

# Final work in operating systems:

## Fourth question:

### Section 1.2:

The running output for the specified example:

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ mkdir dir
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ touch dir/a dir/b
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ ln -s a dir/sl
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ mkdir dir/sub
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ touch dir/sub/x
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ make
gcc -Wall -g -o dir_traversal.out dir_traversal.o
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ ./dir_traversal.out dir
D 11821949022002747      dir
F 6473924464500360      a
F 2814749767261842      b
D 2533274790551189      sub
F 20266198323203790      x
```

To prove that this is the correct inode for each file I will use the stat command that displays the detailed status of a particular file or a file system:

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4$ stat dir
  File: dir
  Size: 512          Blocks: 0          IO Block: 512    directory
Device: 2ah/42d Inode: 11821949022002747 Links: 1
Access: (0777/drwxrwxrwx)  Uid: ( 1000/   tom)   Gid: ( 1000/   tom)
Access: 2020-08-10 21:23:52.518764900 +0300
Modify: 2020-08-10 21:23:42.164922800 +0300
Change: 2020-08-10 21:23:42.164922800 +0300
 Birth: -
```

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4/dir$ stat a
  File: a
  Size: 0            Blocks: 0          IO Block: 512    regular empty file
Device: 2ah/42d Inode: 6473924464500360 Links: 1
Access: (0777/-rwxrwxrwx)  Uid: ( 1000/   tom)   Gid: ( 1000/   tom)
Access: 2020-08-10 21:23:32.308393700 +0300
Modify: 2020-08-10 21:23:32.308393700 +0300
Change: 2020-08-10 21:24:25.108217700 +0300
 Birth: -
```

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4/dir$ stat b
  File: b
  Size: 0            Blocks: 0          IO Block: 512    regular empty file
Device: 2ah/42d Inode: 2814749767261842 Links: 1
Access: (0777/-rwxrwxrwx)  Uid: ( 1000/   tom)   Gid: ( 1000/   tom)
Access: 2020-08-10 21:23:32.310395200 +0300
Modify: 2020-08-10 21:23:32.310395200 +0300
Change: 2020-08-10 21:23:33.594014500 +0300
 Birth: -
```

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4/dir$ stat sub
  File: sub
  Size: 512          Blocks: 0          IO Block: 512    directory
Device: 2ah/42d Inode: 2533274790551189 Links: 1
Access: (0777/drwxrwxrwx)  Uid: ( 1000/   tom)   Gid: ( 1000/   tom)
Access: 2020-08-10 21:23:52.518764900 +0300
Modify: 2020-08-10 21:23:47.363479700 +0300
Change: 2020-08-10 21:23:47.363479700 +0300
 Birth: -
```

```
tom@DESKTOP-D0720L0:/mnt/c/Users/tom/OneDrive/.../q_4/dir/sub$ stat x
  File: x
  Size: 0            Blocks: 0          IO Block: 512    regular empty file
Device: 2ah/42d Inode: 20266198323203790 Links: 1
Access: (0777/-rwxrwxrwx)  Uid: ( 1000/   tom)   Gid: ( 1000/   tom)
Access: 2020-08-10 21:23:47.364477200 +0300
Modify: 2020-08-10 21:23:47.364477200 +0300
Change: 2020-08-10 21:23:48.347928800 +0300
 Birth: -
```