Programming Assignment 3 Part A

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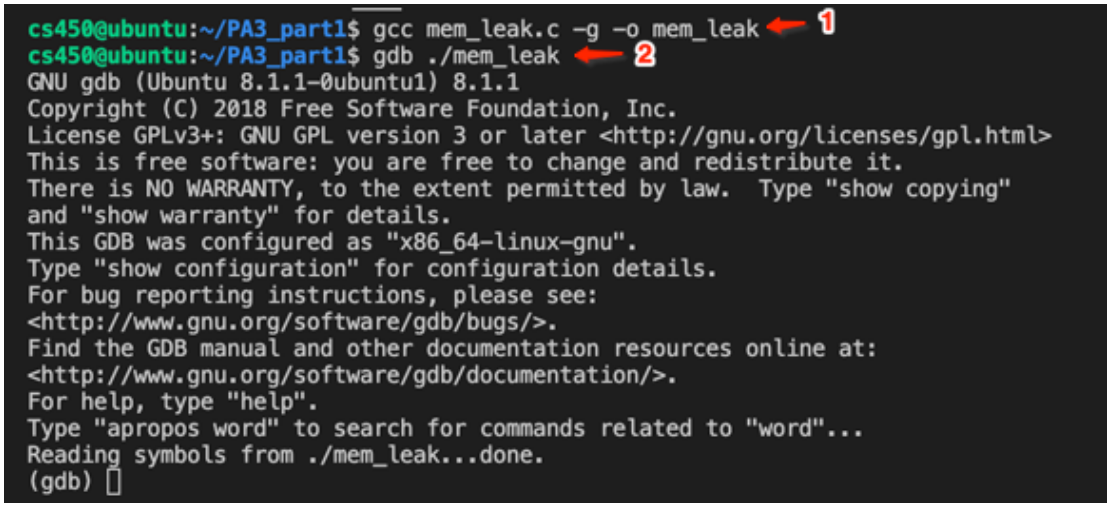
Introduction

This part is to learn how to use the debugging tools gdb and valgrind to find memory leaks and other insidious memory problems.

Build & Run Instructions

execute by gdb:



execute by valgrind:

Instruction l: valgrind --leak-check=yes ./mem_leak

```
cs450@ubuntu:~/PA3_part1$ valgrind --leak-check=yes ./mem_leak
==8357== Memcheck, a memory error detector
==8357== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.
==8357== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info
==8357== Command: ./mem_leak
==8357==
==8357==
==8357== HEAP SUMMARY:
==8357==     in use at exit: 1,024 bytes in 1 blocks
==8357==   total heap usage: 2 allocs, 1 frees, 1,049,600 bytes allocated
==8357==
==8357== 1,024 bytes in 1 blocks are definitely lost in loss record 1 of 1
==8357==    at 0x4C31B0F: malloc (in /usr/lib/valgrind/vgpreload_memcheck-amd64-linux.so)
==8357==    by 0x1086A1: test_memory_leak (mem_leak.c:5)
==8357==    by 0x1086EC: main (mem_leak.c:15)
==8357==
==8357== LEAK SUMMARY:
==8357==    definitely lost: 1,024 bytes in 1 blocks
==8357==    indirectly lost: 0 bytes in 0 blocks
==8357==      possibly lost: 0 bytes in 0 blocks
==8357==    still reachable: 0 bytes in 0 blocks
==8357==         suppressed: 0 bytes in 0 blocks
==8357==
==8357== For counts of detected and suppressed errors, rerun with: -v
==8357== ERROR SUMMARY: 1 errors from 1 contexts (suppressed: 0 from 0)
```

Instruction 2: valgrind --xtree-leak=yes ./mem_leak

```
cs450@ubuntu:~/PA3_part1$ valgrind --xtree-leak=yes ./mem_leak
==5474== Memcheck, a memory error detector
==5474== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.
==5474== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info
==5474== Command: ./mem_leak
==5474==
==5474==
==5474== HEAP SUMMARY:
==5474==     in use at exit: 1,024 bytes in 1 blocks
==5474==   total heap usage: 2 allocs, 1 frees, 1,049,600 bytes allocated
==5474==
==5474== xtree leak report: /home/cs450/PA3_part1/xtleak.kcg.5474
==5474== LEAK SUMMARY:
==5474==    definitely lost: 1,024 bytes in 1 blocks
==5474==    indirectly lost: 0 bytes in 0 blocks
==5474==      possibly lost: 0 bytes in 0 blocks
==5474==    still reachable: 0 bytes in 0 blocks
==5474==         suppressed: 0 bytes in 0 blocks
==5474==
==5474== For counts of detected and suppressed errors, rerun with: -v
==5474== ERROR SUMMARY: 1 errors from 1 contexts (suppressed: 0 from 0)
```

Instruction 3: valgrind --show-reachable=yes ./mem_leak