

PLEASE SUBMIT YOUR WORK ON E-Mail (Also keep a copy on sent items for just in case).

Due Date: Feb 27

The assignment is individual, so please do not make any information exchange or do not discuss about the answers or ask anybody for help except the instructor. You can use any Internet resources for reading, you can search for the answers on any search engine (like Google) or you can use any textbooks.

For all the parts below, please write your code in Lisp Programming Language and test with Dr. Racket.

Assumptions

Assume you have given a binary tree in the format of list with (List Node Left Right) order.

For all the questions, your function will get a search value and a tree. Your functions will return one of two results:

- 0 (Zero) in the case, Item not found in tree (if you are searching for an item not in the tree)
- The number of nodes you have checked until you found the item (if the searched item is in the tree)

Questions

- 1) Implement a BFS (Breadth First Search) Function
- 2) Implement a DFS (Depth First Search) Function
- 3) Implement a DLS (Depth Limited Search) Function with an extra parameter of the depth

Testing

Test your functions with below commands:

```
;node left right
(define myTree
  (list 53
        (list 23
              (list 11 '() '())
              (list 4 '() '())
            )
        (list 17 '() '())))

(BFS myTree 24)
0
(BFS myTree 4)
4
(DFS myTree 24)
0
(DFS myTree 4)
2
(DLS myTree 4 1) ; Last parameter is depth
0
(DLS myTree 4 2)
2
```

You can also download the programming practices for tree coding from the web page of course.