

Buggy App

First command:

```
strace -c {program}
```

this command is used to show the following table to find issue.

```
1/1  +  [?]  [?]  Tilix: el-neshwy@
...wy@Dell: ~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1
Error: File not found!
% time      seconds  usecs/call  calls      errors syscall
-----
30.23      0.000026      4           6           mprotect
23.26      0.000020     20           1           munmap
12.79      0.000011      3           3           brk
 9.30      0.000008      8           1           write
 9.30      0.000008      1           6           1 openat
 5.81      0.000005      5           1           getrandom
 4.65      0.000004      4           1           futex
 4.65      0.000004      4           1           prlimit64
 0.00      0.000000      0           4           read
 0.00      0.000000      0           5           close
 0.00      0.000000      0           5           fstat
 0.00      0.000000      0          22           mmap
 0.00      0.000000      0           2           pread64
 0.00      0.000000      0           1           1 access
 0.00      0.000000      0           1           execve
 0.00      0.000000      0           1           arch_prctl
 0.00      0.000000      0           1           set_tid_address
 0.00      0.000000      0           1           set_robust_list
 0.00      0.000000      0           1           rseq
-----
100.00     0.000086      1          64           2 total
el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/A
el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/A
ssignment_1$
```

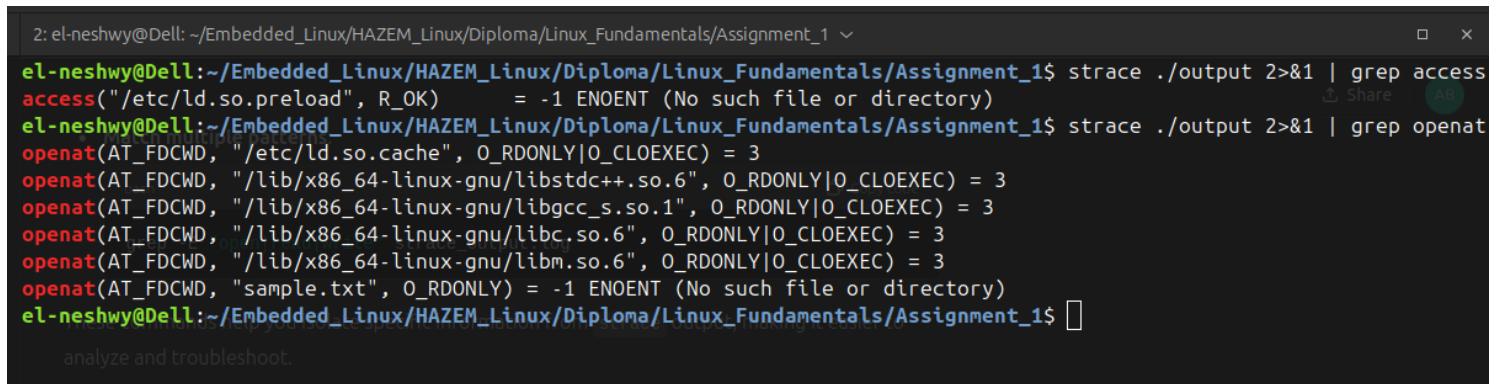
We Found that there was two error one with openat sysCall and anther with access sysCall.

Now we need to find out why this sysCall make this errors, So we need To run second Command

```
strace {prorgam} 2>&1 | grep openat
```

2>&1: Redirects `stderr` (file descriptor 2) to `stdout` (file descriptor 1), so all `strace` output can be piped to `grep`.

grep access: Filters the output to show only lines containing "access".

A terminal window with a dark background and light-colored text. The prompt is 'el-neshwy@Dell: ~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1'. The first command is 'strace ./output 2>&1 | grep access', which outputs 'access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)'. The second command is 'strace ./output 2>&1 | grep openat', which outputs several lines of 'openat' calls with their return values: 'openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3', 'openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = 3', 'openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC) = 3', 'openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3', 'openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC) = 3', and 'openat(AT_FDCWD, "sample.txt", O_RDONLY) = -1 ENOENT (No such file or directory)'. The prompt returns to 'el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1\$'.

```
2: el-neshwy@Dell: ~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1
el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1$ strace ./output 2>&1 | grep access
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1$ strace ./output 2>&1 | grep openat
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = 3
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC) = 3
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC) = 3
openat(AT_FDCWD, "sample.txt", O_RDONLY) = -1 ENOENT (No such file or directory)
el-neshwy@Dell:~/Embedded_Linux/HAZEM_Linux/Diploma/Linux_Fundamentals/Assignment_1$
```

`Access` sysCall try to open "etc/ld.so.preload" and doesnot found it.

`Openat` sysCall try to open "sample.txt" and this file is not exists.