CS 344 – UNIX OS Fundamentals – Lecture #9

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Defining and Using Functions

- Similar to functions in other programming languages we can instruct the shell to define functions
- This function is not a file, it is not a script, it is defined in memory
- You can also save these functions to a file

```
$ numfiles()
{
ls | wc $1
}
$ numfiles temp.java
      14      33     245 temp.java
$ numfiles
     143     144    2004
$ ls | wc
     143     144    2004
```

```
$ cat > myfunctions
numfiles()
{
ls | wc $1
}
$ . ./myfunctions
$ typeset -F
declare -f numfiles
$
```

More “grep”

- To search through several files
  - grep pattern file1 file2
  - grep pattern file*
- To list only the filename that match
  - grep –l pattern files
- To count the number of matches
  - grep –c pattern files
- To search all files in a directory tree
  - grep –r pattern directory (not on Solaris)
- To match complete lines
  - grep –n –x ’pattern’ files (not on Solaris)
- To search for patterns starting with –
  - grep –n –e –pattern files (not on Solaris)

Using metacharacters with grep

- To select lines with a pattern at the beginning of the line
  - grep ’^pattern’ files
- To select lines with a pattern at the end of the line
  - grep ’patten$’ files
- To select lines that match alternative characters
  - grep ’[abc]pattern[xyz]’ files

Using metacharacters with grep

- To match any single character use the metacharacter “.”
  - grep ’.’ files
  - grep ’^...$’ files
- To locate a word explicitly
  - grep –w word files
  - grep ’\<word\>’ files
- To locate a range of characters
  - grep ’[A-Z0-9a-z]’ files
  - grep ’^[A-Z][0-9][a-z]’ files
  - grep ’^[^a-z]’ files

Using metacharacters with grep

- To search for character repetitions
  - grep ’a*’ files (zero or more a characters)
- To locate lines that contain any sequence of charcters
  - grep ’a.*b’ files (a followed by zero or more characters, followed by b)
- All these different options can be combined to form a complex expression
  - grep ’^[^0-9][0-9][A-Z]*$’ files (look for lines that start with not a digit, followed by a digit, zero or more uppercase letters, and ends with end-of-line)

Fast grep - fgrep

- Searches for a string instead of searching for a pattern that matches an expression
- Uses a fast and compact algorithm
- No metacharacter expansion is performed
- We can obtain the functionality of fgrep with grep by using the -F option
- fgrep also accepts multiple patterns by reading a file with different patterns
  - fgrep –f patternsfile files

Extended grep – egrep

- Uses full regular expressions to match the patterns (could be slower than grep)
  - egrep '^a|b$' files (starts with a OR ends with b)
  - egrep –f patternsfile files
- To specify one or more of a previous character
  - egrep 'ab+' files (one or more b)
  - egrep 'ab*' files (zero or more b)
- To specify optional character use ?
  - egrep 'a?b' files (zero or one between a and b)
- To specify number of character to match
  - egrep 'a{3}b' files (three a's followed by a b)