```
1   package Assign_3;
2
3   import Media.*;                  // for Turtle and TurtleDisplayer
4   import java.awt.*;               // for Color objects and methods
5   import static java.lang.Math.*;  // for math constants and functions
6   import static java.awt.Color.*;  // for Color constants
7   import static Media.Turtle.*;    // for FAST turtle
8
9   /** This class randomly generates a cityscape with 3 to 6 buildings each containing
    5 to 15 stories.
10    *
11    * @author Sawyer Fenwick(st# 6005011)
12    *
13    * @version 1.0 November 2 2016
    */
14
15  public class City {
16
17    // instance variables
18      private TurtleDisplayer display;
19      private Turtle yertle;
20
21      /** This constructor creates the turtle object "yertle", creates a canvas of
    500x500 and places yertle on the
22        * display. It calls on the "drawCityScape" method which draws the CityScape
    by calling on several other
23        * methods. */
24
25      public City ( ) {
26
27      // statements including call of method
28        yertle = new Turtle(0);
29        display = new TurtleDisplayer(yertle,500,500);
30        int buildings = (int)(3*random())+3;
31        drawCityScape(buildings);
32        display.close();
33
34      }; // constructor
35
36      /** This method creates a square
    */
37        private void drawSquare ( ) {
38
39          // statements
40          yertle.penDown();
41
42          for (int i = 1; i <=4; i++){
43            yertle.forward(10);
44            yertle.left(PI/2);
45          }
46
47          yertle.penUp();
48
49        }; // drawSquare
50
51      /** This method draws a window built of 4 squares by calling on the
    "drawSquare" method.   */
52        private void drawWindow ( ) {
53
54          //statements
55          yertle.penDown();
56
57          for(int i = 1; i <=4; i++){
58            drawSquare();
59            yertle.right(PI/2);
60          }
61
62          yertle.penUp();
63
64        }; // drawWindow
```

```
65
66      /** This method draws a rectangle, which will be the outside of each building.
    It is passed the parameter
67        * "storie" which is a randomly generated number between 5 and 15. The storie
    is multiplied by
68        *  30 (the height of 1 storie) to find the proper height of a rectangle that
    will accomodate how many
69        *  stories there will be. */
70        private void drawRectangle(int storie){
71
72          int width = 70;
73          int height;
74          height = storie*30;
75          yertle.penDown();
76
77          for (int i = 1; i <=2; i ++){
78            yertle.forward(width);
79            yertle.left(PI/2);
80            yertle.forward(height);
81            yertle.left(PI/2);
82          }
83
84          yertle.penUp();
85
86        }; //drawRectangle
87
88        /* This method draws however many stories is required to fill a building. */
89        private void drawStorie(int storie){
90
91        //local variables
92          int height;
93          height = storie*30;
94        //statements
95          yertle.left(PI/2);
96          yertle.forward(15);
97          yertle.right(PI/2);
98          yertle.forward(20);
99          drawWindow();
100         yertle.forward(30);
101         drawWindow();
102         yertle.left(PI);
103         yertle.forward(50);
104         yertle.right(PI/2);
105
106         for(int i = 2; i <= storie; i ++){
107
108           yertle.forward(30);
109           yertle.right(PI/2);
110           yertle.forward(20);
111           drawWindow();
112           yertle.forward(30);
113           drawWindow();
114           yertle.left(PI);
115           yertle.forward(50);
116           yertle.right(PI/2);
117
118         }
119
120         yertle.right(PI);
121         yertle.forward(height - 15);
122         yertle.left(PI/2);
123
124       }; // drawStorie
125
126       /* This method draws a completed building, using the "drawRectangle" and
    "drawStorie" methods. */
127       private void drawBuilding(int storie){
128
129         drawRectangle(storie);
130         drawStorie(storie);
```

```
131
132       } // drawBuilding
133
134       /* This method draws a complete CityScape, based on the randomly generated
    numbers for how many buildings
135        * will exist and how many stories each building will have. It calls on the
    "drawBuilding" method.*/
136       private void drawCityScape(int buildings){
137
138         yertle.moveTo(-210,-225); //"centering"
139
140         for(int i = 1; i <= buildings; i ++){
141           int storie = (int)(10*random())+5;
142           drawBuilding(storie);
143           yertle.forward(70);
144         }
145
146       } // drawCityScape
147
148       public static void main ( String[] args ) { City s = new City(); };
149
150 }  // City
```