General instructions:

- In the exam, you will be allowed to copy files to your exam machine during the first 15 minutes of the examination period.
- No documents apart from ones stored in the exam machine can be accessed at any time during the examination period.
- Internet access is not allowed at any time during the examination period.
- Use **c:\temp** as Eclipse workspace for all projects in the exam.
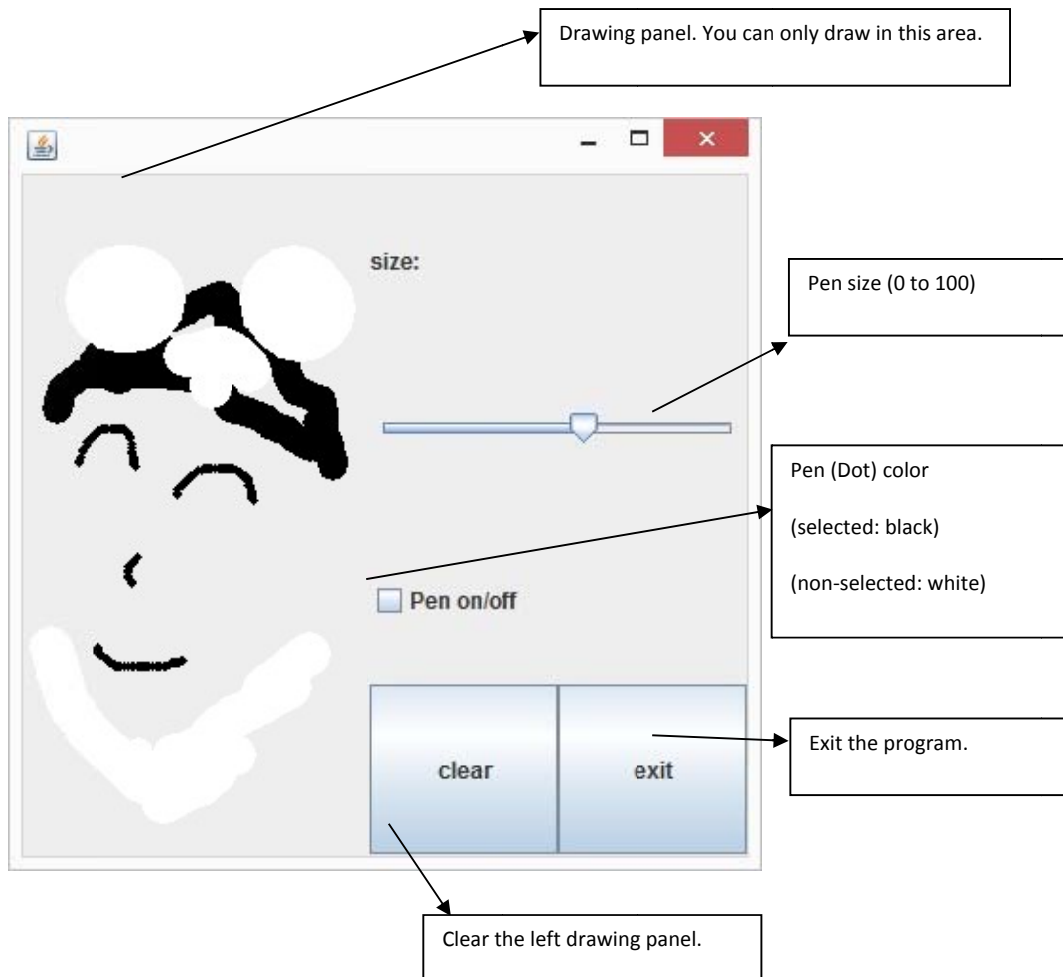
For this problem:

- Expected completion time: <u>60 minutes</u>

Practice problem 2: DotDraw

1. **Java project creation**: (For the real exam)
   - Failure to finish this part will <u>prohibit further grading of this problem</u>.

   a. Set up a new Java project in Eclipse named "practice_problem2" so that the location of the project is at **c:\temp\practice_problem2**
      (We will only grade this problem by opening the project from this folder.)
   b. No source files are provided for this problem.

2. **Program description**: The *DotDraw* Java application is a *JFrame* application that looks like the one in the following picture.

Drawing panel. You can only draw in this area.

size:

Pen size (0 to 100)

Pen (Dot) color

(selected: black)

(non-selected: white)

☐ Pen on/off

clear   exit

Exit the program.

Clear the left drawing panel.

The window size is 400px X 400px.

When drawing, just use *fillOval()* to create dots on the positions that the mouse is "dragged" over. Each dot has the diameter equals to the pen size set by the "Size" slider and its color is either black or white based on the "Pen on/off" checkbox.

The program must remember the sizes and colors of each dot that got painted so that *repaint()* can re-draw all the dots correctly.

3. **Write the code**:

    a. Create a JFrame application in a suitable way.
    b. Layout the GUI so that all widgets are placed similarly to the picture above.
    c. Write all related event listeners for all the events as well as any related code in order so that the program fully works as described above.

Practice problem 2: Grading Checklist

Note that this is NEITHER a set of grading criteria NOR an answer sheet. Don't write anything on this page.

The project can be opened properly.	
The program can be compiled and executed.	
The widgets are laid out as instructed.	
Dots can be drawn when the mouse is dragged.	
Drawn dots have sizes according to the slider.	
Drawn dots have colors according to the checkbox.	
The drawing is repainted correctly.	
The clear button clears the drawing.	
The exit button exits the program.	