

Programming Exam Choice 22

Start by downloading the question 22 files from the moodle into a new directory on your machine. You will be changing the code in the question22.cpp file. You have a Makefile to handle building this code. (I have included my solution code for the binary search tree here, but you can't easily read it because it's in an .o file. That's so you can trust the basic functions to work.)

Part 1. 5 points

You will complete this function to find a target in a binary search tree:

```
bool bst_contains(const binary_tree_node* root_ptr, int target)
{

}
```

If the tree is empty, or the target is not there, set empty to false; otherwise, set empty to true. Be smart about this search and use the rules of binary search trees to write your answer.

Be sure that your code works no matter what range of numbers the tree contains; I'm building them randomly, so test your code a few times for a few cases.

Part 2. 5 points

After that, complete this second function to find a target in a binary tree which is randomly structured (meaning that this is NOT a binary search tree, just a binary tree). How do the rules for the search change?

```
bool bintree_contains(const binary_tree_node* root_ptr, int target)
{

}
```

Upload your question22.cpp file to the moodle when done. Your TA may ask you to zip other files in as well.

Logic of problem laid out in comments:	50%
Code compiles with no errors or warnings:	10%
Code has no run time errors:	10%
Code gives correct answers for all inputs:	20%
Code is clean and easy to read:	10%