Nathan Bender

CS 283

1/25/17

Lab 2

Please see the results from the GDB and Valgrind portions of the lab below. The activities with each of the c file names are listed.

***GDB Results***

**Etox.c**

neb45@tux3 gdb> gcc –g etox.c –o etox

neb45@tux3 gdb> gdb etox

GNU gdb (Ubuntu 7.11.1-0ubuntu1~16.04) 7.11.1

Copyright (C) 2016 Free Software Foundation, Inc.

License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law. Type "show copying"

and "show warranty" for details.

This GDB was configured as "x86\_64-linux-gnu".

Type "show configuration" for configuration details.

For bug reporting instructions, please see:

<http://www.gnu.org/software/gdb/bugs/>.

Find the GDB manual and other documentation resources online at:

<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".

Type "apropos word" to search for commands related to "word"...

Reading symbols from etox...done.

(gdb) b 17

Breakpoint 1 at 0x40069a: file etox.c, line 17.

(gdb) r

Starting program: /home/neb45/cs283/CS283/L2/gdb/etox

This program calculates e^x

using sum of (x^k)/k!

Enter x, n : 2, n

Breakpoint 1, main () at etox.c:17

warning: Source file is more recent than executable.

17 printf("x,n = %8.4lf %4d\n",x,n);

(gdb) p x

$1 = 2

(gdb) p n

$2 = 0

neb45@tux3 gdb> gdb etox

GNU gdb (Ubuntu 7.11.1-0ubuntu1~16.04) 7.11.1

Copyright (C) 2016 Free Software Foundation, Inc.

License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law. Type "show copying"

and "show warranty" for details.

This GDB was configured as "x86\_64-linux-gnu".

Type "show configuration" for configuration details.

For bug reporting instructions, please see:

<http://www.gnu.org/software/gdb/bugs/>.

Find the GDB manual and other documentation resources online at:

<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".

Type "apropos word" to search for commands related to "word"...

Reading symbols from etox...done.

(gdb) b 19

Breakpoint 1 at 0x4006bb: file etox.c, line 19.

(gdb) r

Starting program: /home/neb45/cs283/CS283/L2/gdb/etox

This program calculates e^x

using sum of (x^k)/k!

Enter x, n : 2, 3

x,n = 2.0000 3

Breakpoint 1, main () at etox.c:19

19 series = getvalue(x,n);

(gdb) s

getvalue (x=2, n=3) at etox.c:30

30 double value = 0.0;

(gdb) s

31 double xpow = 1.0;

(gdb) s

32 for (k = 0; k <= n; k++)

(gdb) s

34 value += xpow / factorial(k);

(gdb) s

factorial (number=0) at etox.c:44

44 int fact = 0;

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) s

51 return(fact);

(gdb) s

52 }

(gdb) s

getvalue (x=2, n=3) at etox.c:35

35 xpow = xpow \* x;

(gdb) s

32 for (k = 0; k <= n; k++)

(gdb) s

34 value += xpow / factorial(k);

(gdb) s

factorial (number=1) at etox.c:44

44 int fact = 0;

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) s

48 fact = fact \* j;

(gdb) p fact

$1 = 0

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) s

51 return(fact);

(gdb) p fact

$2 = 0

(gdb) s

52 }

(gdb) s

getvalue (x=2, n=3) at etox.c:35

35 xpow = xpow \* x;

(gdb) s

32 for (k = 0; k <= n; k++)

(gdb) s

34 value += xpow / factorial(k);

(gdb) s

factorial (number=2) at etox.c:44

44 int fact = 0;

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) s

48 fact = fact \* j;

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) p fact

$3 = 0

(gdb) s

48 fact = fact \* j;

(gdb) s

46 for (j = 1; j <= number; j++)

(gdb) p fact

$4 = 0

(gdb) s

51 return(fact);

(gdb) p fact

$5 = 0

(gdb) r

**G1.c**

neb45@tux3 gdb> gcc –g g1.c –o g1

neb45@tux3 gdb> gdb g1

GNU gdb (Ubuntu 7.11.1-0ubuntu1~16.04) 7.11.1

Copyright (C) 2016 Free Software Foundation, Inc.

License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law. Type "show copying"

and "show warranty" for details.

This GDB was configured as "x86\_64-linux-gnu".

Type "show configuration" for configuration details.

For bug reporting instructions, please see:

<http://www.gnu.org/software/gdb/bugs/>.

Find the GDB manual and other documentation resources online at:

<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".

Type "apropos word" to search for commands related to "word"...

Reading symbols from g1...done.

(gdb) b main

Breakpoint 1 at 0x40061e: file g1.c, line 7.

(gdb) r

Starting program: /home/neb45/cs283/CS283/L2/gdb/g1

Breakpoint 1, main () at g1.c:7

7 c = fgetc (stdin) ;

(gdb) n

2

8 while (c != EOF)

(gdb) n

9 if (isalnum (c) )

(gdb) n

10 printf ("%c\n", c) ;

(gdb) n

2

8 while (c != EOF)

(gdb) n

9 if (isalnum (c) )

(gdb) n

10 printf ("%c\n", c) ;

(gdb) n

2

8 while (c != EOF)

(gdb) n

9 if (isalnum (c) )

(gdb) n

10 printf ("%c\n", c) ;

(gdb) n

2

8 while (c != EOF)

**G2.c**

neb45@tux3 gdb> gcc –g g2.c –o g2

neb45@tux3 gdb> gdb g2 core

GNU gdb (Ubuntu 7.11.1-0ubuntu1~16.04) 7.11.1

Copyright (C) 2016 Free Software Foundation, Inc.

License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

This is free software: you are free to change and redistribute it.

There is NO WARRANTY, to the extent permitted by law. Type "show copying"

and "show warranty" for details.

This GDB was configured as "x86\_64-linux-gnu".

Type "show configuration" for configuration details.

For bug reporting instructions, please see:

<http://www.gnu.org/software/gdb/bugs/>.

Find the GDB manual and other documentation resources online at:

<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".

Type "apropos word" to search for commands related to "word"...

Reading symbols from g2...done.

[New LWP 61520]

Core was generated by `/home/neb45/cs283/CS283/L2/gdb/g2'.

Program terminated with signal SIGSEGV, Segmentation fault.

#0 \_\_GI\_\_IO\_getline\_info (fp=fp@entry=0x7ffff7dd18e0 <\_IO\_2\_1\_stdin\_>, buf=buf@entry=0x0, n=1022, delim=delim@entry=10,

extract\_delim=extract\_delim@entry=1, eof=eof@entry=0x0) at iogetline.c:77

77 iogetline.c: No such file or directory.

(gdb) bt

#0 \_\_GI\_\_IO\_getline\_info (fp=fp@entry=0x7ffff7dd18e0 <\_IO\_2\_1\_stdin\_>, buf=buf@entry=0x0, n=1022, delim=delim@entry=10,

extract\_delim=extract\_delim@entry=1, eof=eof@entry=0x0) at iogetline.c:77

#1 0x00007ffff7a7cd78 in \_\_GI\_\_IO\_getline (fp=fp@entry=0x7ffff7dd18e0 <\_IO\_2\_1\_stdin\_>, buf=buf@entry=0x0, n=<optimized out>,

delim=delim@entry=10, extract\_delim=extract\_delim@entry=1) at iogetline.c:34

#2 0x00007ffff7a7bb7d in \_IO\_fgets (buf=0x0, n=<optimized out>, fp=0x7ffff7dd18e0 <\_IO\_2\_1\_stdin\_>) at iofgets.c:53

#3 0x000000000040062e in main () at g2.c:10

(gdb) frame 3

#3 0x000000000040062e in main () at g2.c:10

warning: Source file is more recent than executable.

10 fgets (buf, 1024, stdin) ;

(gdb) print sizeof(buf)

$1 = 8

***Valgrind Results***

**V00.c**

neb45@tux2 valgrind> valgrind --tool=memcheck --leak-check=yes ./v00

==13352== Memcheck, a memory error detector

==13352== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.

==13352== Using Valgrind-3.11.0 and LibVEX; rerun with -h for copyright info

==13352== Command: ./v00

==13352==

==13352== Invalid write of size 4

==13352== at 0x400544: f (v00.c:7)

==13352== by 0x40055A: main (v00.c:12)

==13352== Address 0x5203068 is 0 bytes after a block of size 40 alloc'd

==13352== at 0x4C2DB8F: malloc (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==13352== by 0x400537: f (v00.c:6)

==13352== by 0x40055A: main (v00.c:12)

==13352==

==13352==

==13352== HEAP SUMMARY:

==13352== in use at exit: 40 bytes in 1 blocks

==13352== total heap usage: 1 allocs, 0 frees, 40 bytes allocated

==13352==

==13352== 40 bytes in 1 blocks are definitely lost in loss record 1 of 1

==13352== at 0x4C2DB8F: malloc (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==13352== by 0x400537: f (v00.c:6)

==13352== by 0x40055A: main (v00.c:12)

==13352==

==13352== LEAK SUMMARY:

==13352== definitely lost: 40 bytes in 1 blocks

==13352== indirectly lost: 0 bytes in 0 blocks

==13352== possibly lost: 0 bytes in 0 blocks

==13352== still reachable: 0 bytes in 0 blocks

==13352== suppressed: 0 bytes in 0 blocks

==13352==

==13352== For counts of detected and suppressed errors, rerun with: -v

==13352== ERROR SUMMARY: 2 errors from 2 contexts (suppressed: 0 from 0)

**v05.c**

==13382== Memcheck, a memory error detector

==13382== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.

==13382== Using Valgrind-3.11.0 and LibVEX; rerun with -h for copyright info

==13382== Command: ./v05

==13382==

==13382== Conditional jump or move depends on uninitialised value(s)

==13382== at 0x400532: main (v05.c:6)

==13382==

X is zero==13382==

==13382== HEAP SUMMARY:

==13382== in use at exit: 0 bytes in 0 blocks

==13382== total heap usage: 1 allocs, 1 frees, 1,024 bytes allocated

==13382==

==13382== All heap blocks were freed -- no leaks are possible

==13382==

==13382== For counts of detected and suppressed errors, rerun with: -v

==13382== Use --track-origins=yes to see where uninitialised values come from

==13382== ERROR SUMMARY: 1 errors from 1 contexts (suppressed: 0 from 0)

**v06.c**

==13396== Memcheck, a memory error detector

==13396== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.

==13396== Using Valgrind-3.11.0 and LibVEX; rerun with -h for copyright info

==13396== Command: ./v06

==13396==

==13396== Conditional jump or move depends on uninitialised value(s)

==13396== at 0x400535: foo (v06.c:6)

==13396== by 0x40055A: main (v06.c:15)

==13396==

x is less than 10

==13396==

==13396== HEAP SUMMARY:

==13396== in use at exit: 0 bytes in 0 blocks

==13396== total heap usage: 1 allocs, 1 frees, 1,024 bytes allocated

==13396==

==13396== All heap blocks were freed -- no leaks are possible

==13396==

==13396== For counts of detected and suppressed errors, rerun with: -v

==13396== Use --track-origins=yes to see where uninitialised values come from

==13396== ERROR SUMMARY: 1 errors from 1 contexts (suppressed: 0 from 0)