BSTreeGetKth

Your task is to write a function, BSTreeGetKth, that returns the k'th smallest value in the given BST. You can assume that k is between 0 and N - 1, where N is the size of the tree.

Download

Click here to download a zip of the files.

The Files

BSTree.c	Contains code for reading and printing a BST
BSTree.h	Contains the definition of the BST data structure and function prototypes
testBSTreeGetKth.c	Contains the main function, which reads in a BST from standard input, calls BSTreeGetKth for each value of k read in, and prints out the results.
BSTreeGetKth.c	Contains BSTreeGetKth, the function you must implement
Makefile	A makefile to compile your code
tests/	A directory containing the inputs and expected outputs for some basic tests
autotest	A script that uses the tests in the tests directory to autotest your solution. You should only run this after you have tested your solution manually.

Examples

Your program should behave like these examples:

```
$ ./testBSTreeGetKth
Enter the preorder traversal of the BST: 3 2 1 4 5
Tree:

    3
   / \
  2   4
 /     \
1       5

Enter k: 0
For k = 0, BSTreeGetKth returned 1
Enter k: 1
For k = 1, BSTreeGetKth returned 2
Enter k: 2
For k = 2, BSTreeGetKth returned 3
Enter k: 3
For k = 3, BSTreeGetKth returned 4
Enter k: 4
For k = 4, BSTreeGetKth returned 5
Enter k: (Ctrl + D)
```

```
$ ./testBSTreeGetKth
Enter the preorder traversal of the BST: 8 2 5 4 7 12 13
Tree:

   8
  / \
 /   \
2    12
 \     \
  5    13
 / \
4   7

Enter k: 0
For k = 0, BSTreeGetKth returned 2
Enter k: 1
For k = 1, BSTreeGetKth returned 4
Enter k: 2
For k = 2, BSTreeGetKth returned 5
Enter k: 3
For k = 3, BSTreeGetKth returned 7
Enter k: 4
For k = 4, BSTreeGetKth returned 8
Enter k: 5
For k = 5, BSTreeGetKth returned 12
Enter k: 6
For k = 6, BSTreeGetKth returned 13
Enter k: (Ctrl + D)
```

```
$ ./testBSTreeGetKth
Enter the preorder traversal of the BST: 7
Tree:

7

Enter k: 0
For k = 0, BSTreeGetKth returned 7
Enter k: (Ctrl + D)
```

Testing

You can test your program manually by compiling your code using `make`, and then running `./testBSTreeGetKth`, as shown above. After you are satisfied with your solution, you can autotest it by running `./autotest`. This will run some basic tests on your program.