

Samuel Stall

COP3530

Section: 1087

10/17/17

HW5

*On my honor, I have neither given nor received unauthorized aid in doing this assignment*

A handwritten signature in black ink, appearing to read "Samuel Stall". The signature is written in a cursive style with a large, stylized 'S' and 'H'.

I learned how to process an array given the array begin address and end address, using a stack to evaluate each level of a tournament tree, and making packed array representation of a tournament tree. The most difficult part was converting the array addresses to an actual array, the easy part was constructing the levels of the tree and converting that into the final packed array. I believe the learning objectives was learning to construct a tournament tree in packed array representation and I think I achieved them with an efficient algorithm.

1. Does the program compile without errors?  
Yes.
2. Does the program compile without warnings?  
Yes.
3. Does the program run without crashing?  
Yes.
4. Describe how you tested the program.  
I tested the program with two arrays, {50, 5, 3, 4, 20, 9, 100} and {60, 4, 1000, 251, 43, 56, 67, 67, 89, 1000}. Then printing out the returned array. I also tested the program with Valgrind to assure that all memory was properly deallocated.
5. Describe the ways in which the program does not meet assignment's specifications.  
This program meets the assignment's specifications.
6. Describe all known and suspected bugs.  
If the array addresses that are passed are invalid, there is no check so unexpected behavior can occur.
7. Does the program run correctly?  
Yes.

## Program output:

```
Bash on Ubuntu on Windows
Sam@SamLaptop:/mnt/c/Users/Samuel/Documents/C++ Projects/hw5$ g++ -std=c++11 -Wall -o TT TT.cpp
Sam@SamLaptop:/mnt/c/Users/Samuel/Documents/C++ Projects/hw5$ ./TT
node_num: 14
100 50 100 50 4 20 100 50 5 3 4 20 9 100
node_num: 21
1000 1000 1000 1000 67 1000 60 1000 56 67 1000 60 4 1000 251 43 56 67 67 89 1000
Sam@SamLaptop:/mnt/c/Users/Samuel/Documents/C++ Projects/hw5$
```

```
Bash on Ubuntu on Windows
Sam@SamLaptop:/mnt/c/Users/Samuel/Documents/C++ Projects/hw5$ valgrind ./TT
==741== Memcheck, a memory error detector
==741== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.
==741== Using Valgrind-3.11.0 and LibVEX; rerun with -h for copyright info
==741== Command: ./TT
==741==
node_num: 14
100 50 100 50 4 20 100 50 5 3 4 20 9 100
node_num: 21
1000 1000 1000 1000 67 1000 60 1000 56 67 1000 60 4 1000 251 43 56 67 67 89 1000
==741==
==741== HEAP SUMMARY:
==741==    in use at exit: 72,704 bytes in 1 blocks
==741==    total heap usage: 17 allocs, 16 frees, 73,652 bytes allocated
==741==
==741== LEAK SUMMARY:
==741==    definitely lost: 0 bytes in 0 blocks
==741==    indirectly lost: 0 bytes in 0 blocks
==741==    possibly lost: 0 bytes in 0 blocks
==741==    still reachable: 72,704 bytes in 1 blocks
==741==    suppressed: 0 bytes in 0 blocks
==741== Rerun with --leak-check=full to see details of leaked memory
==741==
==741== For counts of detected and suppressed errors, rerun with: -v
==741== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
Sam@SamLaptop:/mnt/c/Users/Samuel/Documents/C++ Projects/hw5$
```