

MINI PROJECT

Subject Code: NCS-503
Language

Subject Name: Principle of Programming

Problem Statement: To develop the search space of the game Sudoku (3x3) blocks in LISP.

Objectives: Develop an algorithm of the search space of the game Sudoku such that it takes less space and less runtime, less CPU time for BFS, DFS.

Expected Results & Outcomes: The Student's mini project report should answer the following questions

1. Did the algorithms find a solution in all cases? If not, why not?
2. How did the various measures of run time (nodes generated/expanded and CPU time) compare for BFS and DFS?
3. How did checking repeated states affect the various measures of run time? Was this effect different for the different algorithms (BFS vs. DFS)? Why or why not?
4. In this domain, what does it mean for a search to be optimal? What does it mean for a search to be efficient?
5. How did you find a reasonable queue limit and/or time limit? How would the algorithms behave if you increased or removed these limits?
6. How did queue ordering affect the various measures of run time? Was this effect different for the different algorithms? Why or why not?
7. I didn't mention the possibility of using a depth limit, or iterative deepening search. Would either of these be helpful? Why or why not?

Concepts learned: Breadth First Search, Depth First Search, Search space optimization, CPU time minimization, and Runtime minimization.

Tools & Techniques are used: Lisp infrastructure (data structures, basic variables, and some helpful macros and functions), BFS, DFS.

Justify the addressed Pos:

S.No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1.	2	2	2	2	2	1	1	1	2	-	1	2

Book References

- Common LISP: A Gentle Introduction to Symbolic Computation by David S. Touretzky
- Practical Common Lisp by Peter Seibel