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# SEEM3460 Tutorial

# More on Unix Shells

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# Outline

- ❏ Input & Output redirection
- ❏ Metacharacters
- ❏ Pipes

# Input&Output Redirection

- ❑ There are three default I/O channels that are always assumed to be active for every command or program:
  - ❑ Standard input, known as “stdin” whereby a program expects to find input
  - ❑ Standard output, known as “stdout” whereby a program writes its output
  - ❑ Standard error, known as “stderr” whereby a program writes error messages
- ❑ By default, the **standard input** of a process is the keyboard and the **standard output** and standard error are the screen.
- ❑ What if we want to change I/O channels?

# Redirection

- ❑ Output redirection: store the output of a process to a file
  - ❑ use > or >> metacharacter
  - ❑ syntax: command > fileName
- ❑ Input redirection: use the contents of a file as input to a process
  - ❑ use < or << metacharacter
  - ❑ syntax: command < fileName

# Output Redirection

- ❑ Output redirection: store the output of a process to a file
  - ❑ use > or >> metacharacter
  - ❑ syntax: command > fileName
- ❑ Try the followings:
  - ❑ ls > files.txt
  - ❑ echo seem3460
  - ❑ echo seem3460 > output.txt
  - ❑ echo a new line > output.txt
  - ❑ echo append the new content >> output.txt

# Output Redirection

- ❏ Output redirection: store the output of a process to a file
  - ❏ use `>` or `>>` metacharacter
  - ❏ syntax: `command > fileName`
- ❏ Try the followings:
  - ❏ `cat`
  - ❏ `cat > test.txt`
  - ❏ `cat >> test.txt`

# Input Redirection

- ❏ Input redirection: use the contents of a file as input to a process
  - ❏ use `<` or `<<` metacharacter
  - ❏ syntax: `command < fileName`
- ❏ Try the followings:
  - ❏ `wc`
  - ❏ `wc < test.txt`
  - ❏ `wc < test.txt > output.txt`

# Metacharacters

- ❑ These are the special characters that are first interpreted by the shell before passing the same to the command. They are also known as shell wildcards.

Symbol	Meaning
>	Output redirection; writes standard output to a file.
>>	Output redirection; appends standard output to a file.
<	Input redirection; reads standard input from a file.
*	File substitution wildcard; matches zero or more characters.
?	File substitution wildcard; matches any single character.
[...]	File substitution wildcard; matches any character between brackets.
`command`	Command substitution; replaced by the output from <i>command</i> .
	Pipe symbol; sends the output of one process to the input of another.



# Metacharacters

- ❏ Backslash `\` prevents special interpretation of the next character.
- ❏ `echo "quotation"`
- ❏ `echo \"quotation\"`
- ❏ `echo hi \> file.txt`

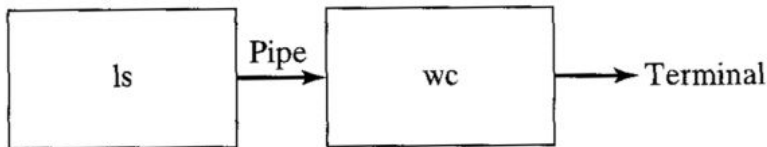
# Pipes

- ❑ The shell allows you to use the standard output of one process as the standard input of another process by connecting the processes together via the pipe |

- ❑ `command1 | command2`

- ❑ `ls`

- ❑ `ls | wc -w`



- ❑ `cat file.txt | head -7 | tail -5`

- ❑ `cat | sort`

# Thanks!