**Experiment Report - 59 - test6\_IntelligentTrafficSystem**

1. **Summary Table of Errors Found**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Error ID | Line Number | Error Type | Self-Detected? | Peer 1 Found? | Peer 2 Found? |
| E01 | line 26 | Logic | √ | √ | √ |
| E02 | line 29 | Syntax | √ | √ | × |
| E03 | line 46 | Semantic | √ | × | × |

Additional Errors Found by Self: 0

Self-Review Detection Rate: 100%

Peer 1 Detection Rate: 67%

Peer 2 Detection Rate: 33%

1. **Source Code**
2. package a;
3. import java.util.ArrayList;
4. import java.util.List;
5. class TrafficSignal {
6. private String intersection;
7. private int greenTime;
8. private List<String> signalLog;
9. public TrafficSignal(String intersection, int defaultGreenTime) {
10. this.intersection = intersection;
11. this.greenTime = defaultGreenTime;
12. this.signalLog = new ArrayList<>();
13. }
14. public void updateGreenTime(int trafficDensity) {
15. if (trafficDensity > 80 && trafficDensity <= 100) {
16. greenTime = 45;
17. } else if (trafficDensity > 50 && trafficDensity <= 80) {
18. greenTime = 30;
19. } else if (trafficDensity > 0 && trafficDensity <= 50){
20. greenTime = 15;
21. } else {
22. greenTime = 0;
23. }
24. if(greenTime = 0) {
25. System.out.printf("invalide input%n ");
26. }else {
27. signalLog.add(String.format("Intersection %s: Green time updated to %d seconds (Traffic: %d%)",
28. intersection, greenTime, trafficDensity));
29. System.out.printf("Green light at %s set to %d seconds due to traffic density: %d%%%n",
30. intersection, greenTime, trafficDensity);
31. }
32. }
33. public void printSignalLog() {
34. System.out.println("Traffic Signal Log for " + intersection + ":");
35. for (String log : signalLog) {
36. System.out.println(log);
37. }
38. }
39. }
40. public class c09\_IntelligentTrafficSystem {
41. public static void main(String[] args) {
42. TrafficSignal signal = new TrafficSignal("Main St & 1st Ave", 20);
43. // testcase-VT:
44. signal.updateGreenTime(-21); // trafficDensity < 0
45. signal.updateGreenTime(3); // trafficDensity > 0 && trafficDensity <= 50
46. signal.updateGreenTime(62); // trafficDensity > 50 && trafficDensity <= 80
47. signal.updateGreenTime(87); // trafficDensity > 80 && trafficDensity <= 100
48. signal.updateGreenTime(134); // trafficDensity > 100
49. signal.printSignalLog();
51. //testcase-FT:
52. // signal.updateGreenTime(61); // trafficDensity < 0
53. // signal.updateGreenTime(27965); // trafficDensity > 0 && trafficDensity <= 50
54. // signal.updateGreenTime(9006397); // trafficDensity > 50 && trafficDensity <= 80
55. // signal.updateGreenTime(35181); // trafficDensity > 80 && trafficDensity <= 100
56. // signal.updateGreenTime(96); // trafficDensity > 100
57. // signal.printSignalLog();
59. }
60. }