CS 35L

LAB 8, Session 2

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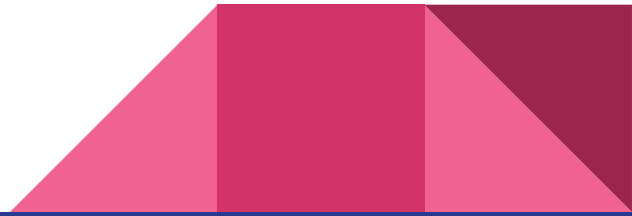
Outline

- Symbolic Links and Hard links
- Emacs
- Lab Assignments and Homework



Links

Symbolic Links (soft links)

symbolic link - the name of a file that contains a reference to another file or directory, either in the form of an absolute path or relative path

A text string that is interpreted as a path to another file or directory (called the target)

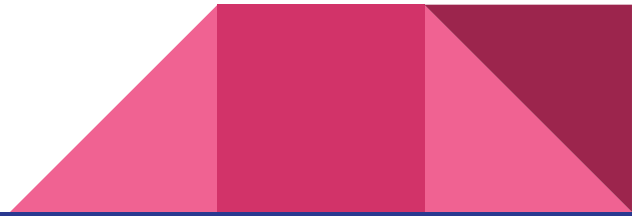
If target is nonexistent then link is broken, orphaned or dead.

Hard link

Directory entry associating a name with a file

Equivalent to giving one file, multiple names

Creates an alias effect



Hard links vs soft links

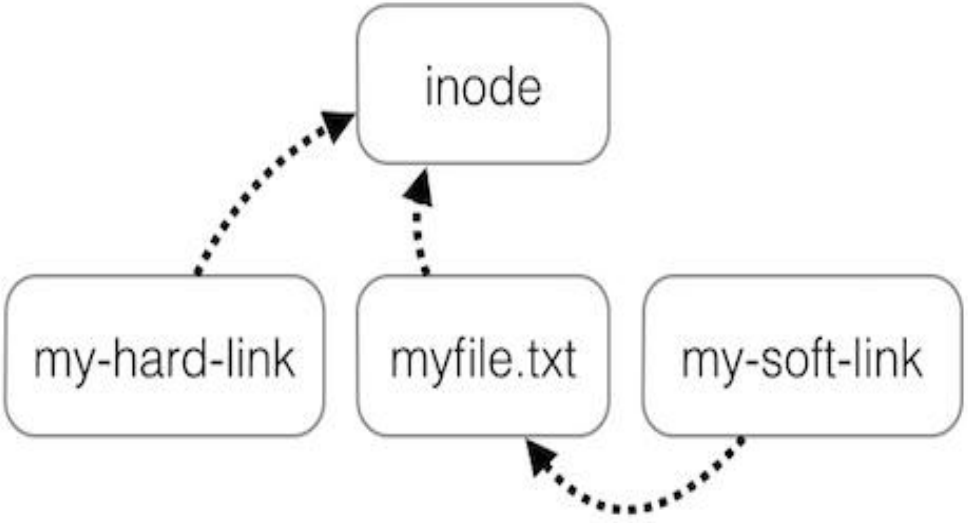
Hard links:

- indistinguishable from other directory entries, because *every* directory entry is hard link
- "original" can be moved or deleted without breaking other hard links to the same inode
- only possible within the same filesystem
- permissions must be the same as those on the "original" (permissions are stored in the inode, not the directory entry)
- can only be made to file, not directories

Symbolic links (soft links):

- simply records that point to another file path. (ls -l will show what path a symlink points to)
- will break if original is moved or deleted. (In some cases it is actually desirable for a link to point to whatever file currently occupies a particular location)
- can point to a file in a different filesystem
- can point to a directory
- on some file system formats, it is possible for the symlink to have different permissions than the file it points to (this is uncommon)

Hard links vs soft links



Link Creation

cd ~/Documents/

touch file1.txt

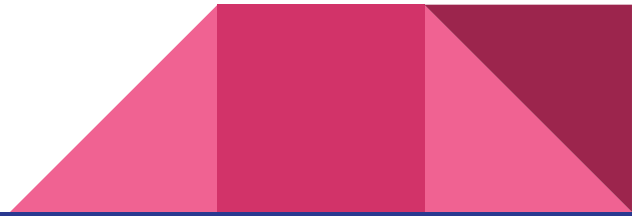
touch file2.txt

echo “file1” > file1.txt

cat file1.txt

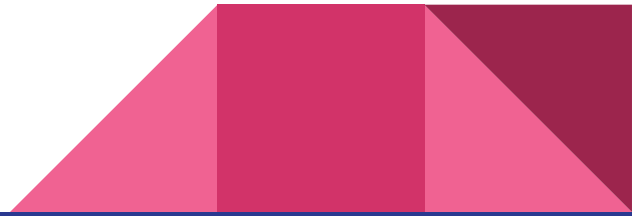
echo “file2” > file2.txt

cat file2.txt



Link Creation

- **ln file1.txt hardlink**
- **cat hardlink**
- **ln -s file2.txt softlink**
- **cat softlink**
- **ls -ali**
- **rm file2.txt**
- **ls -ali**
- **cat softlink**
- **rm file1.txt**
- **ls -ali**
- **cat hardlink**



Basic operations

Creating, copying, moving and deleting a file

touch myfile1.txt

cp myfile1.txt myfile2.txt

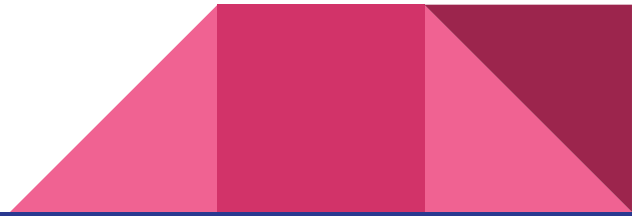
ls -l

mv myfile1.txt myfile3.txt

ls -l

rm myfile3.txt

ls -l



Creating and Deleting directory

mkdir mydir

rmdir mydir

Emacs

Creating a file and adding content

Emacs myfile.txt

Save file: C-x C-s

Exit Emacs: C-x C-c

Quit (i.e. interrupt) command: C-g

Copy and pasting content in a file

Set a mark (select a region of text you want to copy/cut) : C-space

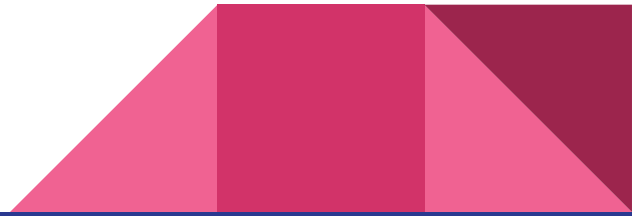
Copy : M-w

Cut : C-w

Paste : C-y

Delete line: C-k (puts it into clipboard)

Read only buffer? Clear by C-x C-q

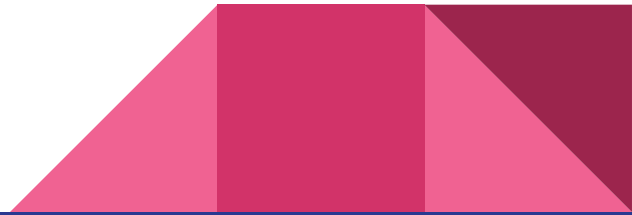


Directory editor

Search for a word: C-s (forward), C-r (to reverse)

Enter mode by: C-x d

Allows you to operate on files: remove, rename, encrypt, decrypt, edit



Running shell commands

M-x shell (interactive shell)

Building programs

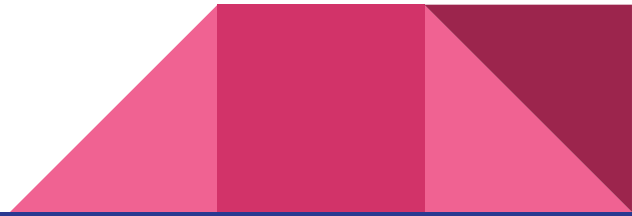
Compile programs: M-x compile

Then, specify command to compile

Tip for homework: gcc hello.c –o hello

Run the executable by running the shell command (M-x shell)

./hello



Homework