

```

1  package Assign_3;
2
3
4  import Media.*;                // for Turtle and TurtleDisplayer
5  import java.awt.*;             // for Color objects and methods
6  import static Media.Turtle.*;  // for Turtle speeds
7  import static java.lang.Math.*; // for math constants and functions
8  import static java.awt.Color.*; // for Color constants
9
10
11 /** This class draws a cityscape that consists of a certain number of buildings
12  * with multiple stories and windows which are all randomized within a certain range.
13  * @author Micah Rose-Mighty
14  * @version 1.0 (2018/10/09)
15  */
16
17 public class Cityscape {
18
19     private TurtleDisplayer display;
20     private Turtle yertle;
21
22     /** This constructor draws the cityscape consisting of 3 to 6 (inclusive)
23     buildings on the TurtleDisplayer with a fast turtle.
24     */
25     public Cityscape( ) {
26         display = new TurtleDisplayer(yertle,500,500);
27         yertle = new Turtle(FAST);
28         display.placeTurtle(yertle);
29         int w;
30         int z;
31         int y;
32         w = 0;
33         z = -225;
34         y = (int) (3*random())+3;;
35         if(y == 3){
36             yertle.moveTo(w-=105,z);
37             for(int i=1; i<=3; i++){
38                 drawBuilding();
39                 w+=70;
40                 yertle.moveTo(w,z);
41                 yertle.left(PI/2);
42             }
43         }
44         else if(y == 4){
45             yertle.moveTo(w-=140,z);
46             for(int i=1; i<=4; i++){
47                 drawBuilding();
48                 w+=70;
49                 yertle.moveTo(w,z);
50                 yertle.left(PI/2);
51             }
52         }
53         else if(y == 5){
54             yertle.moveTo(w-=175,z);
55             for(int i=1; i<=5; i++){
56                 drawBuilding();
57                 w+=70;
58                 yertle.moveTo(w,z);
59                 yertle.left(PI/2);
60             }
61         }
62         else if(y == 6){
63             yertle.moveTo(w-=210,z);
64             for(int i=1; i<=6; i++){

```

```

67         drawBuilding();
68         w+=70;
69         yertle.moveTo(w,z);
70         yertle.left(PI/2);
71     }
72
73     }
74
75     display.close();
76
77 }; // Cityscape
78
79
80
81 //This method draws a rectangle with a width and height of 10 units.
82 */
83 private void drawRectangle ( ) {
84     for(int i=1;i<=4; i++){
85         yertle.penDown();
86         yertle.forward(10);
87         yertle.right(PI/2);
88         yertle.penUp();
89     }
90 }
91
92 }; // drawRectangle
93
94 //This method draws a window made out of 4 rectangles.
95
96 private void drawWindow ( ) {
97     drawRectangle();
98     yertle.forward(10);
99     drawRectangle();
100    yertle.right(PI/2);
101    yertle.forward(10);
102    drawRectangle();
103    yertle.left(PI/2);
104    drawRectangle();
105
106 }; // drawWindow
107
108 //This method draws a building composed of 5 to 15 stories (inclusive) with
each story having two windows and a side length of 30 units
109
110 private void drawBuilding ( ) {
111     int x = (int)(10*random())+5;
112     yertle.penDown();
113     yertle.forward(70);
114     yertle.left(PI/2);
115     yertle.forward(x*30);
116     yertle.left(PI/2);
117     yertle.forward(70);
118     yertle.left(PI/2);
119     yertle.forward(x*30);
120
121     for (int i=1; i<=x; i++){
122         yertle.backward(25);
123         yertle.left(PI/2);
124         yertle.penUp();
125         yertle.forward(10);
126         drawWindow();
127         yertle.forward(20);
128         yertle.left(PI/2);
129         yertle.forward(10);
130         yertle.right(PI/2);
131         drawWindow();
132         yertle.backward(50);
133         yertle.right(PI/2);
134         yertle.backward(15);

```

```
135     }
136
137     };
138     //drawBuilding
139
140
141     public static void main ( String[] args ) { Cityscape s = new Cityscape(); };}
142
143
144
145     // Cityscape
```