Example Program for the Application of Metrics

1. Scoreboard::drawscore(int n)

{

2. while (numdigits-- >0) {

3. score[numdigits]->erase();

}

//build new score in loop, each time update position

4. numdigits = 0;

//if score is 0, just display - 0

5. if (n == 0) {

6. delete score[numdigits];

7. score[numdigits] = new Displayable(digits[0]);

8. score[numdigits] ->move(Point((700-numdigits\*18),40));

9. score[numdigits]->draw();

}

10. while (n){

11. int rem= n % 10;

12. delete score[numdigits];

13. score[numdigits] = new Displayable(digits[rem]);

14. score[numdigits]->move(Point(700-numdigits\*18),40));

15. score[numdigits]->draw();

16. n/=10;

17. numdigits++;

}

18. }

McCabe's Cyclomatic Number

In order to calculate the cyclomatic number, one would ideally draw a graph representing the above program. Then count the number of nodes and edges. A result from the graph theory tells us that the number of linearly independent paths throught this graph is e - n + 2, i.e. 20 (edges) - 18 (nodes) + 2 = 4. McCabe proved that the cyclomatic number is also equal to one more than the number of decision statements in the code. In this case, it is 4. I suggest that you draw the graph and show that the cyclomatic number is 4. Then mention the McCabe's theory that this number can also be obtained by counting the number of decisions and adding one to it. In the graph below, there are 17 nodes and 19 edges, thus the result is 4.

1

17

16

11

15

14

13

12

10

9

8

6

7

5

4

3

2

18