

Kyle Hermens

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==3935== Memcheck, a memory error detector
==3935== Copyright (C) 2002-2013, and GNU GPL'd, by Julian Seward
et al.
==3935== Using Valgrind-3.10.1 and LibVEX; rerun with -h for
copyright info
==3935== Command: ./mssh
==3935==
command?: ls
alias                history                mssh                TESTout.txt
CMakeLists.txt       linkedlist            out2.txt            things
CMAKE PREVIOUS BUILD PATH  main.c              out.txt            tokenize
cscd340_w16_hw8.pdf  Makefile             pipes              utils
Debug                Makefile (copy)      process
HermensKhw8.zip      men                  shell
command?: rm men
command?: ls
alias                HermensKhw8.zip      Makefile (copy)    process
                    utils
CMakeLists.txt       history                mssh                shell
CMAKE PREVIOUS BUILD PATH  linkedlist          out2.txt
TESTout.txt
cscd340_w16_hw8.pdf  main.c              out.txt            things
Debug                Makefile             pipes              tokenize
command?: rm alias
rm: cannot remove : Is a directory
command?: alias
alias dudes=men
==3943==
==3943== HEAP SUMMARY:
==3943==      in use at exit: 5,186 bytes in 235 blocks
==3943==    total heap usage: 264 allocs, 29 frees, 11,577 bytes
allocated
==3943==
==3943== LEAK SUMMARY:
==3943==    definitely lost: 16 bytes in 1 blocks
==3943==    indirectly lost: 6 bytes in 1 blocks
==3943==    possibly lost: 0 bytes in 0 blocks
==3943==    still reachable: 5,164 bytes in 233 blocks
==3943==    suppressed: 0 bytes in 0 blocks
==3943== Rerun with --leak-check=full to see details of leaked
memory
==3943==
==3943== For counts of detected and suppressed errors, rerun
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with: -v
==3943== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: alias > dudes
==3944==
==3944== HEAP SUMMARY:
==3944==      in use at exit: 5,262 bytes in 240 blocks
==3944==    total heap usage: 277 allocs, 37 frees, 11,715 bytes
allocated
==3944==
==3944== LEAK SUMMARY:
==3944==    definitely lost: 16 bytes in 1 blocks
==3944==    indirectly lost: 6 bytes in 1 blocks
==3944==    possibly lost: 0 bytes in 0 blocks
==3944==    still reachable: 5,240 bytes in 238 blocks
==3944==    suppressed: 0 bytes in 0 blocks
==3944== Rerun with --leak-check=full to see details of leaked
memory
==3944==
==3944== For counts of detected and suppressed errors, rerun
with: -v
==3944== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: ls
alias          history          mssh          TESTout.txt
CMakeLists.txt linkedlist      out2.txt      things
CMAKE PREVIOUS BUILD PATH main.c    out.txt       tokenize
cscd340_wl6_hw8.pdf  Makefile      pipes         utils
Debug          Makefile (copy) process
HermensKhwh8.zip      men           shell
command?: alias | wc -w
==3951==
==3951== HEAP SUMMARY:
==3951==      in use at exit: 5,367 bytes in 247 blocks
==3951==    total heap usage: 298 allocs, 51 frees, 11,925 bytes
allocated
==3951==
==3951== LEAK SUMMARY:
==3951==    definitely lost: 16 bytes in 1 blocks
==3951==    indirectly lost: 6 bytes in 1 blocks
==3951==    possibly lost: 0 bytes in 0 blocks
==3951==    still reachable: 5,345 bytes in 245 blocks
==3951==    suppressed: 0 bytes in 0 blocks
==3951== Rerun with --leak-check=full to see details of leaked
memory

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==3951==
==3951== For counts of detected and suppressed errors, rerun
with: -v
==3951== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
2
command?: history
1 megadoot
2 nuperdoot
3 looperdoot
4 history
5 ls -l
6 ls -l
7 pwd
8 dudes
9 pwd
10 cd /home/democke/Documents
11 pwd
12 cd /home/democke/Documents
13 cd /home/democke/Documents
14 alias dudes="men"
15 alias dudes="men"
16 ./mssh
17 ls -l > out.txt
18 wc < out.txt
19 wc -w out.txt > out2.txt
20 ls
21 more out2.txt
22 less out2.txt
23 more out.txt
24 !20
25 ls -l
26 !!
27 ls -l
28 ls -l | history
29 ls -l | history
30 ls -l | history
31 ls -l | history
32 ls -l | history
33 history | wc -w
34 history | wc -w
35 history > out.txt
36 history | wc -w
37 history
38 history
```

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39 alias
40 alias
41 history
42 history | wc -w
43 alias | wc -w
44 ls -l
45 alias
46 history
47 history | wc -w
48 alias | wc -w
49 history
50 !!
51 history
52 !44
53 alias
54 alias things="stuff"
55 alias
56 ls
57 history > things
58 ls
59 history
60 !58
61 !!
62 ls
63 alias
64 alias > dudes
65 alias > out.txt
66 alias > out2.txt
67 alias
68 alias > out.txt
69 alias
70 ls
71 rm men
72 ls
73 rm alias
74 alias
75 alias > dudes
76 ls
77 alias | wc -w
78 history
==3952==
==3952== HEAP SUMMARY:
==3952==      in use at exit: 5,389 bytes in 247 blocks
==3952==    total heap usage: 305 allocs, 58 frees, 12,015 bytes
allocated
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==3952==
==3952== LEAK SUMMARY:
==3952==     definitely lost: 16 bytes in 1 blocks
==3952==     indirectly lost: 8 bytes in 1 blocks
==3952==     possibly lost: 0 bytes in 0 blocks
==3952==     still reachable: 5,365 bytes in 245 blocks
==3952==     suppressed: 0 bytes in 0 blocks
==3952== Rerun with --leak-check=full to see details of leaked
memory
==3952==
==3952== For counts of detected and suppressed errors, rerun
with: -v
==3952== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: history | wc -w
==3955==
==3955== HEAP SUMMARY:
==3955==     in use at exit: 5,475 bytes in 253 blocks
==3955==   total heap usage: 319 allocs, 66 frees, 12,167 bytes
allocated
==3955==
==3955== LEAK SUMMARY:
==3955==     definitely lost: 16 bytes in 1 blocks
==3955==     indirectly lost: 8 bytes in 1 blocks
==3955==     possibly lost: 0 bytes in 0 blocks
==3955==     still reachable: 5,451 bytes in 251 blocks
==3955==     suppressed: 0 bytes in 0 blocks
==3955== Rerun with --leak-check=full to see details of leaked
memory
==3955==
==3955== For counts of detected and suppressed errors, rerun
with: -v
==3955== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
239
command?: !!
==3958==
==3958== HEAP SUMMARY:
==3958==     in use at exit: 5,537 bytes in 258 blocks
==3958==   total heap usage: 337 allocs, 79 frees, 12,331 bytes
allocated
==3958==
==3958== LEAK SUMMARY:
==3958==     definitely lost: 16 bytes in 1 blocks
==3958==     indirectly lost: 8 bytes in 1 blocks
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==3958==          possibly lost: 0 bytes in 0 blocks
==3958==          still reachable: 5,513 bytes in 256 blocks
==3958==          suppressed: 0 bytes in 0 blocks
==3958== Rerun with --leak-check=full to see details of leaked
memory
==3958==
==3958== For counts of detected and suppressed errors, rerun
with: -v
==3958== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
241
==3959==
==3959== HEAP SUMMARY:
==3959==          in use at exit: 5,459 bytes in 251 blocks
==3959==          total heap usage: 337 allocs, 86 frees, 12,326 bytes
allocated
==3959==
==3959== LEAK SUMMARY:
==3959==          definitely lost: 0 bytes in 0 blocks
==3959==          indirectly lost: 0 bytes in 0 blocks
==3959==          possibly lost: 0 bytes in 0 blocks
==3959==          still reachable: 5,459 bytes in 251 blocks
==3959==          suppressed: 0 bytes in 0 blocks
==3959== Rerun with --leak-check=full to see details of leaked
memory
==3959==
==3959== For counts of detected and suppressed errors, rerun
with: -v
==3959== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: history
1 megadoot
2 nuperdoot
3 looperdoot
4 history
5 ls -l
6 ls -l
7 pwd
8 dudes
9 pwd
10 cd /home/democke/Documents
11 pwd
12 cd /home/democke/Documents
13 cd /home/democke/Documents
14 alias dudes="men"
```

```
15 alias dudes="men"
16 ./mssh
17 ls -l > out.txt
18 wc < out.txt
19 wc -w out.txt > out2.txt
20 ls
21 more out2.txt
22 less out2.txt
23 more out.txt
24 !20
25 ls -l
26 !!
27 ls -l
28 ls -l | history
29 ls -l | history
30 ls -l | history
31 ls -l | history
32 ls -l | history
33 history | wc -w
34 history | wc -w
35 history > out.txt
36 history | wc -w
37 history
38 history
39 alias
40 alias
41 history
42 history | wc -w
43 alias | wc -w
44 ls -l
45 alias
46 history
47 history | wc -w
48 alias | wc -w
49 history
50 !!
51 history
52 !44
53 alias
54 alias things="stuff"
55 alias
56 ls
57 history > things
58 ls
59 history
```

```
60 !58
61 !!
62 ls
63 alias
64 alias > dudes
65 alias > out.txt
66 alias > out2.txt
67 alias
68 alias > out.txt
69 alias
70 ls
71 rm men
72 ls
73 rm alias
74 alias
75 alias > dudes
76 ls
77 alias | wc -w
78 history
79 history | wc -w
80 !!
81 history
==3960==
==3960== HEAP SUMMARY:
==3960==      in use at exit: 5,536 bytes in 256 blocks
==3960==    total heap usage: 344 allocs, 88 frees, 12,419 bytes
allocated
==3960==
==3960== LEAK SUMMARY:
==3960==    definitely lost: 16 bytes in 1 blocks
==3960==    indirectly lost: 8 bytes in 1 blocks
==3960==    possibly lost: 0 bytes in 0 blocks
==3960==    still reachable: 5,512 bytes in 254 blocks
==3960==    suppressed: 0 bytes in 0 blocks
==3960== Rerun with --leak-check=full to see details of leaked
memory
==3960==
==3960== For counts of detected and suppressed errors, rerun
with: -v
==3960== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: history
1 megadoot
2 nuperdoot
3 looperdoot
```



```
4 history
5 ls -l
6 ls -l
7 pwd
8 dudes
9 pwd
10 cd /home/democke/Documents
11 pwd
12 cd /home/democke/Documents
13 cd /home/democke/Documents
14 alias dudes="men"
15 alias dudes="men"
16 ./mssh
17 ls -l > out.txt
18 wc < out.txt
19 wc -w out.txt > out2.txt
20 ls
21 more out2.txt
22 less out2.txt
23 more out.txt
24 !20
25 ls -l
26 !!
27 ls -l
28 ls -l | history
29 ls -l | history
30 ls -l | history
31 ls -l | history
32 ls -l | history
33 history | wc -w
34 history | wc -w
35 history > out.txt
36 history | wc -w
37 history
38 history
39 alias
40 alias
41 history
42 history | wc -w
43 alias | wc -w
44 ls -l
45 alias
46 history
47 history | wc -w
48 alias | wc -w
```

```
49 history
50 !!
51 history
52 !44
53 alias
54 alias things="stuff"
55 alias
56 ls
57 history > things
58 ls
59 history
60 !58
61 !!
62 ls
63 alias
64 alias > dudes
65 alias > out.txt
66 alias > out2.txt
67 alias
68 alias > out.txt
69 alias
70 ls
71 rm men
72 ls
73 rm alias
74 alias
75 alias > dudes
76 ls
77 alias | wc -w
78 history
79 history | wc -w
80 !!
81 history
==3965==
==3965== HEAP SUMMARY:
==3965==      in use at exit: 5,536 bytes in 256 blocks
==3965==    total heap usage: 348 allocs, 92 frees, 12,459 bytes
allocated
==3965==
==3965== LEAK SUMMARY:
==3965==      definitely lost: 16 bytes in 1 blocks
==3965==      indirectly lost: 8 bytes in 1 blocks
==3965==      possibly lost: 0 bytes in 0 blocks
==3965==      still reachable: 5,512 bytes in 254 blocks
==3965==      suppressed: 0 bytes in 0 blocks
```

```
==3965== Rerun with --leak-check=full to see details of leaked
memory
==3965==
==3965== For counts of detected and suppressed errors, rerun
with: -v
==3965== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?:
command?: !79
==4018==
==4018== HEAP SUMMARY:
==4018==      in use at exit: 5,674 bytes in 267 blocks
==4018==    total heap usage: 390 allocs, 123 frees, 12,877 bytes
allocated
==4018==
==4018== LEAK SUMMARY:
==4018==    definitely lost: 16 bytes in 1 blocks
==4018==    indirectly lost: 8 bytes in 1 blocks
==4018==    possibly lost: 0 bytes in 0 blocks
==4018==    still reachable: 5,650 bytes in 265 blocks
==4018==    suppressed: 0 bytes in 0 blocks
==4018== Rerun with --leak-check=full to see details of leaked
memory
==4018==
==4018== For counts of detected and suppressed errors, rerun
with: -v
==4018== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
247
==4019==
==4019== HEAP SUMMARY:
==4019==      in use at exit: 5,596 bytes in 260 blocks
==4019==    total heap usage: 390 allocs, 130 frees, 12,873 bytes
allocated
==4019==
==4019== LEAK SUMMARY:
==4019==    definitely lost: 0 bytes in 0 blocks
==4019==    indirectly lost: 0 bytes in 0 blocks
==4019==    possibly lost: 0 bytes in 0 blocks
==4019==    still reachable: 5,596 bytes in 260 blocks
==4019==    suppressed: 0 bytes in 0 blocks
==4019== Rerun with --leak-check=full to see details of leaked
memory
==4019==
==4019== For counts of detected and suppressed errors, rerun
```

```
with: -v
==4019== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?:
==4019==
==4019== HEAP SUMMARY:
==4019==      in use at exit: 5,596 bytes in 260 blocks
==4019==    total heap usage: 390 allocs, 130 frees, 12,873 bytes
allocated
==4019==
==4019== LEAK SUMMARY:
==4019==    definitely lost: 0 bytes in 0 blocks
==4019==    indirectly lost: 0 bytes in 0 blocks
==4019==    possibly lost: 0 bytes in 0 blocks
==4019==    still reachable: 5,596 bytes in 260 blocks
==4019==           suppressed: 0 bytes in 0 blocks
==4019== Rerun with --leak-check=full to see details of leaked
memory
==4019==
==4019== For counts of detected and suppressed errors, rerun
with: -v
==4019== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: cd /home/democke/Documents
==4026==
==4026== HEAP SUMMARY:
==4026==      in use at exit: 5,694 bytes in 264 blocks
==4026==    total heap usage: 405 allocs, 141 frees, 13,224 bytes
allocated
==4026==
==4026== LEAK SUMMARY:
==4026==    definitely lost: 0 bytes in 0 blocks
==4026==    indirectly lost: 0 bytes in 0 blocks
==4026==    possibly lost: 0 bytes in 0 blocks
==4026==    still reachable: 5,694 bytes in 264 blocks
==4026==           suppressed: 0 bytes in 0 blocks
==4026== Rerun with --leak-check=full to see details of leaked
memory
==4026==
==4026== For counts of detected and suppressed errors, rerun
with: -v
==4026== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: pwd
/home/democke/Documents
```

```
command?: pwd
/home/democke/Documents
command?: PATH= $PATH
==4035==
==4035== HEAP SUMMARY:
==4035==      in use at exit: 5,775 bytes in 270 blocks
==4035==    total heap usage: 427 allocs, 157 frees, 13,465 bytes
allocated
==4035==
==4035== LEAK SUMMARY:
==4035==      definitely lost: 0 bytes in 0 blocks
==4035==      indirectly lost: 0 bytes in 0 blocks
==4035==      possibly lost: 0 bytes in 0 blocks
==4035==      still reachable: 5,775 bytes in 270 blocks
==4035==      suppressed: 0 bytes in 0 blocks
==4035== Rerun with --leak-check=full to see details of leaked
memory
==4035==
==4035== For counts of detected and suppressed errors, rerun
with: -v
==4035== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: PATH=
==4045==
==4045== HEAP SUMMARY:
==4045==      in use at exit: 5,807 bytes in 272 blocks
==4045==    total heap usage: 434 allocs, 162 frees, 13,537 bytes
allocated
==4045==
==4045== LEAK SUMMARY:
==4045==      definitely lost: 0 bytes in 0 blocks
==4045==      indirectly lost: 0 bytes in 0 blocks
==4045==      possibly lost: 0 bytes in 0 blocks
==4045==      still reachable: 5,807 bytes in 272 blocks
==4045==      suppressed: 0 bytes in 0 blocks
==4045== Rerun with --leak-check=full to see details of leaked
memory
==4045==
==4045== For counts of detected and suppressed errors, rerun
with: -v
==4045== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: pwd
==4046==
==4046== HEAP SUMMARY:
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```
==4046==      in use at exit: 5,849 bytes in 275 blocks
==4046==    total heap usage: 441 allocs, 166 frees, 13,607 bytes
allocated
==4046==
==4046== LEAK SUMMARY:
==4046==    definitely lost: 0 bytes in 0 blocks
==4046==    indirectly lost: 0 bytes in 0 blocks
==4046==    possibly lost: 0 bytes in 0 blocks
==4046==    still reachable: 5,849 bytes in 275 blocks
==4046==    suppressed: 0 bytes in 0 blocks
==4046== Rerun with --leak-check=full to see details of leaked
memory
==4046==
==4046== For counts of detected and suppressed errors, rerun
with: -v
==4046== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?:
command?: alias
alias dudes=men
==4058==
==4058== HEAP SUMMARY:
==4058==    in use at exit: 5,919 bytes in 280 blocks
==4058==    total heap usage: 448 allocs, 168 frees, 13,689 bytes
allocated
==4058==
==4058== LEAK SUMMARY:
==4058==    definitely lost: 16 bytes in 1 blocks
==4058==    indirectly lost: 6 bytes in 1 blocks
==4058==    possibly lost: 0 bytes in 0 blocks
==4058==    still reachable: 5,897 bytes in 278 blocks
==4058==    suppressed: 0 bytes in 0 blocks
==4058== Rerun with --leak-check=full to see details of leaked
memory
==4058==
==4058== For counts of detected and suppressed errors, rerun
with: -v
==4058== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: alias people="persons"
==4060==
==4060== HEAP SUMMARY:
==4060==    in use at exit: 6,040 bytes in 286 blocks
==4060==    total heap usage: 468 allocs, 182 frees, 14,031 bytes
allocated
```

```
==4060==
==4060== LEAK SUMMARY:
==4060==     definitely lost: 0 bytes in 0 blocks
==4060==     indirectly lost: 0 bytes in 0 blocks
==4060==     possibly lost: 0 bytes in 0 blocks
==4060==     still reachable: 6,040 bytes in 286 blocks
==4060==     suppressed: 0 bytes in 0 blocks
==4060== Rerun with --leak-check=full to see details of leaked
memory
==4060==
==4060== For counts of detected and suppressed errors, rerun
with: -v
==4060== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: alias
alias dudes=men
alias people=persons
==4061==
==4061== HEAP SUMMARY:
==4061==     in use at exit: 6,083 bytes in 290 blocks
==4061==   total heap usage: 474 allocs, 184 frees, 14,086 bytes
allocated
==4061==
==4061== LEAK SUMMARY:
==4061==     definitely lost: 16 bytes in 1 blocks
==4061==     indirectly lost: 6 bytes in 1 blocks
==4061==     possibly lost: 0 bytes in 0 blocks
==4061==     still reachable: 6,061 bytes in 288 blocks
==4061==     suppressed: 0 bytes in 0 blocks
==4061== Rerun with --leak-check=full to see details of leaked
memory
==4061==
==4061== For counts of detected and suppressed errors, rerun
with: -v
==4061== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: unalias people="persons"
==4063==
==4063== HEAP SUMMARY:
==4063==     in use at exit: 6,098 bytes in 288 blocks
==4063==   total heap usage: 490 allocs, 202 frees, 14,383 bytes
allocated
==4063==
==4063== LEAK SUMMARY:
==4063==     definitely lost: 0 bytes in 0 blocks
```

```
==4063==      indirectly lost: 0 bytes in 0 blocks
==4063==      possibly lost: 0 bytes in 0 blocks
==4063==      still reachable: 6,098 bytes in 288 blocks
==4063==      suppressed: 0 bytes in 0 blocks
==4063== Rerun with --leak-check=full to see details of leaked
memory
==4063==
==4063== For counts of detected and suppressed errors, rerun
with: -v
==4063== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?: alias
alias dudes=men
==4065==
==4065== HEAP SUMMARY:
==4065==      in use at exit: 6,139 bytes in 292 blocks
==4065==    total heap usage: 496 allocs, 204 frees, 14,436 bytes
allocated
==4065==
==4065== LEAK SUMMARY:
==4065==      definitely lost: 16 bytes in 1 blocks
==4065==      indirectly lost: 6 bytes in 1 blocks
==4065==      possibly lost: 0 bytes in 0 blocks
==4065==      still reachable: 6,117 bytes in 290 blocks
==4065==      suppressed: 0 bytes in 0 blocks
==4065== Rerun with --leak-check=full to see details of leaked
memory
==4065==
==4065== For counts of detected and suppressed errors, rerun
with: -v
==4065== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
command?:
==3935==
==3935== HEAP SUMMARY:
==3935==      in use at exit: 0 bytes in 0 blocks
==3935==    total heap usage: 496 allocs, 496 frees, 15,054 bytes
allocated
==3935==
==3935== All heap blocks were freed -- no leaks are possible
==3935==
==3935== For counts of detected and suppressed errors, rerun
with: -v
==3935== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0
from 0)
```



