

CS – 314 OPERATING SYSTEMS LAB -9

Objective

- Print desired statements whenever a file is created, read, written or deleted.

Solution

- To print the desired statement whenever a file is created, we add the following snippet inside the function “common_open()” in the file “open.c” in the directory “/usr/src/minix/servers/vfs”.

```
if (r == OK) {
    exist = FALSE; /* We just created the file */
    struct vmnt *temp = find_vmnt(vp->v_fs_e);
    if (strcmp(temp->m_mount_path, "/home") == 0) {
        printf("MINIX 210010050: file created: %llu\n", vp->v_inode_nr);
    }
}
```

- To print the desired statement whenever a file is read or written, we add the following snippet inside the function “read_write()” in the file “read.c” in the directory “/usr/src/minix/servers/vfs”.

```
struct vmnt *temp = find_vmnt(vp->v_fs_e);
if (strcmp(temp->m_mount_path, "/home") == 0) {
    if (rw_flag == READING) {
        printf("MINIX 210010050: file read: %llu; nbytes = %zu; offset = %llu\n",
            vp->v_inode_nr, size, position);
    }
    else if (rw_flag == WRITING) {
        printf("MINIX 210010050: file write: %llu; nbytes = %zu; offset = %llu\n",
            vp->v_inode_nr, size, position);
    }
}
```

- To print the desired statement whenever a file is deleted, we add the following snippet inside the function “do_unlink()” in the file “link.c” in the directory “/usr/src/minix/servers/vfs”.

```
lookup_init(&stickycheck, resolve.l_path, PATH_RET_SYMLINK, &vmp2, &vp);
stickycheck.l_vmnt_lock = VMNT_READ;
stickycheck.l_vnode_lock = VNODE_READ;
vp = advance(dirp, &stickycheck, fp);
if (strcmp(vmp->m_mount_path, "/home") == 0) {
    printf("MINIX 210010050: file deleted: %llu\n", vp->v_inode_nr);
}
if (vp != NULL) {
    unlock_vnode(vp);
    put_vnode(vp);
}
```

Results:

```
Minix 210010050: PID 204 exited
# touch sample.txt *
Minix 210010050: PID 205 created
MINIX 210010050: Time Quantum Executed: 200 out of 200 (Endpoint: 180)
MINIX 210010050: PID 180 swapped in
MINIX 210010050: file created: 116 ←
Minix 210010050: PID 205 exited
# echo "Sample text" >> sample.txt *
MINIX 210010050: file write: 116; nbytes = 12; offset = 12 ←
# cat sample.txt *
Minix 210010050: PID 206 created
MINIX 210010050: Time Quantum Executed: 200 out of 200 (Endpoint: 181)
MINIX 210010050: PID 181 swapped in
MINIX 210010050: file read: 116; nbytes = 4096; offset = 12 ←
Sample text
MINIX 210010050: file read: 116; nbytes = 4096; offset = 12
Minix 210010050: PID 206 exited
# rm sample.txt *
Minix 210010050: PID 207 created
MINIX 210010050: Time Quantum Executed: 200 out of 200 (Endpoint: 182)
MINIX 210010050: PID 182 swapped in
MINIX 210010050: file deleted: 116 ←
Minix 210010050: PID 207 exited
#
```

From the above screenshot, we can see that a statement is being printed whenever a file is created, read, written or deleted.