

CS 411: Lab 01

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Time comparing

Due to the algorithm run to fast, I run drawing function with multiple iterations for comparison.

	DDA	Brensenham	Default of OpenGL
2000 iters	539ms	579ms	503ms
10000 iters	1674ms	1623ms	1688ms
20000 iters	3519ms	3574ms	3397ms

From the table, we can see the difference between three algorithms are not much. Moreover, the time measurement also depends on CPU scheduling. So, it can be not consistency.

Accuracy comparing

Test 1. Line start at (0, 0) and end at (100, 10).

	DDA	Brensenham	Default of OpenGL
DDA	x	L1: 7 L2: 2	L1: 43 L2: 6
Brensenham	x	x	L1: 50 L2: 7
Default of OpenGL	x	x	x

Test 2. Line start at (0, 0) and end at (100, 90).

	DDA	Brensenham	Default of OpenGL
DDA	x	L1: 3 L2: 1	L1: 7 L2: 2
Brensenham	x	x	L1: 10 L2: 3
Default of OpenGL	x	x	x

Test 3. Line start at (0, 0) and end at (100, 99).

	DDA	Brensenham	Default of OpenGL
DDA	x	L1: 0 L2: 0	L1: 1 L2: 1
Brensenham	x	x	L1: 1 L2: 1
Default of OpenGL	x	x	x

From three test, we can see that, the more $\frac{dy}{dx}$ near to 1, three lines generated by algorithms are more similar. When $\frac{dy}{dx}$ near to 0, the difference between 3 algorithms are increasing. DDA and Brensenham algorithm generate two lines that have small distance but they have high distance with the line generated by default algorithm of OpenGL.