

Assignment-1

The c++ code application look for a file named “sample.txt” and prints its contents, after compiling the code and executing it, we got an output as follow “Error: File not found!”, we will use **strace** commands to debug the code and see what happened.

1- **\$ strace -c ./out.exe :**

this commands provides a summary table of syscalls invoked in by the the executable application;

```
Error: File not found!
```

% time	seconds	usecs/call	calls	errors	syscall
45.13	0.001229	1229	1		execve
27.07	0.000737	33	22		mmap
9.11	0.000248	31	8		mprotect
5.80	0.000158	26	6	1	openat
2.35	0.000064	12	5		newfstatat
2.06	0.000056	14	4		read
1.73	0.000047	11	4		pread64
1.69	0.000046	9	5		close
1.21	0.000033	33	1		write
1.21	0.000033	33	1	1	access
0.95	0.000026	13	2	1	arch_prctl
0.59	0.000016	5	3		brk
0.37	0.000010	10	1		set_tid_address
0.37	0.000010	10	1		set_robust_list
0.37	0.000010	10	1		rseq
0.00	0.000000	0	1		munmap
0.00	0.000000	0	1		futex
0.00	0.000000	0	1		prlimit64
0.00	0.000000	0	1		getrandom
100.00	0.002723	39	69	3	total

from the table, we get 3 syscalls that resulted in errors **openat**, **access** and **arch_prctl**

2- **\$ strace ./out.exe :**

the strace command outputs all the syscalls invoked in details, we will look for the 3 syscalls that resulted in errors:

```
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffcc828b300) = -1 EINVAL (Invalid argument)
```

```
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
```

```
openat(AT_FDCWD, "sample.txt", O_RDONLY) = -1 ENOENT (No such file or directory)
```

so after checking all the syscalls errors provided, the issue of having a negative output and not finding the “sample.txt” file originate from the syscall **openat**, this system call tried to open the file but could not find it, thus we got “Error: File not found!” as an output.