Nwen 241 C Lab Report

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June 5, 2015

In this assignment I have learned to pass by reference across methods and the wonderful use of pipes. I really enjoyed learning about pipes, and, if my understanding is correct, pipes are similar to sockets, but for networks, so I hope in future years to learn more about pipes and sockets to make programs more scalable and modular.

1 Code implementation

All three parts of the assignment are complete and follow the prototypes provided. I truly hope the code is meeting all the requirements, because I have now re-written it twice: a first version was implemented with the prototypes and logic as I though would make sense for such program, and a second version was then re-written to meet the handout requirements after talking to Ian.

2 Valgrind

To test for any memory leek I have used Valgrind to check is the memory allocation was freed before terminating the program. Here is an output showing the commands and the terminal output:

```
GENERIC
valgrind --tool=memcheck ./tictactoe

==27648== Memcheck, a memory error detector
==27648== Copyright (C) 2002-2013, and GNU GPL'd, by Julian Seward et al.
==27648== Using Valgrind-3.10.0 and LibVEX; rerun with -h for copyright info
==27648== Command: ./tictactoe
==27648==
This is the game of Tic Tac Toe.
You will be playing against the computer.
How big is your board?
...
==27648==
```

```
==27648== HEAP SUMMARY:
==27648==    in use at exit: 0 bytes in 0 blocks
==27648==  total heap usage: 5 allocs, 5 frees, 96 bytes allocated
==27648==
==27648== All heap blocks were freed -- no leaks are possible
==27648==
==27648== For counts of detected and suppressed errors, rerun with: -v
==27648== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)

SERVER
valgrind --tool=memcheck ./t3server

valgrind --tool=memcheck ./t3server
==27677== Memcheck, a memory error detector
==27677== Copyright (C) 2002-2013, and GNU GPL'd, by Julian Seward et al.
==27677== Using Valgrind-3.10.0 and LibVEX; rerun with -h for copyright info
==27677== Command: ./t3server
==27677==
Tic Tac Toe: server online... waiting for client ...
...
==27677==
==27677== HEAP SUMMARY:
==27677==    in use at exit: 0 bytes in 0 blocks
==27677==  total heap usage: 5 allocs, 5 frees, 96 bytes allocated
==27677==
==27677== All heap blocks were freed -- no leaks are possible
==27677==
==27677== For counts of detected and suppressed errors, rerun with: -v
==27677== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
(16:31) trazzidieg@taj-mahal: /u/students/trazzidieg/Downloads >

CLIENT
valgrind --tool=memcheck ./t3client

==27679== Memcheck, a memory error detector
==27679== Copyright (C) 2002-2013, and GNU GPL'd, by Julian Seward et al.
==27679== Using Valgrind-3.10.0 and LibVEX; rerun with -h for copyright info
==27679== Command: ./t3client
==27679==
How big is your board?

...
You won!
==27679==
==27679== HEAP SUMMARY:
==27679==    in use at exit: 0 bytes in 0 blocks
```

```
==27679==  total heap usage: 0 allocs, 0 frees, 0 bytes allocated
==27679==
==27679== All heap blocks were freed -- no leaks are possible
==27679==
==27679== For counts of detected and suppressed errors, rerun with: -v
==27679== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
```