CS2263 Lab 5

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Exercise One

A picture containing food, flower

Description automatically generated

Exercise Two

make

A picture containing drawing

Description automatically generated

valgrind leak

==6001== Memcheck, a memory error detector

==6001== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==6001== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==6001== Command: ./stringTest1 --tool=memcheck –-leak-check=full -–verbose –-log-file=stringTest1.txt

==6001==

==6001== Invalid write of size 1

==6001== at 0x4C2CAB0: strcpy (vg\_replace\_strmem.c:510)

==6001== by 0x4007CA: duplicateString (Strings.c:28)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid write of size 1

==6001== at 0x4C2CAC3: strcpy (vg\_replace\_strmem.c:510)

==6001== by 0x4007CA: duplicateString (Strings.c:28)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001== Address 0x520304f is 11 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid read of size 1

==6001== at 0x4E82EF9: vfprintf (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6001== by 0x400A8F: main (stringTest1.c:11)

==6001== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid read of size 1

==6001== at 0x4EB089D: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6001== by 0x400A8F: main (stringTest1.c:11)

==6001== Address 0x520304e is 10 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid read of size 1

==6001== at 0x4EB08B4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6001== by 0x400A8F: main (stringTest1.c:11)

==6001== Address 0x520304d is 9 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid read of size 1

==6001== at 0x4C30A56: \_\_GI\_mempcpy (vg\_replace\_strmem.c:1525)

==6001== by 0x4EB07C4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6001== by 0x400A8F: main (stringTest1.c:11)

==6001== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

==6001== Invalid read of size 1

==6001== at 0x4C30A48: \_\_GI\_mempcpy (vg\_replace\_strmem.c:1525)

==6001== by 0x4EB07C4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6001== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6001== by 0x400A8F: main (stringTest1.c:11)

==6001== Address 0x5203045 is 1 bytes after a block of size 4 alloc'd

==6001== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6001== by 0x400771: mallocString (Strings.c:13)

==6001== by 0x4007AC: duplicateString (Strings.c:26)

==6001== by 0x400A6A: main (stringTest1.c:10)

==6001==

Original: --tool=memcheck, Duplicate: --tool=memcheck

==6001==

==6001== HEAP SUMMARY:

==6001== in use at exit: 4 bytes in 1 blocks

==6001== total heap usage: 1 allocs, 0 frees, 4 bytes allocated

==6001==

==6001== LEAK SUMMARY:

==6001== definitely lost: 4 bytes in 1 blocks

==6001== indirectly lost: 0 bytes in 0 blocks

==6001== possibly lost: 0 bytes in 0 blocks

==6001== still reachable: 0 bytes in 0 blocks

==6001== suppressed: 0 bytes in 0 blocks

==6001== Rerun with --leak-check=full to see details of leaked memory

==6001==

==6001== For counts of detected and suppressed errors, rerun with: -v

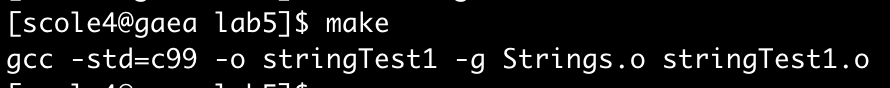
==6001== ERROR SUMMARY: 46 errors from 7 contexts (suppressed: 0 from 0)

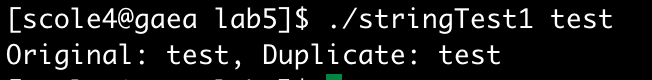
stringTest1 before fix

A picture containing drawing

Description automatically generated

stringTest1 after fix





valgrind output

==6262== Memcheck, a memory error detector

==6262== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==6262== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==6262== Command: ./stringTest1 --tool=memcheck –-leak-check=full -–verbose –-log-file=stringTest1.txt

==6262==

==6262== Invalid write of size 1

==6262== at 0x4C2CAB0: strcpy (vg\_replace\_strmem.c:510)

==6262== by 0x4007CA: duplicateString (Strings.c:28)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid write of size 1

==6262== at 0x4C2CAC3: strcpy (vg\_replace\_strmem.c:510)

==6262== by 0x4007CA: duplicateString (Strings.c:28)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262== Address 0x520304f is 11 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid read of size 1

==6262== at 0x4E82EF9: vfprintf (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6262== by 0x400A8F: main (stringTest1.c:12)

==6262== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid read of size 1

==6262== at 0x4EB089D: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6262== by 0x400A8F: main (stringTest1.c:12)

==6262== Address 0x520304e is 10 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid read of size 1

==6262== at 0x4EB08B4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6262== by 0x400A8F: main (stringTest1.c:12)

==6262== Address 0x520304d is 9 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid read of size 1

==6262== at 0x4C30A56: \_\_GI\_mempcpy (vg\_replace\_strmem.c:1525)

==6262== by 0x4EB07C4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6262== by 0x400A8F: main (stringTest1.c:12)

==6262== Address 0x5203044 is 0 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

==6262== Invalid read of size 1

==6262== at 0x4C30A48: \_\_GI\_mempcpy (vg\_replace\_strmem.c:1525)

==6262== by 0x4EB07C4: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E82EB2: vfprintf (in /usr/lib64/libc-2.17.so)

==6262== by 0x4E89328: printf (in /usr/lib64/libc-2.17.so)

==6262== by 0x400A8F: main (stringTest1.c:12)

==6262== Address 0x5203045 is 1 bytes after a block of size 4 alloc'd

==6262== at 0x4C29BC3: malloc (vg\_replace\_malloc.c:299)

==6262== by 0x400771: mallocString (Strings.c:13)

==6262== by 0x4007AC: duplicateString (Strings.c:26)

==6262== by 0x400A6A: main (stringTest1.c:11)

==6262==

Original: --tool=memcheck, Duplicate: --tool=memcheck

==6262==

==6262== HEAP SUMMARY:

==6262== in use at exit: 0 bytes in 0 blocks

==6262== total heap usage: 1 allocs, 1 frees, 4 bytes allocated

==6262==

==6262== All heap blocks were freed -- no leaks are possible

stringTest1.c

#include"Strings.h"

#include<stdio.h>

#include<stdlib.h>

int main(int argc, char\*\* argv)

{

String dupe;

if(argc > 1)

{

dupe = duplicateString(argv[1]);

printf("Original: %s, Duplicate: %s\n", argv[1], dupe);

}

else

printf("Please enter a String to be copied!\n");

free(dupe);

}

Exercise Three



A picture containing drawing

Description automatically generated

valgrind output

==7722== Memcheck, a memory error detector

==7722== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==7722== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==7722== Command: ./stringListTest --tool=memcheck –-leak-check=full -–verbose –-log-file=stringTest1.txt

==7722==

./stringListTest

--tool=memcheck

–-leak-check=full

-–verbose

–-log-file=stringTest1.txt

==7722==

==7722== HEAP SUMMARY:

==7722== in use at exit: 0 bytes in 0 blocks

==7722== total heap usage: 6 allocs, 6 frees, 134 bytes allocated

==7722==

==7722== All heap blocks were freed -- no leaks are possible

==7722==

==7722== For counts of detected and suppressed errors, rerun with: -v

==7722== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)

stringListTest.c

#include"Strings.h"

#include<stdio.h>

#include<stdlib.h>

int main(int argc, char\*\* argv)

{

String\* dupel;

if(argc > 1)

{

dupel = duplicateStringList(argv, argc);

for(int i=0; i<argc; i++)

printf("%s\n", dupel[i]);

}

else

printf("Please enter a String to be copied!\n");

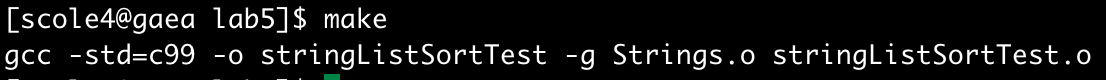
for(int i=0; i<argc; i++)

free(dupel[i]);

free(dupel);

}

Exersice Four



A picture containing food, flower

Description automatically generated

valgrind output

==9008== Memcheck, a memory error detector

==9008== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==9008== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==9008== Command: ./stringListSortTest --tool=memcheck –-leak-check=full -–verbose –-log-file=string

==9008==

--tool=memcheck

-–verbose

./stringListSortTest

–-leak-check=full

–-log-file=string

==9008==

==9008== HEAP SUMMARY:

==9008== in use at exit: 0 bytes in 0 blocks

==9008== total heap usage: 6 allocs, 6 frees, 129 bytes allocated

==9008==

==9008== All heap blocks were freed -- no leaks are possible

==9008==

==9008== For counts of detected and suppressed errors, rerun with: -v

==9008== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)

Exercise Five

A close up of text on a black background

Description automatically generated