



## **UNIX Basics and Commands, PuTTY V1.0**

## **Preface**

This document will take you through to setup ODBC and how to connect from excel to Oracle database.

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## 1. Creating Links

<http://linuxide.com/linux-how-to/difference-soft-link-hard-link/>

Hard Link acts like a mirror copy of the original file. These links share the same inodes. Changes made to the original or hard linked file will reflect the other. When you delete hard link nothing will happen to the other. Hard links can't cross file systems.

Soft Link is actual link to the original file. These Links will have a different Inodes value. Soft link points to the original file so If original file is deleted the soft link fails. If you delete the soft link, nothing will happen to file. The reason for this is, the actual file or directory's inode is different from the "soft link" created file's inode, Hard links can cross file systems.

### What are Hard Links

1. Hard Links have same inodes number.
2. `ls -l` command shows all the links with the link column shows number of links.
3. Links have actual file contents
4. Removing any link, just reduces the link count, but doesn't affect other links.
5. You cannot create a hard link for a directory.
- 6 If original file is removed then the link will still show you the content of the file.

### What are Soft Links

1. Soft Links have different inodes numbers.
2. `ls -l` command shows all links with second column value 1 and the link points to original file.
3. Soft Link contains the path for original file and not the contents.
4. Removing soft link doesn't affect anything but removing original file, the link becomes "dangling" link which points to nonexistent file.
5. A soft link can link to a directory.

Let us try to see some experimental differences. Make a new directory called Test and then move into it and create new file. Simply follow below steps.

### Hard links

```
$ mkdir Test
$ cd Test
$ touch sample1
```

**Now, create a hard link to sample1. Name the hard link sample2.**

```
$ ln sample1 sample2
```

Display inodes for both files using 'I' argument of the `ls` command.

```
$ ls -il sample1 sample2
```

This is what you get:

```
1482256 -rw-r--r-- 2 bruno bruno 21 May 5 15:55 sample1
1482256 -rw-r--r-- 2 bruno bruno 21 May 5 15:55 sample2
```

From the output you can notice that both sample1 and sample2 have the same inode number (1482256). Also both files have the same file permissions and the same size.

### **Now Remove the original sample1**

```
$ rm sample1
```

After removing hard link just have a look at the content of the "link" sample2.

```
$ cat sample2
```

You will still be able to see the content of the file.

### **Symbolic links**

#### **Create soft link for the file sample2.**

```
$ ln -s sample2 sample3
```

Display inodes for both using i argument of ls command.

```
$ ls -il sample2 sample3
```

This is what you'll get:

```
1482256 -rw-r--r-- 1 bruno bruno 21 May 5 15:55 FileB
1482226 lrwxrwxrwx 1 bruno bruno 5 May 5 16:22 FileC -> FileB
```

From the output you can notice that the inodes are different and the symbolic link got a "l" before the rwxrwxrwx. The permissions are different for the link and the original file because it is just a symbolic link.

Now list the contents:

```
$ cat sample2
$ cat sample3
```

#### **Now remove the original file:**

```
$ rm sample2
```

And then check the Test directory:

```
$ ls
```

It will still display symbolic link sample3 but if you try to list the contents It will tell you that there is no such file or directory.

```
$ cat sample3
```

Now you know about some of the key differences between hard links and soft links to make it easier to access files and run programs.

- See more at: <http://linuxide.com/linux-how-to/difference-soft-link-hard-link/#sthash.K0hogF3t.dpuf>