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## 1.Finished Function

-cirsweep

-ciroptimize

-cirstrash

## 2.Comparison with ref

### (1)cirread

Using sim13.aag as reference

ref takes 0.03 seconds and my program takes 0.4 seconds.

ref uses 14.96 MB and my program takes 33.69 MB.

Both of my running time usage and memory usage is slightly bigger than the ref program. Therefore I think it's because I used extra memory that makes the run time also increased, maybe in order to maintain the memory.

### (2)cirprint cirgate cirwrite

These function implemented in hw6 is also the same as the ref program

### (3)cirsweep

I implemented cirsweep by going through the gates not in dfslist, and adjust their fins and fouts, it is almost the same as ref program.

### (4)ciroptimize

I implemented ciroptimize by going through dfslist a check if the gate has

1.const0 as input

2.const1 as input

3.two inputs of the same gate, whether inverse or not.

Then I use three function to deal with these three situations, a then recursively optimize the gates if needed.

The performance is almost the same as ref program.

### (5)cirstrash

Modified from hw7, I implemented a hash to detect the structural identical gates. When found, merge them. The performance is almost the same as ref program.

I have tested my program by generating test cases myself, and test cirprint cirgate functions to see if my program perform correctly. I found that if tested with numerous, about 100000 commands, my program will run approximately 30 seconds slower than ref program. Average 0.0003 seconds per command. I think it's because I used too much redundant memory. I should do it better next time.

### 3. Class comments

First, it is very worthy to finish the course, although it is very tiring and often disappointing when seeing the score. I think I can claim that I improved a lot in programming this semester, which gives me a lot of confidence of programming. Second, I want to thank professor and TA a lot. I did very bad in hw4, and get very frustrated. It was professor's letter that told us not to be frustrated and improve on detecting bugs by creating test cases instead, cheers me up when I was having a bad time. Also, the last speech of the class is very useful for me. It makes me think more about my career. Professor is such a good live mentor. It's my pleasure to be one of professor's student.