

Philip Pesic

Week 10

March 26 2023

Week 10 Prog 4

Write code

// Remember the three steps ..

Step 1 - DEFINE

1) Create this class first: Square

two variables: length, width

five function: getWidth, setWidth, getLength, setLength, getArea

Write a constructor that sets default values of length and width to 0;

2) Write the class second: Cube

inheritance the square class code

one variable: height

three functions: getHeight, setHeight, getVolume

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Step 2 - DECLARE 3 different instances of a cube: C1, C2, C3

Step 3 - USE the three instances of the cube.

set the length, width and height of each: C1: 2,3,4 and C2: 3,4.5,7 and C3: 4,,9.5,42

by calling the set functions.

get volume of each cube

```
package Prog4;
```

```
class prog4 {  
    public static void main(String[] args) {  
        cube c1 = new cube();  
        cube c2 = new cube();  
        cube c3 = new cube();  
  
        c1.setLength(2);  
        c1.setWidth(3);  
        c1.setHeight(4);  
  
        c2.setLength(3);  
        c2.setWidth(4.5);  
        c2.setHeight(7);  
  
        c3.setLength(4);  
        c3.setWidth(9.5);  
        c3.setHeight(42);  
  
        System.out.println("C1 volume = " + c1.getVolume());  
        System.out.println("C2 volume = " + c2.getVolume());  
        System.out.println("C3 volume = " + c3.getVolume());  
    }  
}
```

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```
        System.out.println("Philip Pesic 3/26/23");
    }
}

package Prog4;

public class square {
    private double length, width;

    public void setLength(double length) {
        this.length = length;
    }

    public void setWidth(double width) {
        this.width = width;
    }

    public double getLength() {
        return this.length;
    }

    public double getWidth() {
        return this.width;
    }

    public double getArea() {
        return this.length * this.width;
    }
}

package Prog4;

public class cube extends square {
    private double height;
```

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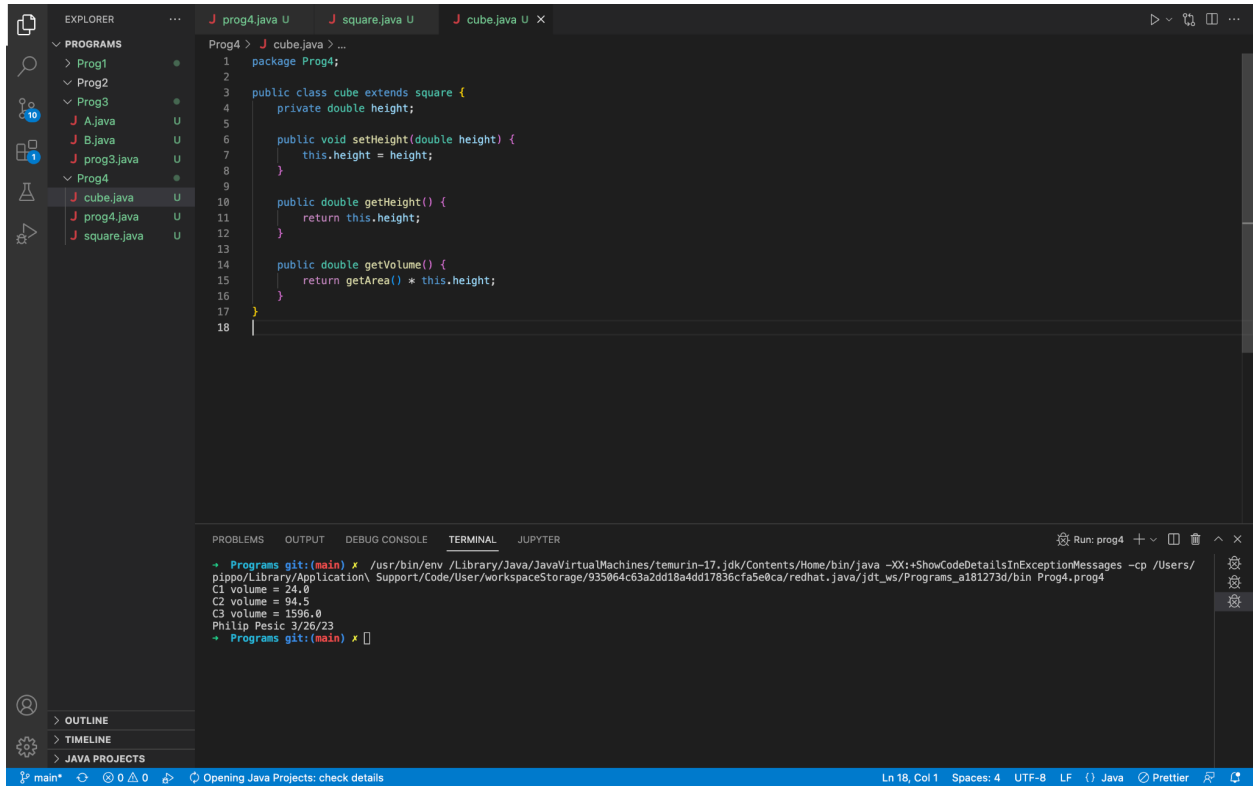
```
public void setHeight(double height) {  
    this.height = height;  
}  
  
public double getHeight() {  
    return this.height;  
}  
  
public double getVolume() {  
    return getArea() * this.height;  
}  
}
```

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The screenshot shows an IDE with the following components:

- EXPLORER:** A tree view on the left showing a project structure with folders 'PROGRAMS' and 'Prog4'. Under 'Prog4', there are files 'cube.java', 'prog4.java', and 'square.java'. The 'cube.java' file is selected.
- Editor:** The main area displays the code for 'Prog4 > J cube.java'. The code is as follows:

```
1 package Prog4;
2
3 public class cube extends square {
4     private double height;
5
6     public void setHeight(double height) {
7         this.height = height;
8     }
9
10    public double getHeight() {
11        return this.height;
12    }
13
14    public double getVolume() {
15        return getArea() * this.height;
16    }
17 }
18
```
- TERMINAL:** The bottom panel shows the output of running the program. The command executed is `java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/pippo/Library/Application\ Support/Code/User/workspaceStorage/935064c63a2dd18a4dd17836cfa5e8ca/redhat.java/jdt_ws/Programs_a181273d/bin Prog4.prog4`. The output is:

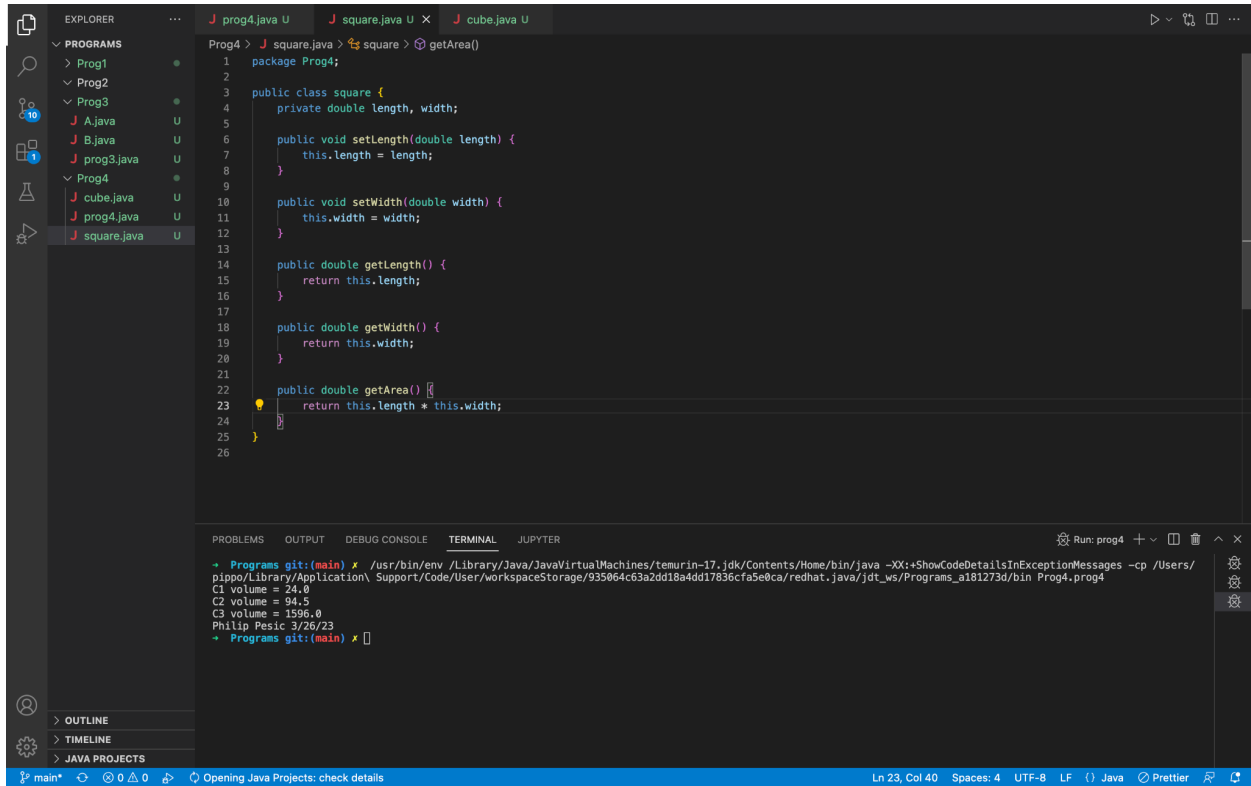
```
C1 volume = 24.0
C2 volume = 94.5
C3 volume = 1596.0
Philip Pesic 3/26/23
Programs git:(main) *
```
- STATUS BAR:** The bottom status bar shows 'Ln 18, Col 1', 'Spaces: 4', 'UTF-8', 'LF', 'Java', 'Prettier', and a refresh icon.

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The screenshot shows an IDE with a dark theme. The Explorer panel on the left shows a project structure with folders 'PROGRAMS' and 'Progs'. Under 'Progs', there are files 'A.java', 'B.java', 'prog3.java', 'cube.java', 'prog4.java', and 'square.java'. The 'square.java' file is selected and its content is displayed in the main editor. The code defines a 'square' class with private attributes 'length' and 'width', and methods 'setLength', 'setWidth', 'getLength', 'getWidth', and 'getArea'. The 'getArea' method is highlighted with a yellow cursor. The Terminal panel at the bottom shows the output of running the program, which prints the volume of three cubes (C1, C2, C3) and the date 'Philip Pesic 3/26/23'. The status bar at the bottom indicates the current line and column (Ln 23, Col 40) and the file encoding (UTF-8).

```
1 package Prog4;
2
3 public class square {
4     private double length, width;
5
6     public void setLength(double length) {
7         this.length = length;
8     }
9
10    public void setWidth(double width) {
11        this.width = width;
12    }
13
14    public double getLength() {
15        return this.length;
16    }
17
18    public double getWidth() {
19        return this.width;
20    }
21
22    public double getArea() {
23        return this.length * this.width;
24    }
25 }
26
```

Run: prog4

```
+ Programs git:(main) * /usr/bin/env /Library/Java/JavaVirtualMachines/temurin-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/pippo/Library/Application\ Support/Code/User/workspaceStorage/935064c63a2dd18a4dd17836cfa5e8ca/redhat.java/jdt_ws/Programs_a181273d/bin Prog4.prog4
C1 volume = 24.0
C2 volume = 94.5
C3 volume = 1596.0
Philip Pesic 3/26/23
+ Programs git:(main) *
```

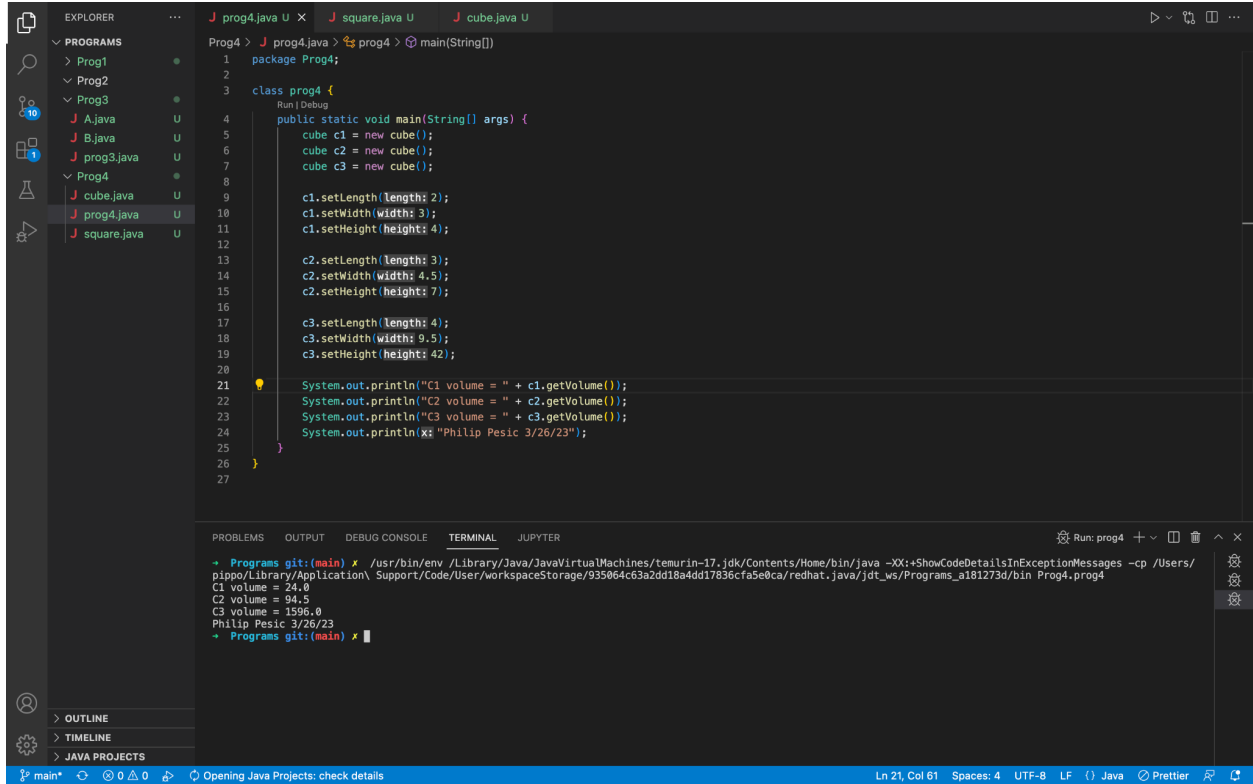
Ln 23, Col 40 Spaces: 4 UTF-8 LF Java Prettier

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The screenshot shows an IDE with a project named 'Prog4'. The Explorer panel on the left lists files: Prog1, Prog2, Prog3, Prog4, A.java, B.java, prog3.java, cube.java, prog4.java, and square.java. The main editor displays the code for 'prog4.java', which defines a 'prog4' class with a 'main' method. The code creates three 'cube' objects (c1, c2, c3), sets their dimensions, and prints their volumes. The output console at the bottom shows the execution results: 'C1 volume = 24.0', 'C2 volume = 94.5', 'C3 volume = 1596.0', and 'Philip Pesic 3/26/23'.

```
1 package Prog4;
2
3 class prog4 {
4     public static void main(String[] args) {
5         cube c1 = new cube();
6         cube c2 = new cube();
7         cube c3 = new cube();
8
9         c1.setLength(length: 2);
10        c1.setWidth(width: 3);
11        c1.setHeight(height: 4);
12
13        c2.setLength(length: 3);
14        c2.setWidth(width: 4.5);
15        c2.setHeight(height: 7);
16
17        c3.setLength(length: 4);
18        c3.setWidth(width: 9.5);
19        c3.setHeight(height: 42);
20
21        System.out.println("C1 volume = " + c1.getVolume());
22        System.out.println("C2 volume = " + c2.getVolume());
23        System.out.println("C3 volume = " + c3.getVolume());
24        System.out.println(x: "Philip Pesic 3/26/23");
25    }
26 }
27
```

Run: prog4

```
+ Programs git:(main) * /usr/bin/env /Library/Java/JavaVirtualMachines/temurin-17.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/pippo/Library/Application\ Support/Code/User/workspaceStorage/935064c63a2dd18a4dd17836cfa5e8ca/redhat.java/jdt_ws/Programs_a181273d/bin Prog4.prog4
C1 volume = 24.0
C2 volume = 94.5
C3 volume = 1596.0
Philip Pesic 3/26/23
+ Programs git:(main) *
```

I learned how to write my own inheritance