

# strace

```
execve("./example_external", ["./example_external"], 0xffffffff35bb480 /* 17 vars */) = 0
brk(NULL)
      = 0xaaaa04d8000
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffaed86000
faccessat(AT_FDCWD, "/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=67899, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 67899, PROT_READ, MAP_PRIVATE, 3, 0) = 0xfffffaed40000
close(3)
      = 0
openat(AT_FDCWD, "/lib/aarch64-linux-gnu/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0\267\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2190752, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 2332704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffaeb06000
mmap(0xfffffaeb10000, 2267168, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0) = 0xfffffaeb10000
munmap(0xfffffaeb06000, 40960)
      = 0
munmap(0xfffffaed3a000, 22560)
      = 0
mprotect(0xfffffaed1a000, 61440, PROT_NONE) = 0
mmap(0xfffffaed29000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x209000) = 0xfffffaed29000
mmap(0xfffffaed37000, 10272, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0xfffffaed37000
close(3)
      = 0
openat(AT_FDCWD, "/lib/aarch64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0\267\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=84296, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 213704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffaeadb000
mmap(0xfffffaeae0000, 148168, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0) = 0xfffffaeae0000
munmap(0xfffffaeadb000, 20480)
      = 0
munmap(0xfffffaeb05000, 41672)
      = 0
mprotect(0xfffffaeaf4000, 61440, PROT_NONE) = 0
mmap(0xfffffaeb03000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x13000) = 0xfffffaeb03000
close(3)
      = 0
openat(AT_FDCWD, "/lib/aarch64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0\267\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0755, st_size=1637400, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 1805928, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffae927000
mmap(0xfffffae930000, 1740392, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0) = 0xfffffae930000
munmap(0xfffffae927000, 36864)
      = 0
munmap(0xfffffaead9000, 28264)
      = 0
mprotect(0xfffffaeab8000, 61440, PROT_NONE) = 0
mmap(0xfffffaeac7000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x187000) = 0xfffffaeac7000
mmap(0xfffffaeacd000, 48744, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0xfffffaeacd000
close(3)
      = 0
openat(AT_FDCWD, "/lib/aarch64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0\267\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=551064, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 680048, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffae889000
mmap(0xfffffae890000, 614512, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0) = 0xfffffae890000
munmap(0xfffffae889000, 28672)
      = 0
munmap(0xfffffae927000, 32880)
      = 0
mprotect(0xfffffae916000, 61440, PROT_NONE) = 0
mmap(0xfffffae925000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x85000) = 0xfffffae925000
close(3)
      = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffaed84000
set_tid_address(0xfffffaed84af0)
      = 25322
set_robust_list(0xfffffaed84b00, 24)
      = 0
rseq(0xfffffaed851c0, 0x20, 0, 0xd428bc00) = 0
mprotect(0xfffffaeac7000, 16384, PROT_READ) = 0
mprotect(0xfffffae925000, 4096, PROT_READ) = 0
mprotect(0xfffffaeb03000, 4096, PROT_READ) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xfffffaed82000
mprotect(0xfffffaed29000, 45056, PROT_READ) = 0
mprotect(0xaaaaac3096000, 4096, PROT_READ) = 0
mprotect(0xfffffaed8b000, 8192, PROT_READ) = 0
prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
munmap(0xfffffaed40000, 67899)
      = 0
getrandom("\x58\x27\x16\xb8\xfd\xe5\x40\x03", 8, GRND_NONBLOCK) = 8
brk(NULL)
      = 0xaaaa04d8000
brk(0xaaaa04f9000)
      = 0xaaaa04f9000
futex(0xfffffaed377a4, FUTEX_WAKE_PRIVATE, 2147483647) = 0
rt_sigaction(SIGRT_1, {sa_handler=0xfffffae9aa700, sa_mask=[], sa_flags=SA_ONSTACK|SA_RESTART|SA_SIGINFO}, NULL, 8) = 0
rt_sigprocmask(SIG_UNBLOCK, [RTMIN RT_1], NULL, 8) = 0
mmap(NULL, 8454144, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0xfffffae080000
mprotect(0xfffffae090000, 8388608, PROT_READ|PROT_WRITE) = 0
rt_sigprocmask(SIG_BLOCK, ~[], [], 8) = 0
clone(child_stack=0xfffffae88e940, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARPID, parent_tid=[25323], tls=0xfffffae88f8c0, child_tidptr=0xfffffae88f1d0) = 25323
rt_sigprocmask(SIG_SETMASK, [], NULL, 8) = 0
exit_group(0)
      = ?
```

# ltrace -e pthread\*+malloc+free

```
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0, 1) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8878740, 0xffffb8878779) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 1, 0xffffb8870af0) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 1, 1) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8878610, 0xffffb8870e78) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb88785f0, 0xffffb8870e78) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb88780b0, 0xffffb860a9d0) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 1, 0xffffb8871fb0) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 1, 1) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8877f80, 0xffffb8872338) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8879540, 5) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 38, 1) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8879470, 4) = 0
libstdc++.so.6->pthread_once(0xffffb88777a4, 0xffffb8705c30, 0xffffb8878b00, 46) = 0
libstdc++.so.6->malloc(16) = 0xaaaadda66eb0
libstdc++.so.6->pthread_create(0xffffd90c9760, 0, 0xffffb87231e0, 0xaaaadda66eb0) = 0
libstdc++.so.6->pthread_join(0xffffb83cf100, 0, 0, 8)
```