

PA 3.3 访存越界

在完成 PA 3.3的时候，出现了访存越界的现象，整个调试过程中difftest都是开着的：

```
address (0x00000015) is out of bound at pc = 0x8301b7f0
$0 = 0x00000000
ra = 0x8301be78
sp = 0x80379e90
gp = 0x00000000
tp = 0x00000000
t0 = 0x00000000
t1 = 0x8301b4cc
t2 = 0x00000000
s0 = 0x83029b0c
s1 = 0x00000015
a0 = 0x00000015
a1 = 0x0000000e
a2 = 0x00000000
a3 = 0x80379edc
a4 = 0x83029b0c
a5 = 0x00000015
a6 = 0x83029700
a7 = 0x00000004
s2 = 0x80379edc
s3 = 0x00000016
s4 = 0x00000000
s5 = 0x00000000
s6 = 0x00000000
s7 = 0x00000000
s8 = 0x00000000
s9 = 0x00000000
s10 = 0x00000000
s11 = 0x00000000
t3 = 0x00000000
t4 = 0x83021f80
t5 = 0x00000000
t6 = 0x00000000
```

通过print调试法最终确定在 `NDL_OpenCanvas` 函数中:

```
void NDL_OpenCanvas(int *w, int *h) {  
    // 打开 /proc/dispinfo 文件  
    int dispinfo_fd = open(file: "/proc/dispinfo", oflag: O_RDONLY);  
    printf(format: "After open\n");  
  
    // 读取文件内容  
    size_t bytes_read = read(fd: dispinfo_fd, buf: dispinfo_buf, nbytes: sizeof(dispinfo_buf));  
  
    printf(format: "After read\n");  
}
```

```
After open  
Just in _read  
After __syscall__ read  
address (0x00000015) is out of bound at pc = 0x8301b7f0
```

然后继续跟到 `read` 系统调用中，发现read应该是正常返回的：

```
int _read(int fd, void *buf, size_t count) {  
    printf(format: "Just in _read\n");  
    int ret = __syscall__(type: SYS_read, a0: fd, a1: (intptr_t)buf, a2: count);  
    printf(format: "After __syscall__ read\n");  
    return ret;  
}
```

```
After open  
Just in _read  
After __syscall__ read  
address (0x00000015) is out of bound at pc = 0x8301b7f0
```

这就很奇怪了，如果C库是正确的，那就应该回到 `NDL_OpenCanvas` 函数中，但是并没有

接下来应该怎么调试？