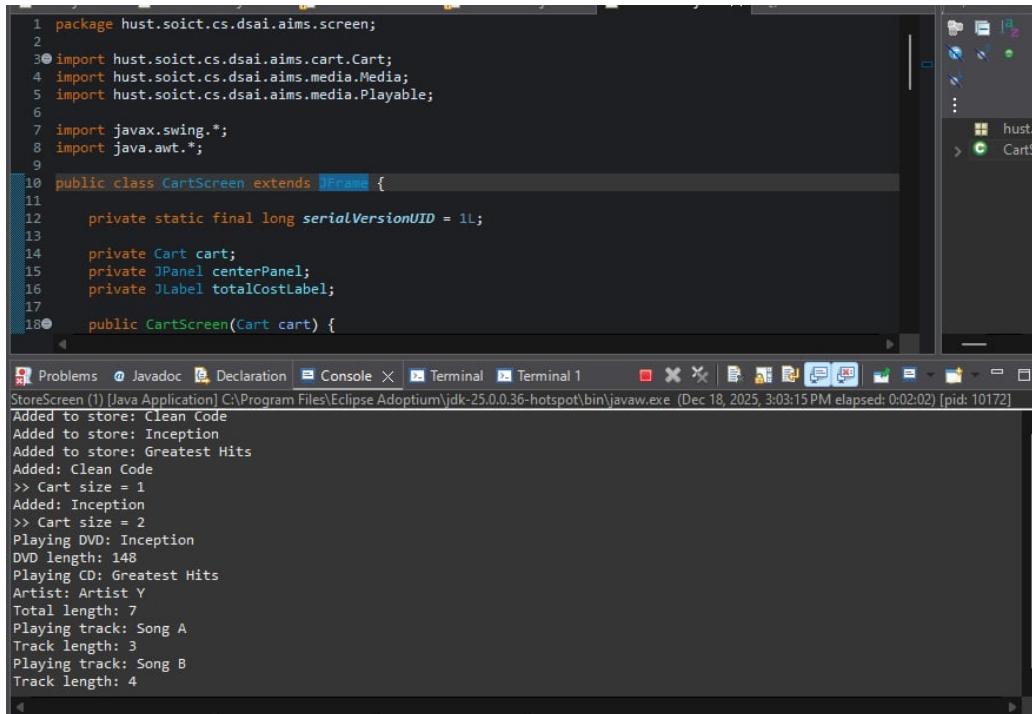
Screenshot instructions:

- Run the StoreScreen class

- Ensure multiple media items are displayed
- Capture the full Store window
- Save the image as `Store.jpg`

6.2 Cart Interface

Figure 2 shows the CartScreen after adding media items.



The screenshot shows the Eclipse IDE interface. On the left is the code editor with `CartScreen.java` open. The code defines a class `CartScreen` that extends `JFrame`. It imports various Java packages and classes. The constructor takes a `Cart` object as a parameter. On the right is the terminal window showing the application's output:

```

1 package hust.soict.cs.dsai.aims.screen;
2
3 import hust.soict.cs.dsai.aims.cart.Cart;
4 import hust.soict.cs.dsai.aims.media.Media;
5 import hust.soict.cs.dsai.aims.media.Playable;
6
7 import javax.swing.*;
8 import java.awt.*;
9
10 public class CartScreen extends JFrame {
11
12     private static final long serialVersionUID = 1L;
13
14     private Cart cart;
15     private JPanel centerPanel;
16     private JLabel totalCostLabel;
17
18     public CartScreen(Cart cart) {
19
20         this.cart = cart;
21         centerPanel = new JPanel();
22         totalCostLabel = new JLabel("Total Cost: " + cart.getTotalCost());
23
24         centerPanel.add(totalCostLabel);
25
26         add(centerPanel, "Center");
27
28         pack();
29         setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
30         setVisible(true);
31     }
32
33     public void updateCart() {
34
35         totalCostLabel.setText("Total Cost: " + cart.getTotalCost());
36
37         if (cart.getMediaList().size() > 0) {
38             Media media = cart.getMediaList().get(0);
39
40             if (media instanceof Playable) {
41                 Playable playable = (Playable) media;
42
43                 if (playable instanceof CD) {
44                     CD cd = (CD) playable;
45                     String artistName = cd.getArtist();
46                     String trackName = cd.getSong();
47                     int trackLength = cd.getLength();
48
49                     System.out.println("Playing CD: " + artistName + " - " + trackName);
50                     System.out.println("Track length: " + trackLength);
51
52                     if (trackLength < 100) {
53                         System.out.println("Playing track: Song A");
54                     } else {
55                         System.out.println("Playing track: Song B");
56                     }
57
58                     if (trackLength > 100) {
59                         System.out.println("DVD length: " + trackLength);
60                     }
61
62                     if (trackLength > 150) {
63                         System.out.println("Greatest Hits");
64                     }
65
66                     if (trackLength > 200) {
67                         System.out.println("Inception");
68                     }
69
70                     if (trackLength > 250) {
71                         System.out.println("Clean Code");
72                     }
73
74                     if (trackLength > 300) {
75                         System.out.println("Artist Y");
76                     }
77
78                     if (trackLength > 350) {
79                         System.out.println("Song A");
80                     }
81
82                     if (trackLength > 400) {
83                         System.out.println("Song B");
84                     }
85
86                     if (trackLength > 450) {
87                         System.out.println("Artist Z");
88                     }
89
90                     if (trackLength > 500) {
91                         System.out.println("Song C");
92                     }
93
94                     if (trackLength > 550) {
95                         System.out.println("Song D");
96                     }
97
98                     if (trackLength > 600) {
99                         System.out.println("Song E");
100
101                     if (trackLength > 650) {
102                         System.out.println("Song F");
103                     }
104
105                     if (trackLength > 700) {
106                         System.out.println("Song G");
107                     }
108
109                     if (trackLength > 750) {
110                         System.out.println("Song H");
111                     }
112
113                     if (trackLength > 800) {
114                         System.out.println("Song I");
115                     }
116
117                     if (trackLength > 850) {
118                         System.out.println("Song J");
119                     }
120
121                     if (trackLength > 900) {
122                         System.out.println("Song K");
123                     }
124
125                     if (trackLength > 950) {
126                         System.out.println("Song L");
127                     }
128
129                     if (trackLength > 1000) {
130                         System.out.println("Song M");
131                     }
132
133                     if (trackLength > 1050) {
134                         System.out.println("Song N");
135                     }
136
137                     if (trackLength > 1100) {
138                         System.out.println("Song O");
139                     }
140
141                     if (trackLength > 1150) {
142                         System.out.println("Song P");
143                     }
144
145                     if (trackLength > 1200) {
146                         System.out.println("Song Q");
147                     }
148
149                     if (trackLength > 1250) {
150                         System.out.println("Song R");
151                     }
152
153                     if (trackLength > 1300) {
154                         System.out.println("Song S");
155                     }
156
157                     if (trackLength > 1350) {
158                         System.out.println("Song T");
159                     }
160
161                     if (trackLength > 1400) {
162                         System.out.println("Song U");
163                     }
164
165                     if (trackLength > 1450) {
166                         System.out.println("Song V");
167                     }
168
169                     if (trackLength > 1500) {
170                         System.out.println("Song W");
171                     }
172
173                     if (trackLength > 1550) {
174                         System.out.println("Song X");
175                     }
176
177                     if (trackLength > 1600) {
178                         System.out.println("Song Y");
179                     }
180
181                     if (trackLength > 1650) {
182                         System.out.println("Song Z");
183                     }
184
185                     if (trackLength > 1700) {
186                         System.out.println("Song AA");
187                     }
188
189                     if (trackLength > 1750) {
190                         System.out.println("Song BB");
191                     }
192
193                     if (trackLength > 1800) {
194                         System.out.println("Song CC");
195                     }
196
197                     if (trackLength > 1850) {
198                         System.out.println("Song DD");
199                     }
19
200                     if (trackLength > 1900) {
201                         System.out.println("Song EE");
202                     }
203
204                     if (trackLength > 1950) {
205                         System.out.println("Song FF");
206                     }
207
208                     if (trackLength > 2000) {
209                         System.out.println("Song GG");
210                     }
211
212                     if (trackLength > 2050) {
213                         System.out.println("Song HH");
214                     }
215
216                     if (trackLength > 2100) {
217                         System.out.println("Song II");
218                     }
219
220                     if (trackLength > 2150) {
221                         System.out.println("Song JJ");
222                     }
223
224                     if (trackLength > 2200) {
225                         System.out.println("Song KK");
226                     }
227
228                     if (trackLength > 2250) {
229                         System.out.println("Song LL");
230                     }
231
232                     if (trackLength > 2300) {
233                         System.out.println("Song MM");
234                     }
235
236                     if (trackLength > 2350) {
237                         System.out.println("Song NN");
238                     }
239
240                     if (trackLength > 2400) {
241                         System.out.println("Song OO");
242                     }
243
244                     if (trackLength > 2450) {
245                         System.out.println("Song PP");
246                     }
247
248                     if (trackLength > 2500) {
249                         System.out.println("Song QQ");
250                     }
251
252                     if (trackLength > 2550) {
253                         System.out.println("Song RR");
254                     }
255
256                     if (trackLength > 2600) {
257                         System.out.println("Song SS");
258                     }
259
260                     if (trackLength > 2650) {
261                         System.out.println("Song TT");
262                     }
263
264                     if (trackLength > 2700) {
265                         System.out.println("Song UU");
266                     }
267
268                     if (trackLength > 2750) {
269                         System.out.println("Song VV");
270                     }
271
272                     if (trackLength > 2800) {
273                         System.out.println("Song WW");
274                     }
275
276                     if (trackLength > 2850) {
277                         System.out.println("Song XX");
278                     }
279
280                     if (trackLength > 2900) {
281                         System.out.println("Song YY");
282                     }
283
284                     if (trackLength > 2950) {
285                         System.out.println("Song ZZ");
286                     }
287
288                     if (trackLength > 3000) {
289                         System.out.println("Song AA");
290                     }
291
292                     if (trackLength > 3050) {
293                         System.out.println("Song BB");
294                     }
295
296                     if (trackLength > 3100) {
297                         System.out.println("Song CC");
298                     }
299
29
300                     if (trackLength > 3150) {
301                         System.out.println("Song DD");
302                     }
303
304                     if (trackLength > 3200) {
305                         System.out.println("Song EE");
306                     }
307
308                     if (trackLength > 3250) {
309                         System.out.println("Song FF");
310                     }
311
312                     if (trackLength > 3300) {
313                         System.out.println("Song GG");
314                     }
315
316                     if (trackLength > 3350) {
317                         System.out.println("Song HH");
318                     }
319
320                     if (trackLength > 3400) {
321                         System.out.println("Song II");
322                     }
323
324                     if (trackLength > 3450) {
325                         System.out.println("Song JJ");
326                     }
327
328                     if (trackLength > 3500) {
329                         System.out.println("Song KK");
330                     }
331
332                     if (trackLength > 3550) {
333                         System.out.println("Song LL");
334                     }
335
336                     if (trackLength > 3600) {
337                         System.out.println("Song MM");
338                     }
339
33
340                     if (trackLength > 3650) {
341                         System.out.println("Song NN");
342                     }
343
344                     if (trackLength > 3700) {
345                         System.out.println("Song OO");
346                     }
347
348                     if (trackLength > 3750) {
349                         System.out.println("Song PP");
350                     }
351
352                     if (trackLength > 3800) {
353                         System.out.println("Song QQ");
354                     }
355
356                     if (trackLength > 3850) {
357                         System.out.println("Song RR");
358                     }
359
360                     if (trackLength > 3900) {
361                         System.out.println("Song SS");
362                     }
363
364                     if (trackLength > 3950) {
365                         System.out.println("Song TT");
366                     }
367
368                     if (trackLength > 4000) {
369                         System.out.println("Song UU");
370                     }
371
372                     if (trackLength > 4050) {
373                         System.out.println("Song VV");
374                     }
375
376                     if (trackLength > 4100) {
377                         System.out.println("Song WW");
378                     }
379
380                     if (trackLength > 4150) {
381                         System.out.println("Song XX");
382                     }
383
384                     if (trackLength > 4200) {
385                         System.out.println("Song YY");
386                     }
387
388                     if (trackLength > 4250) {
389                         System.out.println("Song ZZ");
390                     }
391
392                     if (trackLength > 4300) {
393                         System.out.println("Song AA");
394                     }
395
396                     if (trackLength > 4350) {
397                         System.out.println("Song BB");
398                     }
399
39
400                     if (trackLength > 4400) {
401                         System.out.println("Song CC");
402                     }
403
404                     if (trackLength > 4450) {
405                         System.out.println("Song DD");
406                     }
407
408                     if (trackLength > 4500) {
409                         System.out.println("Song EE");
410                     }
411
412                     if (trackLength > 4550) {
413                         System.out.println("Song FF");
414                     }
415
416                     if (trackLength > 4600) {
417                         System.out.println("Song GG");
418                     }
419
420                     if (trackLength > 4650) {
421                         System.out.println("Song HH");
422                     }
423
424                     if (trackLength > 4700) {
425                         System.out.println("Song II");
426                     }
427
428                     if (trackLength > 4750) {
429                         System.out.println("Song JJ");
430                     }
431
432                     if (trackLength > 4800) {
433                         System.out.println("Song KK");
434                     }
435
436                     if (trackLength > 4850) {
437                         System.out.println("Song LL");
438                     }
439
43
440                     if (trackLength > 4900) {
441                         System.out.println("Song MM");
442                     }
443
444                     if (trackLength > 4950) {
445                         System.out.println("Song NN");
446                     }
447
448                     if (trackLength > 5000) {
449                         System.out.println("Song OO");
450                     }
451
452                     if (trackLength > 5050) {
453                         System.out.println("Song PP");
454                     }
455
456                     if (trackLength > 5100) {
457                         System.out.println("Song QQ");
458                     }
459
460                     if (trackLength > 5150) {
461                         System.out.println("Song RR");
462                     }
463
464                     if (trackLength > 5200) {
465                         System.out.println("Song SS");
466                     }
467
468                     if (trackLength > 5250) {
469                         System.out.println("Song TT");
470                     }
471
472                     if (trackLength > 5300) {
473                         System.out.println("Song UU");
474                     }
475
476                     if (trackLength > 5350) {
477                         System.out.println("Song VV");
478                     }
479
480                     if (trackLength > 5400) {
481                         System.out.println("Song WW");
482                     }
483
484                     if (trackLength > 5450) {
485                         System.out.println("Song XX");
486                     }
487
488                     if (trackLength > 5500) {
489                         System.out.println("Song YY");
490                     }
491
492                     if (trackLength > 5550) {
493                         System.out.println("Song ZZ");
494                     }
495
496                     if (trackLength > 5600) {
497                         System.out.println("Song AA");
498                     }
499
49
500                     if (trackLength > 5650) {
501                         System.out.println("Song BB");
502                     }
503
504                     if (trackLength > 5700) {
505                         System.out.println("Song CC");
506                     }
507
508                     if (trackLength > 5750) {
509                         System.out.println("Song DD");
510                     }
511
512                     if (trackLength > 5800) {
513                         System.out.println("Song EE");
514                     }
515
516                     if (trackLength > 5850) {
517                         System.out.println("Song FF");
518                     }
519
520                     if (trackLength > 5900) {
521                         System.out.println("Song GG");
522                     }
523
524                     if (trackLength > 5950) {
525                         System.out.println("Song HH");
526                     }
527
528                     if (trackLength > 6000) {
529                         System.out.println("Song II");
530                     }
531
532                     if (trackLength > 6050) {
533                         System.out.println("Song JJ");
534                     }
535
536                     if (trackLength > 6100) {
537                         System.out.println("Song KK");
538                     }
539
53
540                     if (trackLength > 6150) {
541                         System.out.println("Song LL");
542                     }
543
544                     if (trackLength > 6200) {
545                         System.out.println("Song MM");
546                     }
547
548                     if (trackLength > 6250) {
549                         System.out.println("Song NN");
550                     }
551
552                     if (trackLength > 6300) {
553                         System.out.println("Song OO");
554                     }
555
556                     if (trackLength > 6350) {
557                         System.out.println("Song PP");
558                     }
559
560                     if (trackLength > 6400) {
561                         System.out.println("Song QQ");
562                     }
563
564                     if (trackLength > 6450) {
565                         System.out.println("Song RR");
566                     }
567
568                     if (trackLength > 6500) {
569                         System.out.println("Song SS");
570                     }
571
572                     if (trackLength > 6550) {
573                         System.out.println("Song TT");
574                     }
575
576                     if (trackLength > 6600) {
577                         System.out.println("Song UU");
578                     }
579
580                     if (trackLength > 6650) {
581                         System.out.println("Song VV");
582                     }
583
584                     if (trackLength > 6700) {
585                         System.out.println("Song WW");
586                     }
587
588                     if (trackLength > 6750) {
589                         System.out.println("Song XX");
590                     }
591
592                     if (trackLength > 6800) {
593                         System.out.println("Song YY");
594                     }
595
596                     if (trackLength > 6850) {
597                         System.out.println("Song ZZ");
598                     }
599
59
600                     if (trackLength > 6900) {
601                         System.out.println("Song AA");
602                     }
603
604                     if (trackLength > 6950) {
605                         System.out.println("Song BB");
606                     }
607
608                     if (trackLength > 7000) {
609                         System.out.println("Song CC");
610                     }
611
612                     if (trackLength > 7050) {
613                         System.out.println("Song DD");
614                     }
615
616                     if (trackLength > 7100) {
617                         System.out.println("Song EE");
618                     }
619
620                     if (trackLength > 7150) {
621                         System.out.println("Song FF");
622                     }
623
624                     if (trackLength > 7200) {
625                         System.out.println("Song GG");
626                     }
627
628                     if (trackLength > 7250) {
629                         System.out.println("Song HH");
630                     }
631
632                     if (trackLength > 7300) {
633                         System.out.println("Song II");
634                     }
635
636                     if (trackLength > 7350) {
637                         System.out.println("Song JJ");
638                     }
639
640                     if (trackLength > 7400) {
641                         System.out.println("Song KK");
642                     }
643
644                     if (trackLength > 7450) {
645                         System.out.println("Song LL");
646                     }
647
648                     if (trackLength > 7500) {
649                         System.out.println("Song MM");
650                     }
651
652                     if (trackLength > 7550) {
653                         System.out.println("Song NN");
654                     }
655
656                     if (trackLength > 7600) {
657                         System.out.println("Song OO");
658                     }
659
660                     if (trackLength > 7650) {
661                         System.out.println("Song PP");
662                     }
663
664                     if (trackLength > 7700) {
665                         System.out.println("Song QQ");
666                     }
667
668                     if (trackLength > 7750) {
669                         System.out.println("Song RR");
670                     }
671
672                     if (trackLength > 7800) {
673                         System.out.println("Song SS");
674                     }
675
676                     if (trackLength > 7850) {
677                         System.out.println("Song TT");
678                     }
679
680                     if (trackLength > 7900) {
681                         System.out.println("Song UU");
682                     }
683
684                     if (trackLength > 7950) {
685                         System.out.println("Song VV");
686                     }
687
688                     if (trackLength > 8000) {
689                         System.out.println("Song WW");
690                     }
691
692                     if (trackLength > 8050) {
693                         System.out.println("Song XX");
694                     }
695
696                     if (trackLength > 8100) {
697                         System.out.println("Song YY");
698                     }
699
69
700                     if (trackLength > 8150) {
701                         System.out.println("Song ZZ");
702                     }
703
704                     if (trackLength > 8200) {
705                         System.out.println("Song AA");
706                     }
707
708                     if (trackLength > 8250) {
709                         System.out.println("Song BB");
710                     }
711
712                     if (trackLength > 8300) {
713                         System.out.println("Song CC");
714                     }
715
716                     if (trackLength > 8350) {
717                         System.out.println("Song DD");
718                     }
719
720                     if (trackLength > 8400) {
721                         System.out.println("Song EE");
722                     }
723
724                     if (trackLength > 8450) {
725                         System.out.println("Song FF");
726                     }
727
728                     if (trackLength > 8500) {
729                         System.out.println("Song GG");
730                     }
731
732                     if (trackLength > 8550) {
733                         System.out.println("Song HH");
734                     }
735
736                     if (trackLength > 8600) {
737                         System.out.println("Song II");
738                     }
739
740                     if (trackLength > 8650) {
741                         System.out.println("Song JJ");
742                     }
743
744                     if (trackLength > 8700) {
745                         System.out.println("Song KK");
746                     }
747
748                     if (trackLength > 8750) {
749                         System.out.println("Song LL");
750                     }
751
752                     if (trackLength > 8800) {
753                         System.out.println("Song MM");
754                     }
755
756                     if (trackLength > 8850) {
757                         System.out.println("Song NN");
758                     }
759
75
760                     if (trackLength > 8900) {
761                         System.out.println("Song OO");
762                     }
763
764                     if (trackLength > 8950) {
765                         System.out.println("Song PP");
766                     }
767
768                     if (trackLength > 9000) {
769                         System.out.println("Song QQ");
770                     }
771
772                     if (trackLength > 9050) {
773                         System.out.println("Song RR");
774                     }
775
776                     if (trackLength > 9100) {
777                         System.out.println("Song SS");
778                     }
779
780                     if (trackLength > 9150) {
781                         System.out.println("Song TT");
782                     }
783
784                     if (trackLength > 9200) {
785                         System.out.println("Song UU");
786                     }
787
788                     if (trackLength > 9250) {
789                         System.out.println("Song VV");
790                     }
791
792                     if (trackLength > 9300) {
793                         System.out.println("Song WW");
794                     }
795
796                     if (trackLength > 9350) {
797                         System.out.println("Song XX");
798                     }
799
79
800                     if (trackLength > 9400) {
801                         System.out.println("Song YY");
802                     }
803
804                     if (trackLength > 9450) {
805                         System.out.println("Song ZZ");
806                     }
807
808                     if (trackLength > 9500) {
809                         System.out.println("Song AA");
810                     }
811
812                     if (trackLength > 9550) {
813                         System.out.println("Song BB");
814                     }
815
816                     if (trackLength > 9600) {
817                         System.out.println("Song CC");
818                     }
819
820                     if (trackLength > 9650) {
821                         System.out.println("Song DD");
822                     }
823
824                     if (trackLength > 9700) {
825                         System.out.println("Song EE");
826                     }
827
828                     if (trackLength > 9750) {
829                         System.out.println("Song FF");
830                     }
831
832                     if (trackLength > 9800) {
833                         System.out.println("Song GG");
834                     }
835
836                     if (trackLength > 9850) {
837                         System.out.println("Song HH");
838                     }
839
83
840                     if (trackLength > 9900) {
841                         System.out.println("Song II");
842                     }
843
844                     if (trackLength > 9950) {
845                         System.out.println("Song JJ");
846                     }
847
848                     if (trackLength > 10000) {
849                         System.out.println("Song KK");
850                     }
851
852                     if (trackLength > 10050) {
853                         System.out.println("Song LL");
854                     }
855
856                     if (trackLength > 10100) {
857                         System.out.println("Song MM");
858                     }
859
85
860                     if (trackLength > 10150) {
861                         System.out.println("Song NN");
862                     }
863
864                     if (trackLength > 10200) {
865                         System.out.println("Song OO");
866                     }
867
868                     if (trackLength > 10250) {
869                         System.out.println("Song PP");
870                     }
871
872                     if (trackLength > 10300) {
873                         System.out.println("Song QQ");
874                     }
875
876                     if (trackLength > 10350) {
877                         System.out.println("Song RR");
878                     }
879
880                     if (trackLength > 10400) {
881                         System.out.println("Song SS");
882                     }
883
884                     if (trackLength > 10450) {
885                         System.out.println("Song TT");
886                     }
887
888                     if (trackLength > 10500) {
889                         System.out.println("Song UU");
890                     }
891
892                     if (trackLength > 10550) {
893                         System.out.println("Song VV");
894                     }
895
896                     if (trackLength > 10600) {
897                         System.out.println("Song WW");
898                     }
899
89
900                     if (trackLength > 10650) {
901                         System.out.println("Song XX");
902                     }
903
904                     if (trackLength > 10700) {
905                         System.out.println("Song YY");
906                     }
907
908                     if (trackLength > 10750) {
909                         System.out.println("Song ZZ");
910                     }
911
912                     if (trackLength > 10800) {
913                         System.out.println("Song AA");
914                     }
915
916                     if (trackLength > 10850) {
917                         System.out.println("Song BB");
918                     }
919
920                     if (trackLength > 10900) {
921                         System.out.println("Song CC");
922                     }
923
924                     if (trackLength > 10950) {
925                         System.out.println("Song DD");
926                     }
927
928                     if (trackLength > 11000) {
929                         System.out.println("Song EE");
930                     }
931
932                     if (trackLength > 11050) {
933                         System.out.println("Song FF");
934                     }
935
936                     if (trackLength > 11100) {
937                         System.out.println("Song GG");
938                     }
939
940                     if (trackLength > 11150) {
941                         System.out.println("Song HH");
942                     }
943
944                     if (trackLength > 11200) {
945                         System.out.println("Song II");
946                     }
947
948                     if (trackLength > 11250) {
949                         System.out.println("Song JJ");
950                     }
951
952                     if (trackLength > 11300) {
953                         System.out.println("Song KK");
954                     }
955
956                     if (trackLength > 11350) {
957                         System.out.println("Song LL");
958                     }
959
960                     if (trackLength > 11400) {
961                         System.out.println("Song MM");
962                     }
963
964                     if (trackLength > 11450) {
965                         System.out.println("Song NN");
966                     }
967
968                     if (trackLength > 11500) {
969                         System.out.println("Song OO");
970                     }
971
972                     if (trackLength > 11550) {
973                         System.out.println("Song PP");
974                     }
975
976                     if (trackLength > 11600) {
977                         System.out.println("Song QQ");
978                     }
979
980                     if (trackLength > 11650) {
981                         System.out.println("Song RR");
982                     }
983
984                     if (trackLength > 11700) {
985                         System.out.println("Song SS");
986                     }
987
988                     if (trackLength > 11750) {
989                         System.out.println("Song TT");
990                     }
991
992                     if (trackLength > 11800) {
993                         System.out.println("Song UU");
994                     }
995
996                     if (trackLength > 11850) {
997                         System.out.println("Song VV");
998                     }
999
99
1000                     if (trackLength > 11900) {
1001                         System.out.println("Song WW");
1002                     }
1003
1004                     if (trackLength > 11950) {
1005                         System.out.println("Song XX");
1006                     }
1007
1008                     if (trackLength > 12000) {
1009                         System.out.println("Song YY");
1010                     }
1011
1012                     if (trackLength > 12050) {
1013                         System.out.println("Song ZZ");
1014                     }
1015
1016                     if (trackLength > 12100) {
1017                         System.out.println("Song AA");
1018                     }
1019
1020                     if (trackLength > 12150) {
1021                         System.out.println("Song BB");
1022                     }
1023
1024                     if (trackLength > 12200) {
1025                         System.out.println("Song CC");
1026                     }
1027
1028                     if (trackLength > 12250) {
1029                         System.out.println("Song DD");
1030                     }
1031
1032                     if (trackLength > 12300) {
1033                         System.out.println("Song EE");
1034                     }
1035
1036                     if (trackLength > 12350) {
1037                         System.out.println("Song FF");
1038                     }
1039
1040                     if (trackLength > 12400) {
1041                         System.out.println("Song GG");
1042                     }
1043
1044                     if (trackLength > 12450) {
1045                         System.out.println("Song HH");
1046                     }
1047
1048                     if (trackLength > 12500) {
1049                         System.out.println("Song II");
1050                     }
1051
1052                     if (trackLength > 12550) {
1053                         System.out.println("Song JJ");
1054                     }
1055
1056                     if (trackLength > 12600) {
1057                         System.out.println("Song KK");
1058                     }
1059
1060                     if (trackLength > 12650) {
1061                         System.out.println("Song LL");
1062                     }
1063
1064                     if (trackLength > 12700) {
1065                         System.out.println("Song MM");
1066                     }
1067
1068                     if (trackLength > 12750) {
1069                         System.out.println("Song NN");
1070                     }
1071
1072                     if (trackLength > 12800) {
1073                         System.out.println("Song OO");
1074                     }
1075
1076                     if (trackLength > 12850) {
1077                         System.out.println("Song PP");
1078                     }
1079
1080                     if (trackLength > 12900) {
1081                         System.out.println("Song QQ");
1082                     }
1083
1084                     if (trackLength > 12950) {
1085                         System.out.println("Song RR");
1086                     }
1087
1088                     if (trackLength > 13000) {
1089                         System.out.println("Song SS");
1090                     }
1091
1092                     if (trackLength > 13050) {
1093                         System.out.println("Song TT");
1094                     }
1095
1096                     if (trackLength > 13100) {
1097                         System.out.println("Song UU");
1098                     }
1099
1100                     if (trackLength > 13150) {
1101                         System.out.println("Song VV");
1102                     }
1103
1104                     if (trackLength > 13200) {
1105                         System.out.println("Song WW");
1106                     }
1107
1108                     if (trackLength > 13250) {
1109                         System.out.println("Song XX");
1110                     }
1111
1112                     if (trackLength > 13300) {
1113                         System.out.println("Song YY");
1114                     }
1115
1116                     if (trackLength > 13350) {
1117                         System.out.println("Song ZZ");
1118                     }
1119
1120                     if (trackLength > 13400) {
1121                         System.out.println("Song AA");
1122                     }
1123
1124                     if (trackLength > 13450) {
1125                         System.out.println("Song BB");
1126                     }
1127
11
```

8 Conclusion

Through Lab 05, students gain practical experience in building graphical user interfaces using Java Swing and integrating them with object-oriented application logic. This lab demonstrates how GUI programming complements core OOP principles in real-world applications.