Subject: what in the world is going on with my code
Posted by SSinischo on Sun, 05 Mar 2017 18:16:13 GMT
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edit: solved!

I am testing my normal BST class, which is exhibiting the following abnormal behavior:

Every time I insert a new node, every node in the tree is replaced with the value I'm trying to insert.

The only time I change a node's value is when I create a new node in the insertBST function. Similarly, I set the root of the tree exactly once and I have checked to make sure I am not performing operations on different trees. The insert function follows the pseudocode in the book which has been verified as working for several students.

The program still compares the value of different node pointers as it "walks down" the tree, but all of those nodes take on the value of my new node. The comparator function is working properly, but always returns 0 since it is being passed in two identical values.

The weird thing is, I can check the root of the tree from my main class before I perform my insertBST operation. After one insertion, things are fine. For the second insertion, in the BST class, I check the root again as soon as the insertBST function is called - and it is the value of the node I'm trying to insert. The root has changed somehow while doing nothing but passing the same tree and a new value (that hasn't even been inserted yet) to my BST class.

No operations are performed on the tree outside of the BST class. (except calls to newBST and insertBST from the main class for testing) The tree is not a static variable and I cannot find any scope issues that would let any class other than bst.c to interfere with the tree.

I have gone over every single line in my code several times and cannot figure out what's going on here. Because I can't determine why or how the issue occurs, I'd have to have someone vet my entire code - which obviously I can't post on the forums.

I have been blocked on this seemingly trivial error for three days now, and I'm out of ideas other than it being an environment/memory allocation issue. (I am working within a Xubuntu virtual machine)

PM me if you would like to see portions of my code.

because I know everyone has better things to do than to debug my code If anyone has any clue of what could be going on here, I'll buy you donuts before class. seriously
Subject: Re: what in the world is going on with my code
Posted by ccatwater on Sun, 05 Mar 2017 19:25:25 GMT
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I bet you are using strings to insert, and if you changed your value to integers, your code would work fine. The issue is how you are allocating/assigning the pointers when reading from a file then inserting it. All your pointers now point to the new value you are inserting and that's why everything changes to the new value. Same thing happened to me. I think i used a string copy function to get around this.

Subject: Re: what in the world is going on with my code
Posted by nboltralik on Sun, 05 Mar 2017 20:24:25 GMT
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On the subject of absurd problems with code, I am having trouble with a similar issue. When I create a bst object using newVBST(), it allocates space, initializes value and so on. One of the things it does it set the value of root to NULL. Immediately after returning that bst object to the bst* in vbst, the root value is no longer NULL. I fixed this by setting root to NULL again even though it should not have changed and that fixed the issue.

Now I have the same problem but with function pointers to display and compare in vbst. newVBST() sets up its display and compare functions just fine but when it returns the vbst object it created to bstrees.c, bstrees.c sees the compare function as being NULL. This causes a seg fault whenever tree->compare is called in bst.c. I am on Mac and it does not work on my system but I had someone run it successfully on it on Ubuntu VM where it worked so it seems to be an environmental issue. Maybe try running yours on a different system.

Subject: Re: what in the world is going on with my code
Posted by SSinischo on Sun, 05 Mar 2017 21:00:52 GMT
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ccatwater wrote on Sun, 05 March 2017 13:25
I bet you are using strings to insert, and if you changed your value to integers, your code would work fine. The issue is how you are allocating/assigning the pointers when reading from a file then inserting it. All your pointers now point to the new value you are inserting and that's why everything changes to the new value. Same thing happened to me. I think i used a string copy function to get around this.

Interesting conjecture! This could very well be it.

But, I'm not sure how strcpy would fix things, as I already initialize a new "phrase" variable for each time I'm processing a command.

The following is my (not-so-pseudo) pseudocode for processCommand. Any ideas?

//passed in a single command char, and a queue for the phrase to be processed (from main
void processCommand(bst *theBST, char *command, queue *phraseQ){
    totalSize = size of phraseQ + 1
    if (totalSize == 1 and the command is not 's' or 'r') return; //empty string
    char phrase[totalSize]; //this will be what is passed into insertBST
    set phrase[totalSize-1] to null terminator;
    for (int i=0; i<totalSize-1; i++)
        phrase[i] = dequeue(phraseQ);
    switch( command){
        case 'i':
            insertBST(theBST, foo);
            break;
        ...other stuff
    }
}

Subject: Re: what in the world is going on with my code
Posted by jherumin on Mon, 06 Mar 2017 01:46:29 GMT
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command is passed as char *, you have to switch on char or int
take away the * and make sure you're passing a single character.

Subject: Re: what in the world is going on with my code
Posted by ccatwater on Mon, 06 Mar 2017 02:55:54 GMT
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My issue was it happened when I was reading it into a file. So to correct it, as soon as i got the lower-cased, correctly formatted string I said IF (its at least 1 character long) declare a new char*, allocate space to it. Then run the string copy into the new string, then insert/delete/find the frequency of the new string.

Subject: Re: what in the world is going on with my code
Posted by jherumin on Mon, 06 Mar 2017 03:26:11 GMT
why not do

char command = string[0]

Subject: Re: what in the world is going on with my code
Posted by SSinischo on Mon, 06 Mar 2017 03:49:59 GMT

jherumin wrote on Sun, 05 March 2017 19:46

command is passed as char *, you have to switch on char or int

take away the * and make sure you're passing a single character.

I don't think that's the issue. The function is being passed a pointer to my command character, which we determined just before call in my main function as it was scanning the file. Either way, my switch statement works fine and the commands are not the issue here.

ccatwater wrote on Sun, 05 March 2017 20:55

My issue was it happened when I was reading it into a file. So to correct it, as soon as I got the lower-cased, correctly formatted string I said IF (its at least 1 character long) declare a new char*, allocate space to it. Then run the string copy into the new string, then insert/delete/find the frequency of the new string.

Isn't that what I already do with char phrase[totalSize]; in the pseudocode I posted? I thought declaring a char array would allocate enough space for it. If not, what's the appropriate way to malloc an array with a variable size?

Subject: Re: what in the world is going on with my code
Posted by lusth on Mon, 06 Mar 2017 20:53:25 GMT

nboltralik wrote on Sun, 05 March 2017 14:24

On the subject of absurd problems with code, I am having trouble with a similar issue.

When I create a bst object using newVBST(), it allocates space, initializes value and so on. On of the things it does it set the value of root to NULL. Immediately after returning that bst object to the bst* in vbst, the root value is no longer NULL. I fixed this by setting root to NULL again even though it should not have changed and that fixed the issue.

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newVBST() sets up its display and compare functions just fine but when it returns the vbst object it created to bstrees.c, bstrees.c sees the compare function as being NULL. This causes a seg fault whenever tree->compare is called in bst.c. I am on Mac and it does not work on my system but I had someone run it successfully on it on Ubuntu VM where it worked so it seems to be an environmental issue. Maybe try running yours on a different system.
This was fixed. The problem was naming a variable the same as a typedef.

Subject: Re: what in the world is going on with my code  
Posted by lusth on Mon, 06 Mar 2017 20:56:39 GMT  
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    char phrase[totalSize]; //this will be what is passed into insertBST

This will never work since phrase goes away when you return from processCommand. Goes away in that the memory allocated to phrase is rewritten by the next function invocation. What you need is:

    char *phrase = malloc(the number of characters you need plus 1 for the null byte);

Subject: Re: what in the world is going on with my code  
Posted by SSinischo on Mon, 06 Mar 2017 21:31:06 GMT  
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lusth wrote on Mon, 06 March 2017 14:56    char phrase[totalSize]; //this will be what is passed into insertBST

This will never work since phrase goes away when you return from processCommand. Goes away in that the memory allocated to phrase is rewritten by the next function invocation. What you need is:

    char *phrase = malloc(the number of characters you need plus 1 for the null byte);

This was it! Without the memory allocation, I was initializing a pointer to garbage memory.

Dr. Lusth, I owe you donuts.

Subject: Re: what in the world is going on with my code  
Posted by lusth on Mon, 06 Mar 2017 21:43:01 GMT  
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donuts.

Subject: Re: what in the world is going on with my code  
Posted by cewrobel on Mon, 06 Mar 2017 22:15:53 GMT  
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Can I request one of the in-class giveaways for a couple of those donuts? :)