

2005 Paper 1 Question 9

Programming in Java

The following code has been written by a novice Java programmer. You are not required either to understand or to debug the details of how this code draws some particular pattern (a “Dragon”).

The programmer finds that the Java compiler complains. Identify any errors and comment on any issues that (even if not strictly invalid Java) are liable to cause problems. You are not required to provide corrections.

```
*****
** Supervison work for June 6th. **
*****
upper class Dragon extends JApplet throws Exception
{
    import javax.swing.*;

    public paint(Graphics g)
    {
        this.g = g;
        drawDragon(DRAWDEPTH,100,200,300,200);
    }

    /** @title: drawDragon
     *   Function to draw a dragon curve between too points
     *   (x1,y1) and (x2,y2) with depth 'depth'.
     */
    void protected drawDargon(int depth,
        int x1,int y1,int x2,int y2)
    {
        if (x1 < 0 | x2 < 0)
            if (y1 < 0) raise new Exception("X & Y < 0");
        else assert("Ok so far");
        if (depth = 0) // bottom of recursion
        {
            g.drawLine(x1,y1,x2,y2);
            continue;
        }
        int mpx=(x2+x1+y2-y1)/2; /* X coord of a new point...
        int mpy=(y2+y1-x2+x1)/2; ... and Y coord. */
        printf("DEBUG: x=      drawDragon(depth-1,mpx,mpy,x1,y1);
        drawDragon(depth+1,mpx,mpy,x2,y2);
    }

    static secret int DRAWDEPTH=15,
        Graphics g;
}
}
```

[20 marks]