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| CS4218 Milestone 1 |
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**Team 05**

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# Implementation for Basic Functionality (BF)

## Implementation for Shell: Calling applications

* Shell splits call command into arguments and redirection operators.
* Filenames are expanded.
* Application name is resolved.
* Specified application is executed.

## Implementation for Shell: Quoting

* Our shell supports three kinds of quotes:
  + Single quote (‘)
  + Double quotes (“)
  + Backquotes (`)
* The ‘ and “ are used to disable interpretation of all or some special characters
* The ` used to make command substitution
* Special characters are: \t (tab), \* (globbing), ‘ (single quote), “ (double quote), ` (backquote), | (pipe), < (input redirection), > (output redirection), ; (semicolon), space
* Using regex and pattern matching to search the quote
* If quote found then run the corresponding method

## Implementation for Shell: Semicolon Operator

* The semicolon operator split a command into 2 command.
* Run the first command; when the first command terminates, run the second command.
* If an exception is thrown during the execution of the first command, the execution of the whole command must be terminated.
* Using regex and split to split the command

## Implementation for Applications: cat

* Plans for implementation

## Implementation for Applications: cd

* The cd command changes the current working directory
* “*cd*” with no path or arg will change to home directory
* “*cd ~*” will also change to home directory
* “*cd /*” (mac or linux)
  + Linux uses “/” for its “file separator”
  + However, for Linux, if a user entered “\” as the “file separator” instead of “/” there will be no auto correction as “\” is a valid folder & file name in the Linux. An appropriate error message will be display if the “path” entered does not exist in the shell system.
* “*cd /*” or “cd \”(for Windows) will change to the root directory
  + Windows uses “\” for its “file separator”.
  + If “/” is mistakenly used as the “file separator” in the “path” entered, the shell system will auto correct “/” to “\”.
  + The following observation was made in the “command prompt” on Windows, hence this correction was implemented to help ease the user as their intention is clear.
  + As “/” is an invalid folder & file name in Windows, the auto-correction will not cause any issues
* “cd .” will remain at the current working directory, no change in directory
* “cd ..” will return to the parent directory
* “cd PATH” will change the directory to the “PATH”. If the “PATH” does not exist it will return an error message
  + Windows uses “\” for its “file separator”.
  + If the shell system is run on Windows, auto correction of the “file separator” from “/” to “\” will take if “/” is mistakenly used as the “file separator” in the “PATH” entered.
  + The following observation was made in the “command prompt” on Windows, hence this correction was implemented to help ease the user as their intention is clear.
  + As “/” is an invalid folder & file name in Windows, the auto-correction will not cause any issues
  + “PATH” is a “relative path directory” e.g. “folder1/folder2”
  + “PATH” as specific in the project document cannot be an “absolute path directory” e.g. /user/home/directory”. A “/” (for mac & Linux) and “\” (for Windows) indicates that the “PATH” is an “absolute path directory” hence the “shell system” will return an error message if “/” or “\” is detected as the first char of the “PATH”

## Implementation for Applications: pwd

* The pwd command prints the current working directory followed by a newline
* Use “*Environment.currentDirectory*” to get the current working directory
* Add “*System.lineSeparator*” to insert a newline after displaying the results

## Implementation for Applications: echo

* Plans for implementation

## Implementation for Applications: head

* Plans for implementation

## Implementation for Applications: tail

* Plans for implementation

# Implementation for Extended Functionality 1 (EF1)

## Implementation for Shell: Globbing

* For each argument ARG in a shell command check if it contains unquoted \* (asterisk)
* Find the deepest path which does not contain \*
* Create path regex to search correct file
* Find all the file from that path by using pattern matching
* Store all the correct file into arraylist and pass it to next function as argument

## Implementation for Shell: IO-redirection

* Open InputStream from the file for input redirection (the one following “<” symbol).
* Open the OutputStream to the file for output redirection (the one following “>” symbol).
* If several files are specified for input redirection or output redirection, throw an exception.
* If no files are given, use the NULL value.
* If the file specified for input redirection does not exist, throw an exception.
* If the file specified for output redirection does not exist, create it.

## Implementation for Applications: cal

* Plans for implementation

## Implementation for Applications: grep

* Plans for implementation

## Implementation for Applications: sort

* The “sort” commands sort a specific file or input in a sorted order
* The sorted order is defined in the order of “special character”, “numbers”, “capital letters” and “simple letters”
* If “-n” is specific after the “sort” command (e.g. sort [-n] [FILE]), the first word of a line will be treated as a number. The first word will be treated as number only if it contains all numeric characters (e.g 8 days later, so “8” is the first word). If the first word will be treated as a normal word if it contains other types of characters(e.g. 8days later, “8days” is the first word)
* If 2 or more “FILES” are provided, the lines in the “FILES” will be combined and sorted together

# Unit Testing for Basic Functionality (BF)

## Unit Testing for Shell: Calling applications

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Shell: Quoting

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Shell: Semicolon Operator

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: cat

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: cd

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: pwd

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: echo

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: head

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: tail

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

# Unit Testing of Extended Functionality 1 (EF1)

## Unit Testing for Shell: Globbing

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Shell: IO-redirection

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: cal

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: grep

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Unit Testing for Applications: sort

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

# Test Cases for Extended Functionality 2 (EF2)

## Test Cases for Shell: Pipe Operator

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Test Cases for Shell: Command Substitution

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Test Cases for Applications: date

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Test Cases for Applications: sed

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests

## Test Cases for Applications: wc

* Summary of Test cases provided
* What have you covered during testing
* Did you have any plans for generation tests