C Course :: Fall 2008, Lab Session - IV

01 November 2008

Problem 1

Problem

Implement the datastructure Binary Search Tree (BST) which supports the following operations:

insert() : insert a node into the BST. (a node has the following fields: {double value, char id, left node, right node})

printTree() : print out the tree 'inorder' - left child, root, right child

Use of: structs, recursion

GUI Example

See the following link:

http://www.ibr.cs.tu-bs.de/courses/ss98/audii/applets/BST/BST-Example.html

How your program should work

You ask to insert a node from the user repeatedly and after the user enters the node (char id, double value), you printout the tree.

```
main() {
.
.
        while(1) {
                printf("Enter a node <id, value>");
                scanf("%c %lf", id, value);
                insert();
                printTree();
        }
.
}
```

What is a node?

A node is a struct with the following fields: (double value, char id, left node, right node)

How insert(char id, double value) works?

To insert a node, malloc a new variable of type struct node. Then assign to it an id and a value. Then start from root and traverse down until you find a place to insert and finally, insert.

How printTree() works?

Recursively print the (left child, node, right child)