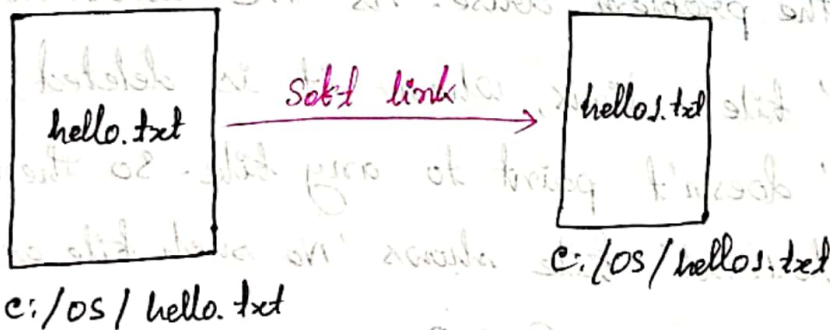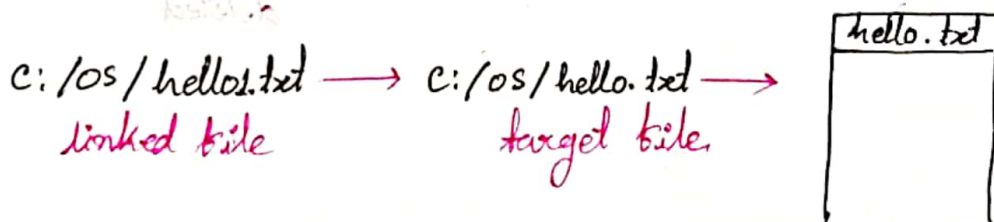4 Assignment - 6

#Q: Explain graphically what happens when we modify and delete one file which is softly linked to another file.
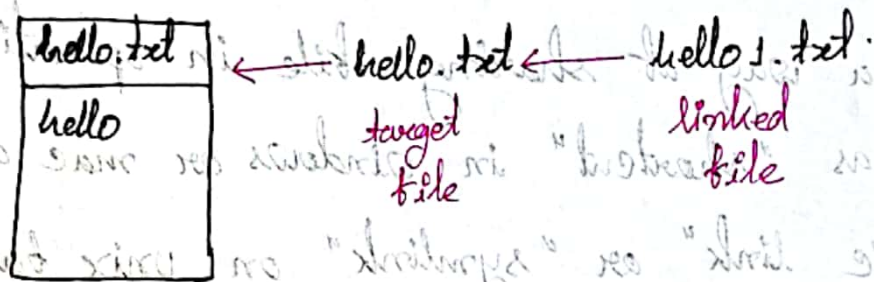
Answer:

Soft link is a way of sharing file in operating system. It is known as "shortcut" in windows or mac operating system and "symbolic link" or "symlink" on unix based operating system. Soft link creates a link between two file. It is created using "ln -s" command in linux.

*ln-s 'target file' 'linked file'

hello.txt → (Soft link) → hellos.txt

c:/os/hello.txt   c:/os/hellos.txt

Soft link connects the filename to another filename. The linked file is started with '1' which can be seen through it inode and also has different inode. Here no new file (hard file) is created. The actual structure be like -

c:/os/hellos.txt ———→ c:/os/hello.txt ———→ hello.txt
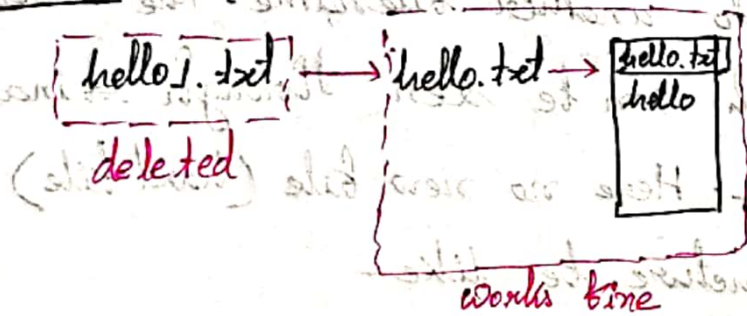linked file   target file.

If we modify any of the file in the previous example, like the 'hello.txt' or 'hello1.txt', the main file will be changed. Simply both files will be changed. For example. If we add "hello" to 'hello1.txt', both hello.txt and 'hello1.txt' will be changed.

```
┌──────────────┐
│ hello.txt    │ ⟵————— hello.txt ⟵————— hello1.txt;
├──────────────┤            target         linked
│ hello        │            file          file
│              │
│              │
└──────────────┘
```

If we want to delete, here we get two cases. If the 'hello1.txt' file is deleted, the 'hello.txt' file works fine. But if we delete the 'hello.txt' file, the problem arise. As the 'hello1.txt' file contains the 'hello.txt' file's link, when it is deleted, it doesn't the 'hello1.txt' doesn't point to any file. So then,
o after running 'hello1.txt' file shows 'No such file or directory'

Case-1

```
┌──────────────┐     ┌───────────┐     ┌────────────┐
│ hello1.txt   │ ——⟶ │ hello.txt │ ——⟶ │ hello.txt  │
└──────────────┘     └───────────┘     ├────────────┤
  ( deleted )                          │ hello      │
                                       │            │
                                       └────────────┘
                                          works fine
```

Case-2

```
┌──────────────┐   ┌───────────┐     ┌────────────┐
│ hello1.txt   │ ⟶ │ hello.txt │ ——⟶ │ hello.txt  │
└──────────────┘   └───────────┘     ├────────────┤
  points to                          │ hello      │
  invalid                            │            │
  file                               └────────────┘
                                        deleted
```