

## Exercises for Programming Practice 1

The submitted program will be evaluated as described in “Lesson Plan (2021)”.

The programs (Face.java, PacMan.java and PacManWithEye.java) used in Exercise 15 and 16 can be obtained from “Week 08” page Resource of “Programming Practice 1”, manaba+R. However, please note that the value of the variable "size" is not changed even if Pac-Man is drawn outside the window in the downloaded “Face.java”.

Note:

- ✓ Do not create “module-info.java”, when you create a Java Project.
- ✓ Do not set Package name in the window “New Java Class”.
- ✓ The following information must be included as a comment at the first part of the program.
  - Contents of the program
    - ✧ Do not use the title of exercise for “contents of the program”  
Think about “contents of the program” yourself.
  - Submission date
  - Program creator
- ✓ Wrong file name (including case sensitivity) is not accepted.

The deadline for submitting the programs is 17:50 on November 16th, 2021.

### Exercise 15 (file name “Exercise15.java”)

Create Java program “Exercise15.java” which draws PacMan or PacManWithEye. The program “Exercise15.java” must satisfy the following conditions.

- (a) The window size is 500 horizontal pixels and 500 vertical pixels.
- (b) Create the button at the bottom of the window, which displays the class name (PacMan and PacManWithEye) used for drawing. Every time the button is pressed, the name of class is changed. Use JButton for the object of button.
- (c) On the right side of the button, create a text area with the 16 columns that displays messages that shows the status of the system. The following information must be described in the text area according to the situation.
  - ① Mouse cursor coordinates when mouse button is pressed.
  - ② Pacman size: a multiple of the distance between the location where the mouse button was pressed and the current mouse cursor when the mouse is being dragged.

(d) Pacman's size should be specified by mouse drag.

(e) Prepare the following variables in the field.

```
Face face = new PacMan(0, 0, 0, 60);      // to prepare for drawing  
int flag = 0;    // 0: PacMan, 1: PacManWithEye, Flag that specifies the name of the  
                 // class to draw  
JButton button1; // For switching and displaying the class name to be drawn  
JTextField text; // To display information according to the situation
```

(f) Use the following paint method.

```
public void paint(Graphics g){  
    super.paint(g);  
    g.clearRect(0, 0, 500, 450);  
    face.make(g);  
}
```

Figure 1 shows examples of drawing PacMan, and Figure 2 shows examples of drawing PacManWithEye.

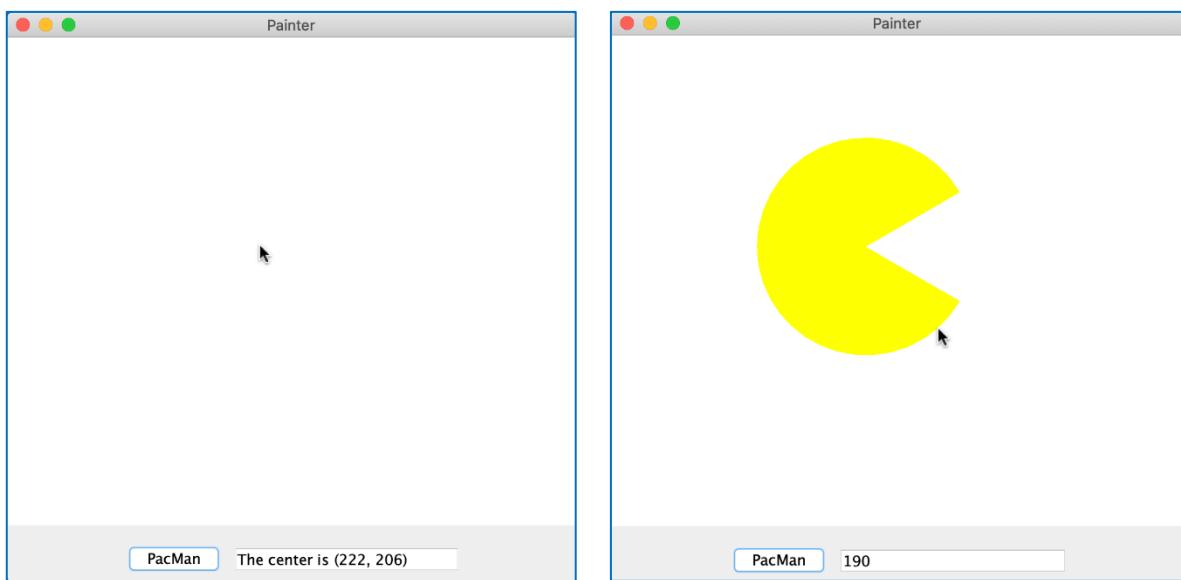


Figure 1. In the case of flag = 0.

(a) Situation when the mouse is pressed.

(b) Situation when the mouse is being dragged



Figure 2. In the case of flag = 1.

- (a) Situation when the mouse is pressed.
- (b) Situation when the mouse is being dragged.

#### **Exercise 16 (file name “Exercise16.java”)**

Create Java program “Exercise16.java” by adding the following functions to program “Exercise15.java”.

- (a) In addition to the create mode realized by program “Exercise15.java”, a check mode that displays the class name used for drawing is added. To handle the two modes, add the following two variables to the field.

```
int mode = 0;      // 0: create mode, 1: check mode
JButton button2;  // For switching and displaying the mode
```

- (b) Button variable “button2” for changing the mode. The “button2” is add to JPanel p before “button1”. Therefore, “button2” is placed to the left of “button1”. The initial label of “button2” is “create mode”. Figure 3 shows the initial state.
- (c) When Pacman is pressed in check mode, display the name of the class that draws Pacman in the text area. See Figure 4 for examples of check mode.

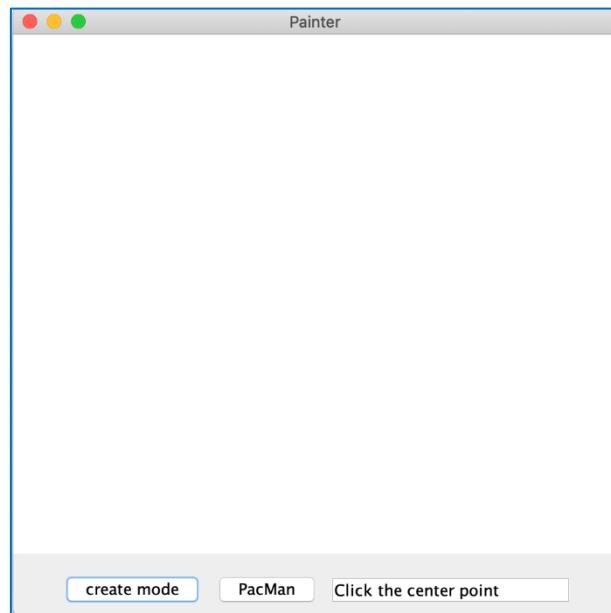


Figure 3. The initial state of “Exercise16.java”.

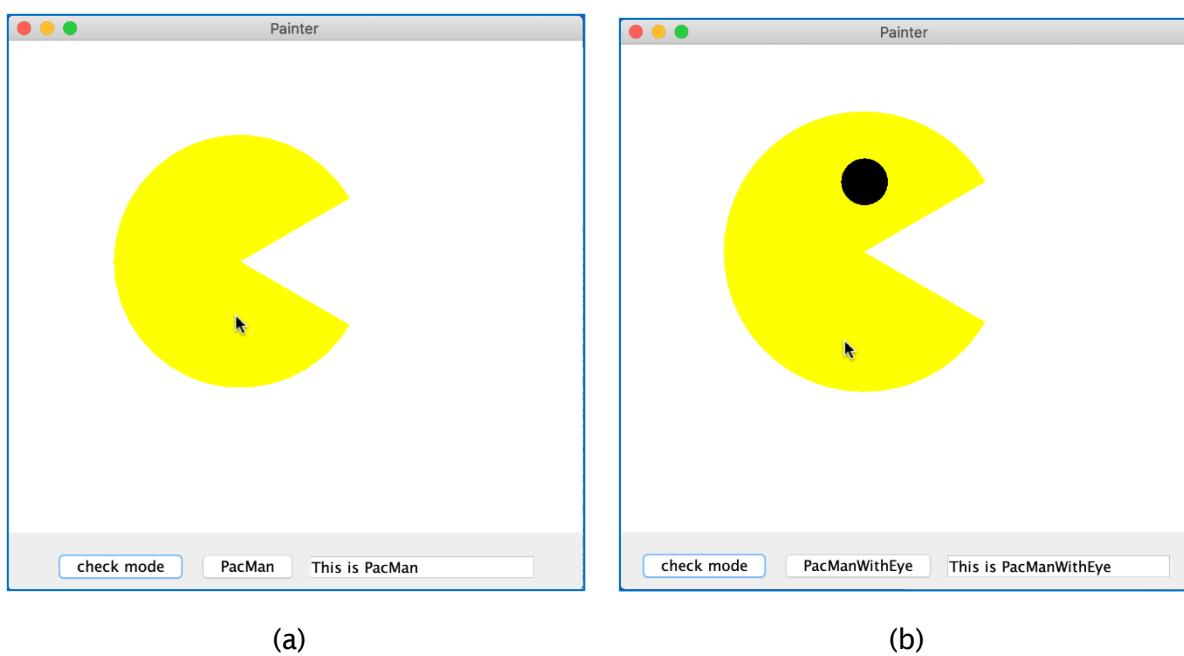


Figure 4 In the case of check mode.

- (a) Situation when the PacMan is drawn.
- (b) Situation when the PacManWithEye is drawn.