Programming 1

Tutorial 13

Activity 1

Create and display window. Add a custom `JPanel` whose size is `480 x 360` to this window. Resize the window to fit the size of the content panel. Make the window appear at the center of the screen.

(*) In the constructor of the custom `JPanel`, set the size of the panel using the `setPreferredSize()` method. Use the `pack()` method of `JFrame` to fit the window size to the size of its content.

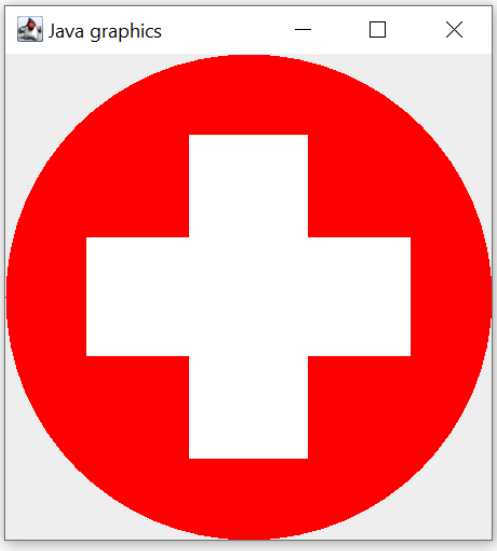
Deliverables

BlankWindow.java

BlankPanel.java

Activity 2

Write a program to display a window which has a white plus sign on a red circle, like the following picture:



Hint

The panel' size is `450 x 450` pixels. We can set the panel' size using the following statement in the panel's constructor:

```
setPreferredSize(new Dimension(450, 450));
```

The red circle is touching the panel's borders. That means the top-left point for drawing the circle is `(0,0)`, and the diameter of circle is `450` pixels.

```
g.fillOval(0, 0, 450, 450);
```

The vertical bar's width is approximately `20%` to `25%` of `450` pixels. Its height is approximately 2/3 of `450` pixels, and it is centered in the panel. Therefore, you should calculate its top-left position like the following:

```
x = (450 - 110) / 2;
y = (450 - 300) / 2;
```

Let the width of vertical bar be `110`, distance to the left or right is `(450 - 110) / 2`.

The height of horizontal bar is the same as the width of vertical bar. The width of horizontal bar equals the height of vertical bar. Don't forget to draw these bars with the white color.

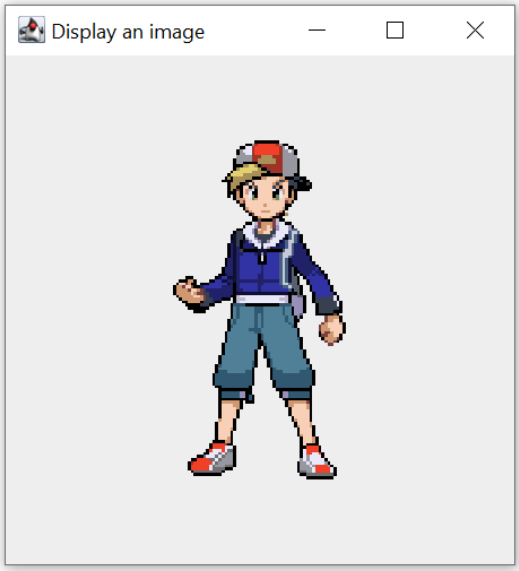
Deliverables

RedCrossDemo.java

RedCrossPanel.java

Activity 3

Display the provided `pokemon_trainer.png` image at the center of the window.



Deliverables

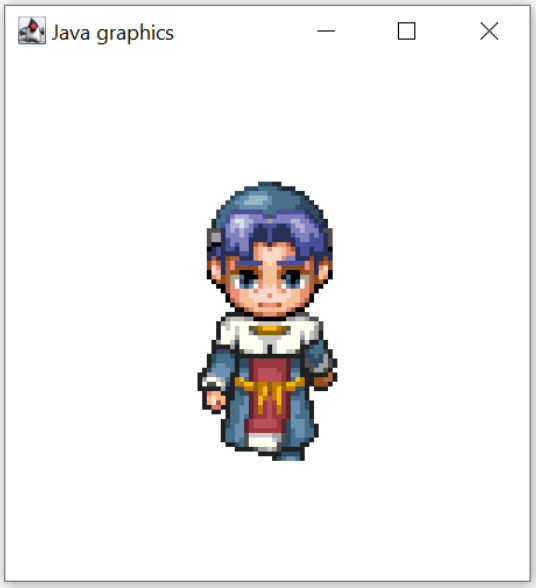
PokemonTrainer.java

PokemonTrainerPanel.java

Activity 4

(optional)

The file `sprites.png` contain 3 frames of a game character. If you display these frames approximately 3 times per second, you'll see the character walking.



Hint

The size of the `png` image is `396 x 244`. It is evenly divided into 3 sections, each has the size of `132 x 244`. Follow the animation example in the lecture source code for ideas to complete this exercise.

Deliverables

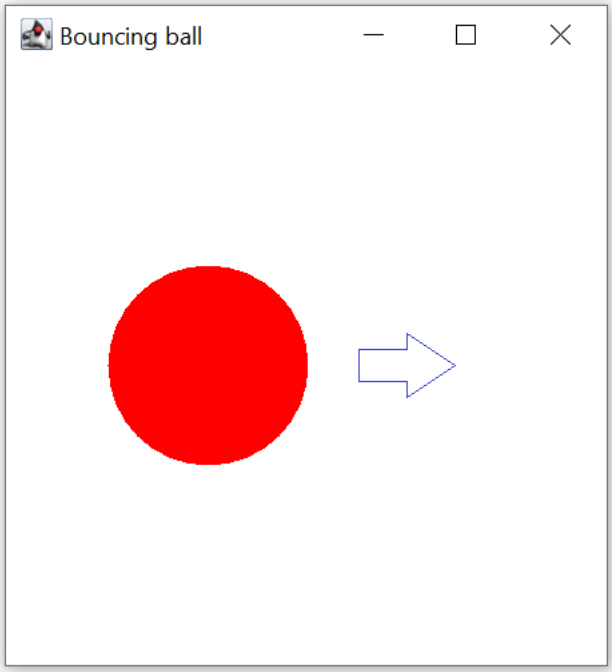
WalkingAnimation.java

WalkingAnimationPanel.java

Activity 5

(optional)

Write a program in which a ball bounces within the window in the horizontal direction.



Hint

Think of a way to check if the red ball touches the edge of the panel. As soon as the ball collides with the panel's edge, reverse its traveling direction. Don't forget to do this for both the left edge and the right edge.

Deliverables

BouncingBall.java

BouncingBallPanel.java