Lab 4 Threaded Tree

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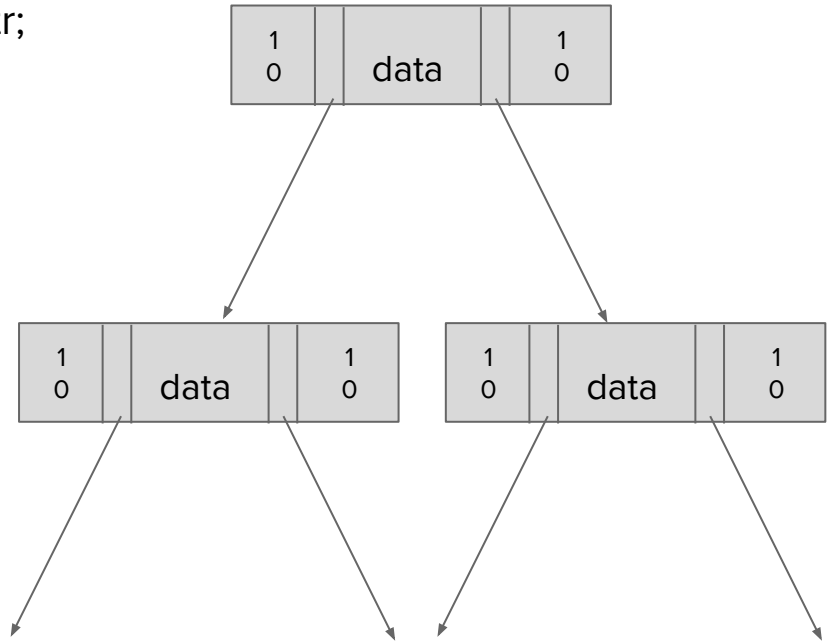
lab 4. Threaded Tree

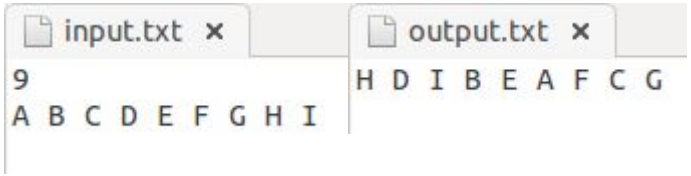
- **Data Structure Description**

```
typedef struct threaded_tree *threaded_ptr;
typedef struct threaded_tree{
        short int left_thread;
        threaded_ptr left_child;
        char data;
        threaded_ptr right_child;
        short int right_thread;
};
```



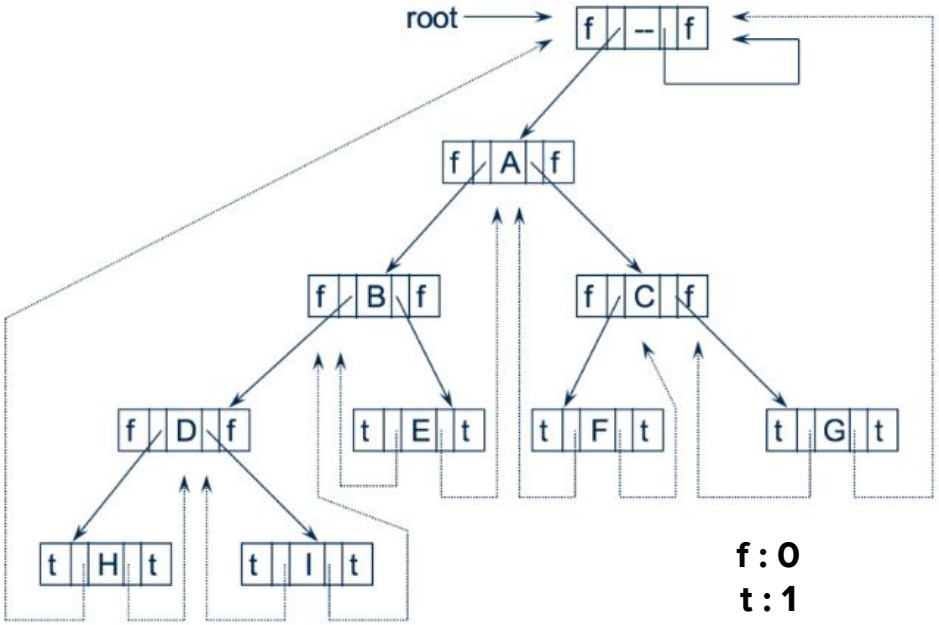
lab 4. Threaded Tree

- **Implement inorder traversal only with Threaded Tree using linked list(not array).**
  - maximum number of node is 100.
  - first line of input.txt is number of nodes.
  - second line is data of nodes (separated with space).
  - make complete binary tree
    - define function InsertNode(threaded_tree node, threaded_tree tree) .
    - put the following nodes in input.txt .
  - print inorder traversal.
  - define false = 0, true = 1 (short (int) type).
- **You have to use file I/O like the previous assignment.**



lab 4. Threaded Tree

The tree you create should follow the structure below.



lab 4. Threaded Tree

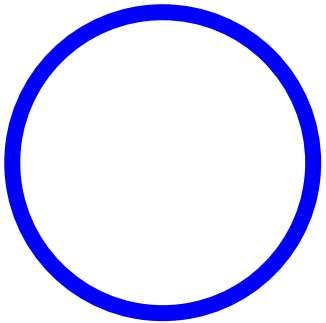
- iterative in-order traversal using **stack**

```
void iterInorder (Tree node)   {
    int top = -1
    Tree stack[MAX_SIZE];
    for (;;)  {
        for (; node; node = node -> leftChild)
            push(node);
        node = pop();              // pop parent
        if (!node)    break;
        printf("%d", node -> data);
        node = node -> rightChild;
    }
}
```

- inorder traversal **recursive**

```
void inorder(Tree ptr) {
    if(ptr) {
        inorder(ptr->left_child);
        printf("%3c",   ptr->data);
        inorder(ptr->right_child);
    }
}
```

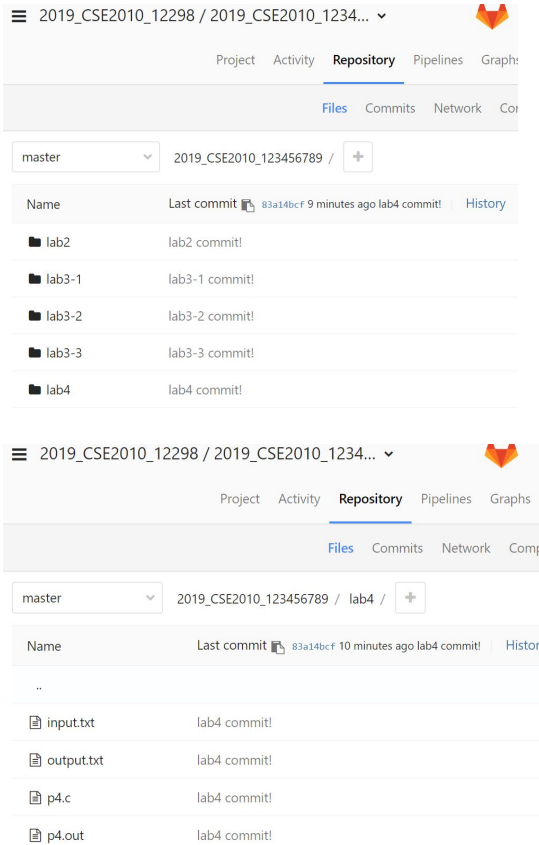
```
void tinorder(threaded_ptr tree) {
    threaded_ptr temp = tree;
    for (;;) {
        temp = insucc(temp);
        if (temp == tree) break;
        printf("%3c", temp->data);
    }
}
```



lab 4. Threaded Tree

- Submission
  - Project directory name : lab4
  - Source file name : p4.c
  - Executable file name : p4.out
  - You should upload in the hconnect (Gitlab) server.

```
daewook@daewook-VirtualBox:~/2019_CSE2010_123456789/lab4$ gcc p4.c -o p4.out
daewook@daewook-VirtualBox:~/2019_CSE2010_123456789/lab4$ ./p4.out
daewook@daewook-VirtualBox:~/2019_CSE2010_123456789/lab4$ cat output.txt
H D I B E A F C G
daewook@daewook-VirtualBox:~/2019_CSE2010_123456789/lab4$ git add .
daewook@daewook-VirtualBox:~/2019_CSE2010_123456789/lab4$ git commit -m "lab4 commit!"
[master 83a14bc] lab4 commit!
```



DeadLine

Wednesday, 03 April, 23 : 59 pm