

Strace Debugging Program

First command:

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

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

```
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".

```
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$
```

analyze and troubleshoot.