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| CS4218 Milestone 1 |
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# Implementation for Basic Functionality (BF)

## Implementation for Shell: Calling applications

* Plans for implementation

## Implementation for Shell: Quoting

* Plans for implementation

## Implementation for Shell: Semicolon Operator

* Plans for implementation

## 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

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| The “head” commands prints first N lines of a specific file or input |
| “head” with no path and argument will print the first 10 lines of the InputStream |
| ARGUMENT is in the format: “-n 3”, where “-n” is the command and “3” is the number of lines |
| PATH is a “relative path directory” e.g. “folder1/folder2/123.txt” |
| “head” command accepts the rightmost ARGUMENT if more than 1 ARGUMENT exists. e.g. “head –n 3 –n 5 –n 2 123.txt”. It accepts –n 2 as the ARGUMENT |
| “head” command accepts multiple PATH in the command. e.g. “head –n 6 123.txt 246.txt”. It prints out the first 6 lines of 123.txt and 246.txt files |
| ARGUMENT can input behind the PATH. e.g. “head 123.txt –n 6” |
| Other than the ARGUMENT, any command that starts with “-” is invalid |
| Any input other than the ARGUMENT will be regarded as PATH e.g. “head 1 5.txt 7”. The PATH of the inputs are: 1, 5.txt and 7 |

## Implementation for Applications: tail

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| --- |
| The “tail” commands prints last N lines of a specific file or input |
| “tail” with no path and argument will print the first 10 lines of the InputStream |
| ARGUMENT is in the format: “-n 3”, where “-n” is the command and “3” is the number of lines |
| PATH is a “relative path directory” e.g. “folder1/folder2/123.txt” |
| “tail” command accepts the rightmost ARGUMENT if more than 1 ARGUMENT exists. e.g. “tail –n 3 –n 5 –n 2 123.txt”. It accepts –n 2 as the ARGUMENT |
| “tail” command accepts multiple PATH in the command. e.g. “tail –n 6 123.txt 246.txt”. It prints out the first 6 lines of 123.txt and 246.txt files |
| ARGUMENT can input behind the PATH. e.g. “tail 123.txt –n 6” |
| Other than the ARGUMENT, any command that starts with “-” is invalid |
| Any input other than the ARGUMENT will be regarded as PATH e.g. “tail 1 5.txt 7”. The PATH of the inputs are: 1, 5.txt and 7 |

# Implementation for Extended Functionality 1 (EF1)

## Implementation for Shell: Globbing

* Plans for implementation

## Implementation for Shell: IO-redirection

* Plans for implementation

## 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

|  |  |  |  |
| --- | --- | --- | --- |
| ID | Test Case(s) | Input | Expected Results |
| 1 | testAllNullArgument | **Arguments**: N  **InputStream**: N  **OutputStream**: N | **HeadException**, **Message**: Head: args, stdin, stdout are null |
| 2 | testNullInputStream | **Arguments**: V  **InputStream**: N  **OutputStream**: V | **HeadException**,  **Message**:Head: stdin is null |
| 3 | testNullOutputStream | **Arguments**: V  **InputStream**: V  **OutputStream**: N | **HeadException**,  **Message**:Head: stdout is null |
| 4 | testNoArgument | **Arguments**: N  **InputStream**: V  **OutputStream**: V | **InputStream Message:** “test\nstring” |
| 5 | testOneArgument | **Arguments**: V  **InputStream**: N  **OutputStream**: V | **InputStream Message: “**31423\n 115ewafg\n gaqwtq345 \ntqtqt \nc592859v \ngasgsad" |
| 6 | testTwoArgument | **Arguments**: V  **InputStream**: V  **OutputStream**: V | **InputStream Message:**  "31423\n1" |
| 7 | testThreeArgument | **Arguments**: V  **InputStream**: V  **OutputStream**: V | **InputStream Message:**  "31423\n1" |

## Unit Testing for Applications: tail

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| --- | --- | --- | --- |
| ID | Test Case(s) | Input | Expected Results |
| 1 | testAllNullArgument | **Arguments**: N  **InputStream**: N  **OutputStream**: N | **TailException**, **Message**: Tail: args, stdin, stdout are null |
| 2 | testNullInputStream | **Arguments**: V  **InputStream**: N  **OutputStream**: V | **TailException**,  **Message**:Tail: stdin is null |
| 3 | testNullOutputStream | **Arguments**: V  **InputStream**: V  **OutputStream**: N | **TailException**,  **Message**:Tail: stdout is null |
| 4 | testNoArgument | **Arguments**: N  **InputStream**: V  **OutputStream**: V | **InputStream Message:** “test\nstring” |
| 5 | testOneArgument | **Arguments**: V  **InputStream**: N  **OutputStream**: V | **InputStream Message: “**31423\n 115ewafg\n gaqwtq345 \ntqtqt \nc592859v \ngasgsad" |
| 6 | testTwoArgument | **Arguments**: V  **InputStream**: V  **OutputStream**: V | **InputStream Message:**  "31423\n1" |
| 7 | testThreeArgument | **Arguments**: V  **InputStream**: V  **OutputStream**: V | **InputStream Message:**  "31423\n1" |

# 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