



CS 1632 Software Quality Assurance

Deliverable 4

Member 1 Name: Bangyan Li

Member 2 Name: Wentao Wu

Team Name: Macrosoft

1. Introduction

We did this assignment together. Wentao find the methods needed to be refactored. Bangyan wrote the test cases.

Difficulties: Before refactoring the two methods (`iterateCell()` and `calculateNextIteration()`), we don't know what the third method needs to be refactored.

2. Optimized Feature 1

- Write the name of the feature optimized (the label on the button)
Run Continuous
- Write the name(s) of the method(s) you refactored to optimize this feature
MainPanel.iterateCell()
MainPanel.calculateNextIteration()
- Insert a screenshot of VisualVM CPU profiling *after* optimizing Feature 1. Please include only the “Hot spots” window in the screenshot.

热点 方法	自用时间 [%] ▼	自用时间	总时间	调用
MainPanel.runContinuous ()		2,476 ms (75.9%)	2,641 ms	2
javax.swing.RepaintManager\$ProcessingRunnable.run ()		611 ms (18.7%)	611 ms	119
Cell.<init> ()		126 ms (3.9%)	126 ms	2,617
Cell.setAlive (boolean)		21.9 ms (0.7%)	21.9 ms	5,216
MainPanel.backup ()		6.83 ms (0.2%)	140 ms	105
sun.lwawt.LWCursorManager\$1.run ()		6.55 ms (0.2%)	6.55 ms	206
sun.lwawt.macox.LWCToolkit\$CallableWrapper.run ()		4.42 ms (0.1%)	4.42 ms	16
Cell.getAlive ()		3.15 ms (0.1%)	3.14 ms	26,017
MainPanel.getNumNeighbors (int, int)		2.46 ms (0.1%)	4.64 ms	2,600
MainPanel.calculateNextIteration ()		1.31 ms (0%)	23.9 ms	104
MainPanel.displayIteration (boolean[])		1.11 ms (0%)	16.6 ms	104
MainPanel.iterateCell (int, int)		1.8 ms (0%)	5.94 ms	2,600
sun.java2d.opengl.OGLSurfaceData\$1.run ()		0.645 ms (0%)	0.645 ms	9
Cell\$CellButtonListener.<init> (Cell)		0.496 ms (0%)	0.495 ms	2,617
RunContinuousButton\$GameRunnable.run ()		0.049 ms (0%)	2,641 ms	2

3. Optimized Feature 2

- Write the name of the feature optimized (the label on the button)
Write
- Write the name(s) of the method(s) you refactored to optimize this feature
Cell.toString()
- Insert a screenshot of VisualVM CPU profiling **after** optimizing Feature 2. Please show only the profile for Feature 2 (do not invoke Feature 1 while profiling). Please include only the “Hot spots” window in the screenshot, as before.

热点	方法	自用时间 [%]	自用时间	总时间	调用
	javax.swing.RepaintManager\$ProcessingRunnable.run ()		128 ms (91.3%)	128 ms	51
	sun.lwawt.LWCursorManager\$1.run ()		9.94 ms (7.1%)	9.94 ms	231
	sun.lwawt.mac.osx.LWCToolkit\$CallableWrapper.run ()		1.92 ms (1.4%)	1.92 ms	59
	sun.java2d.opengl.OGLSurfaceData\$1.run ()		0.268 ms (0.2%)	0.268 ms	6
	java.nio.DirectByteBuffer\$Deallocator.run ()		0.022 ms (0%)	0.022 ms	1