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4CSC

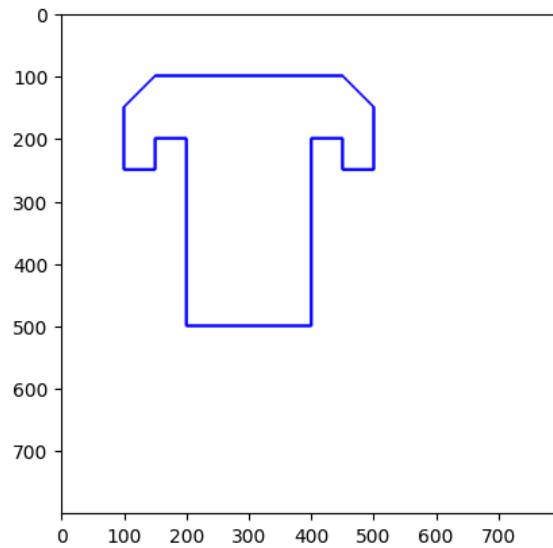
## Graphics Computing – Quiz 1

### 1. T-shirt

#### a. Python

```
2. image = Image.new("RGB", (800, 800), "white")
3. draw = ImageDraw.Draw(image)
4. points = [
5.     (100, 250),
6.     (150, 250),
7.     (150, 200),
8.     (200, 200),
9.     (200, 500),
10.    (400, 500),
11.    (400, 200),
12.    (450, 200),
13.    (450, 250),
14.    (500, 250),
15.    (500, 150),
16.    (450, 100),
17.    (150, 100),
18.    (100, 150),
19.    (100, 250),
20.]
21.draw.line(points, fill="blue", width=5)
22.plt.imshow(image)
```

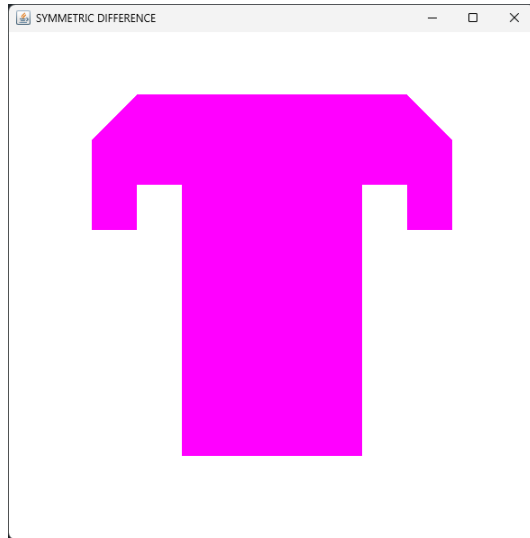
OUTPUT



a. Java

```
23. public void paint (Graphics g){
24.     Graphics2D g2d = (Graphics2D) g;
25.     BasicStroke bs = new BasicStroke(5.0f);
26.     g2d.setStroke(bs);
27.     GeneralPath tshirt = new GeneralPath();
28.
29.
30.     tshirt.moveTo(100,250);
31.     tshirt.lineTo(150, 250);
32.     tshirt.lineTo(150, 200);
33.     tshirt.lineTo(200, 200);
34.     tshirt.lineTo(200, 500);
35.     tshirt.lineTo(400, 500);
36.     tshirt.lineTo(400, 200);
37.     tshirt.lineTo(450, 200);
38.     tshirt.lineTo(450, 250);
39.     tshirt.lineTo(500, 250);
40.     tshirt.lineTo(500, 150);
41.     tshirt.lineTo(450, 100);
42.     tshirt.lineTo(150, 100);
43.     tshirt.lineTo(100, 150);
44.     tshirt.lineTo(100, 250);
45.     tshirt.closePath();
46.
47.     g2d.setPaint(Color.MAGENTA);
48.     g2d.fill(tshirt);
```

OUTPUT

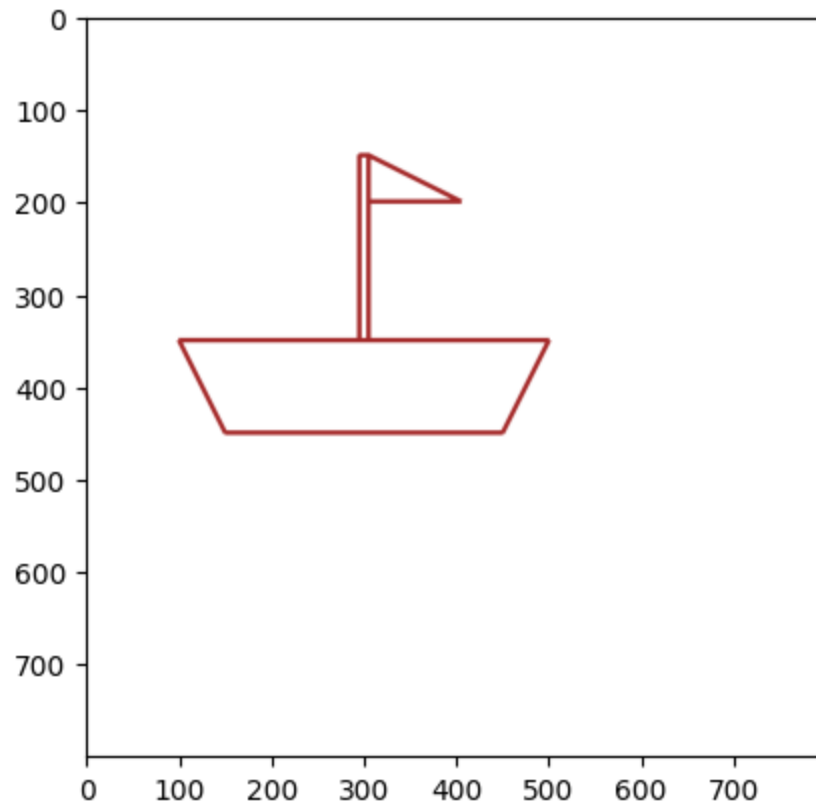


#### 49. Boat

##### a. Python

```
50.image = Image.new("RGB", (800, 800), "white")
51.draw = ImageDraw.Draw(image)
52.points = [
53.     (100, 350),
54.     (150, 450),
55.     (450, 450),
56.     (500, 350),
57.     (305, 350),
58.     (295, 350),
59.     (295, 150),
60.     (305, 150),
61.     (305, 200),
62.     (405, 200),
63.     (305, 150),
64.     (305, 350),
65.     (100, 350),
66.]
67.draw.line(points, fill="brown", width=5)
68.plt.imshow(image)
```

OUTPUT



a. Java

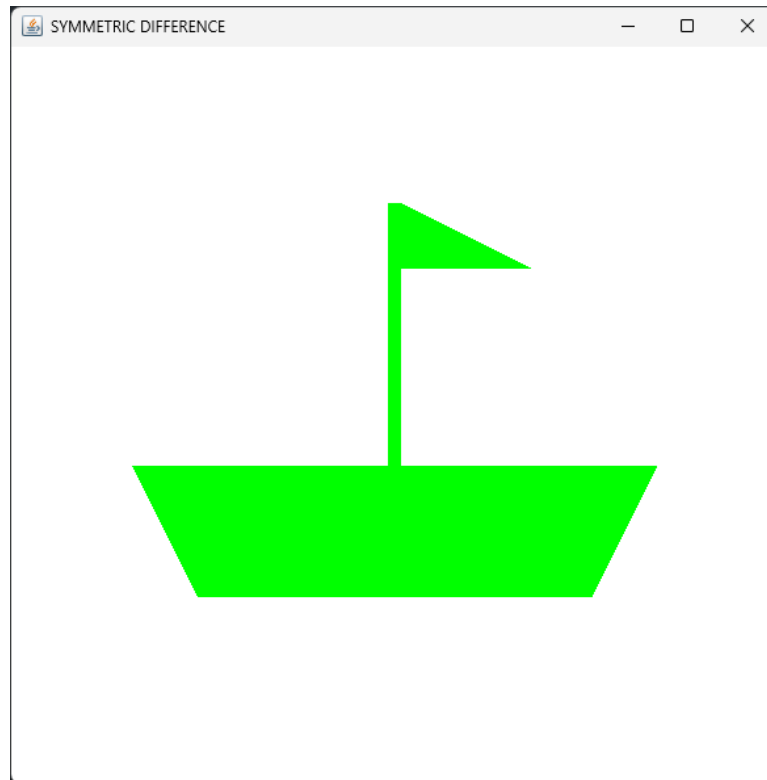
```
69. // Boat Base
70.     GeneralPath boatBase = new GeneralPath();
71.     boatBase.moveTo(100, 350);
72.     boatBase.lineTo(150, 450);
73.     boatBase.lineTo(450, 450);
74.     boatBase.lineTo(500, 350);
75.     boatBase.lineTo(100, 350);
76.
77.     // Boat Flag
78.     GeneralPath boatFlag = new GeneralPath();
79.     boatFlag.moveTo(305, 150);
80.     boatFlag.lineTo(305, 200);
81.     boatFlag.lineTo(405, 200);
82.
83.     // Boat Pole
84.     GeneralPath boatPole = new GeneralPath();
85.     boatPole.moveTo(295, 350);
86.     boatPole.lineTo(295, 150);
87.     boatPole.lineTo(305, 150);
88.     boatPole.lineTo(305, 350);
89.
90.     // Boat Color
```

```

91.         g2d.setPaint(Color.GREEN);
92.         g2d.fill(boatBase);
93.         g2d.fill(boatPole);
94.         g2d.fill(boatFlag);

```

## OUTPUT



## 95. Relative Difference and Symmetric Difference

### a. Relative Difference

```

96. // Creating Tshirt Area
97.     Area tshirtArea = new Area(tshirt);
98.
99.     // // Creating Area for Boat Components
100.        Area poleArea = new Area(boatPole);
101.        Area baseArea = new Area(boatBase);
102.        Area flagArea = new Area(boatFlag);
103.        Area boatArea = new Area();
104.        boatArea.add(baseArea);
105.        boatArea.add(poleArea);
106.        boatArea.add(flagArea);
107.
108.        // Relative Difference of tshirt and Boat
109.        Area relative = new Area(tshirtArea);
110.        relative.subtract(boatArea);
111.        g2d.setPaint(Color.YELLOW);

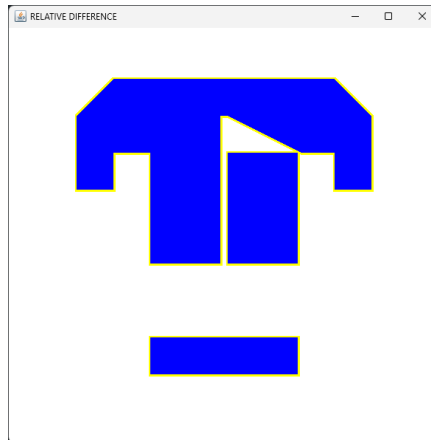
```

```

112.         g2d.draw(relative);
113.         g2d.setPaint(Color.BLUE);
114.         g2d.fill(relative);

```

## OUTPUT



### a. Symmetric Difference

```

115.         // Symmetric Difference
116.         Area symmetric = new Area(tshirtArea);
117.         symmetric.exclusiveOr(boatArea);
118.
119.         g2d.setPaint(Color.RED);
120.         g2d.draw(symmetric);
121.         g2d.setPaint(Color.ORANGE);
122.         g2d.fill(symmetric);

```

## OUTPUT

