

## Week 7, Lecture 1

### Objects, Arrays and Methods



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## Announcements

- **Assignment 2** is due

**4pm this Friday, September 10th**  
(late assignments cannot be accepted).

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## Assignment 2 Submission

- prepare the **three** files  
**Pirate.java**, **PlankStatistics.java** and **PercentSaved.java**
- ensure the top of **each** file contains the comments:  

```
// Family name: DODGER  
// Given names: Roger The  
// Student number: 87654321
```
- follow the instructions for submission; in particular, **you must submit all three files together--if you resubmit you must resubmit all three files**
- keep a record of your **Submission Id**

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## This Week

**Lecture 1: Objects, arrays and methods**

**Lecture 2: Case study: population simulation**

**Java Genesis:**

–reinforcement of Chapters 5, 6 and 7

**Assignment 2 (due 4pm this Friday, Sept 10)**

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```
import java.awt.*;  
public class Circle {  
  
    // instance variables  
    private int xCentre, yCentre;  
    private int radius;  
    private Color colour;  
    private boolean isSolid;  
  
    // constructor  
    public Circle (int x, int y,  
                  int r, Color c, boolean b) {  
        xCentre = x;  
        yCentre = y;  
        radius = r;  
        colour = c;  
        isSolid = b;  
    }  
}
```

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```
    public int getXCentre ( ) {  
        return xCentre;  
    }  
    public int getYCentre ( ) {  
        return yCentre;  
    }  
    public void setCentre (int x, int y) {  
        xCentre = x;  
        yCentre = y;  
    }  
    public int getRadius ( ) {  
        return radius;  
    }  
    public void setRadius (int r) {  
        radius = r;  
    }  
}
```

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```

public Color getColour ( ) {
    return colour;
}

public void setColour (Color c) {
    colour = c;
}

public boolean getIsSolid ( ) {
    return isSolid;
}

public void setIsSolid (boolean b) {
    isSolid = b;
}
}

```

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```

import java.awt.*;

public class DrawingCircles {

    public static void main (String [ ] args) {
        int num = 24;
        Circle [ ] circles = new Circle [num];
        for (int i=0; i<num; i++) {
            circles[i] =
                new Circle(244, 232,
                           10*i, Color.red, false);
        }
        Mike.draw(circles);
    }
}

```

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```

import java.awt.*;
public class DrawingCircles {

    private static Color [ ] colours = {Color.red,
        Color.blue, Color.green, Color.magenta,
        Color.yellow, Color.pink, Color.orange,
        Color.cyan, Color.black, Color.gray};

    public static void main (String [ ] args) {
        int num = 35;
        Circle [ ] circles = new Circle [num];
        for (int i=0; i<num; i++) {
            int posn =
                (int)(colours.length*Math.random( ));
            circles[i] = new Circle(244, 232,
                10*(num-i-1), colours[posn], true);
        } Mike.draw(circles);
    }
}

```

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```

public static void cycleColours (Circle [ ] c) {
    for (int i=0; i<c.length-1; i++) {
        c[i].setColour(c[i+1].getColour( ));
    }
    c[c.length-1].setColour(c[0].getColour( ));
}

```

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```

public static void explode (Circle [ ] c) {
    int num = c.length;
    while (true) {
        Delay.milliseconds(10);
        for (int i=0; i<num; i++) {
            c[i].setRadius(c[i].getRadius( )+2);
            if (c[i].getRadius( ) > 100) {
                int x = (int)(400*Math.random( ))+50;
                int y = (int)(400*Math.random( ))+50;
                c[i].setCentre(x, y);
                int posn =
                    (int)(colours.length*Math.random( ));
                c[i].setColour(colours[posn]);
                c[i].setRadius(0);
            }
        }
        Mike.redraw(c);
    }
}
}

```

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