

User Manual for Comp Virtual File System (CVFS)

Introduction

This document is the user manual for Comp Virtual File System (CVFS). This guide aims to assist users in understanding and using the CVFS application efficiently.

CVFS is an in-memory Virtual File System. It allows users to perform various operations on a virtual disk, including creating and managing files and directories, defining criteria for file selection, and saving/loading virtual disks. It offers a user-friendly interface for managing the documents and directories effectively.

Commands Description

There are a total of 18 commands in CVFS. Here is the detailed explanation of each command, including their functionalities, how they can be used, examples, the troubles you may face and how to solve them.

1. newDisk

This command creates a new virtual disk with the specified maximum size. If there is any previous disk, it will be cleared.

How to use: Input the command “newDisk” with the desired maximum size of the disk.

Instruction: Enter “newDisk 1000” to create a disk with a maximum size of 1000 bytes.

```
Input Command:  
newDisk 1000  
Disk created with size: 1000
```

Troubleshooting: “Invalid size” will be shown if the size of the disk you input is inaccurate. The size of the disk should be an integer.

```
newDisk abc  
Invalid size. Please enter a valid integer.
```

2. newDoc

This command creates a new document in working directory with the specified name, type, and content.

How to use: Input the command “newDoc” with the name, type and the content of the document.

Instruction: Enter “newDoc MyDocument txt This is the content” to create a txt document named MyDocument with content of “This is the content”.

```
Input Command:
newDoc MyDocument txt "This is content"
Document created: MyDocument.txt
```

Troubleshooting:

“Name already exists” will be shown if the name of the document has already existed. You need to enter a new name to make sure all files’ names are unique. “Invalid document name, type.” will be shown if the document name is not created by digits or English letters, or the type of document is wrong as “txt”, “java”, “html”, and “css” are allowed.

```
Invalid size: Please enter a valid size.
Input Command:
newDoc hello cpp 123123
Invalid document name or type.
```

“Disk full” will be shown if the current size after adding the new document exceeds the maximum size of the disk. You may delete an existing, unneeded file using the command “delete” (in command 4) with that file name.

```
Input Command:
newDisk 10
Disk created with size: 10
Input Command:
newDoc hello java 121212123
Disk full
```

3. newDir

This command creates a new directory in the working directory with the specified name.

How to use: Input the command “newDir” with the name of the directory.

Instruction: Enter “newDir MyDirectory” to create a new directory called MyDirectory.

```
Input Command:
newDir MyDirectory
Directory created: MyDirectory
```

Troubleshooting:

"Name already exists" will be shown if the name of the directory has already existed. You need to enter a new name to make sure all the files' names are unique.

"Invalid directory name" will be shown if the document name is not created by digits or English letters

"Disk full" will be shown if the current size after adding the new directory exceeds the maximum size of the disk. You may delete an existing, unneeded file using the command "delete" (in command 4) with that file name.

```
Input Command:
newDir hi
Directory created: hi
Input Command:
newDir hi
Name already exists.
```

4. delete

This command deletes an existing file with the specified name from the working directory.

How to use: Input the command "delete" with the name of the document that you want to delete.

Instruction: Enter "delete MyDocument" to delete the document named MyDocument.

```
Input Command:
delete MyDocument
File deleted.
```

Troubleshooting: "File not found." will be shown if there is no file called the name that you entered.

```
Input Command:
delete HelloWorld
File not found.
```

5. rename

This command renames an existing file in the working directory from an old file name to a new file name.

How to use: Input the command “rename” with the old name of the document and the name you want to change to.

Instruction: Enter “rename oldname newname” to change the file called “oldname” to “newname”.

```
Input Command:
rename oldname newname
File renamed from oldname to newname
```

Troubleshooting:

“File not found.” will be shown if there is no file called the name that you entered.

"New name already exists" will be shown if the name you want to change to already exists.

```
Input Command:
newDoc test txt abc
Document created: test.txt
Input Command:
newDoc test2 txt abc
Document created: test2.txt
Input Command:
rename test test2
New name already exists
```

6. changeDir

This command changes the working directory to the specified directory name or moves to the parent directory if “..” is provided.

How to use: Input the command “changeDir” with the name of the directory to move into or “..” to move to the parent directory.

Instruction: Enter “changeDir MyDirectory” to move to the new directory called MyDirectory, or enter “changeDir ..” to move to the parent directory.

```
Input Command:
changeDir MyDirectory
Changed directory to: MyDirectory
```

Troubleshooting:

"Already at root directory." will be shown if the working directory is a root directory, which does not have the parent directory.

```
Input Command:
changeDir ..
Already at root directory.
```

“Directory not found.” or “This is not a directory” will be shown if there is no directory called the name that you entered.

7. list

This command lists all files directly contained in the working directory, including their name, type, and size and output the total number and size of files listed.

How to use: Simply input the command “list” to display the list of files in the current directory.

Instruction: Enter “list”.

```
Input Command:
list
Document: MyDocument.txt, Size: 50 bytes
Total files: 1, Total size: 50
```

Troubleshooting: N/A

8. rList

This command recursively lists all files in the working directory with an indentation to show the level of each file and output the total number and size of files listed.

How to use: Input the command “rList” to display the list of files in the current directory.

Instruction: Enter “rList”.

```
Input Command:
rList
Directory: MyDirectory, Size: 90
  Document: MyDocument.txt, Size: 50 bytes
Document: newname.txt, Size: 50 bytes
Total files: 2, Total size: 140
```

Troubleshooting: N/A

9. newSimpleCri

This command constructs a simple criterion based on name, type, or size for future file searches.

How to use: Input the command “newSimpleCri” with criteria name, attribute name, comparison operator, and value to create a new simple criterion.

If attribute name is name, comparison operator must be “contains”, and value must be a string enclosed in double quotes.

If attribute name is type, comparison operator must be “equals”, and value must be a string enclosed in double quotes.

If attribute name is size, comparison operator can be >, <, >=, <=, ==, or !=, and value must be an integer.

Instruction:

Enter “newSimpleCri Cr name contains “example”” to create a criterion called Cr which name contains “example”.

```
Input Command:  
newSimpleCri Cr name contains "example"  
Criterion created: Cr
```

Enter “newSimpleCri Cr type equals “txt”” to create a criterion called Cr which types equals to “txt”.

```
Input Command:  
newSimpleCri Cr type equals "txt"  
Criterion created: Cr
```

Enter “newSimpleCri Cr size > 100” to create a criterion called Cr which size greater than 100.

Troubleshooting:

"Invalid name." will be shown if the criteria name does not contain exactly two English letters.

"Invalid attribute name." will be shown if the attribute name is not either “name”, “type” or “value”.

"Invalid operation for attribute." will be shown if the comparison operator does not match with the attribute name (See How to use).

"Value must be an integer." will be shown if the value of the size is inaccurate.

```
newSimpleCri abc size > 60  
Invalid name.
```

10.IsDocument

This command evaluates whether a file is a document (true or false).

How to use: Input the command “IsDocument” to check if a file is a document.

Instruction: Enter “IsDocument”. If it is a document, it will show you “True”. If

not, “False” will be shown.

```
Input Command:  
newDisk 1000  
Disk created with size: 1000  
Input Command:  
printAllCriteria  
IsDocument: IsDocument  
Input Command:  
|
```

Troubleshooting: N/A

11.newNegation

This command constructs the negation of an existing criterion.

How to use: Input the command “newNegation” with one existing criterion to creates a new criterion.

Instruction: Enter “newNegation NC Cr” to create a new negation criterion called NC with an existing criterion called Cr.

```
newNegation ac ab  
Negation criterion created: ac  
Input Command:  
printAllCriteria  
IsDocument: IsDocument  
ab: size > 50  
ac: ~ab  
Input Command:
```

Troubleshooting: "Criterion not found: " will be shown if the name of the criterion is null (does not exist).

12.newBinaryCri

This command constructs a composite criterion using two existing criteria and a logical operator (&& or ||).

How to use: Input the command “newBinaryCri” with two existing criteria and a logical operator to create a new composite criterion.

Instruction: Enter “newBinaryCri BC Cr && Ci” to create a new binary criterion called BC with two existing criteria called Cr and Ci, and the logical operator

&&(And).

```
newBinaryCri ad ab || ac
Binary criterion created: ad
Input Command:
printAllCriteria
IsDocument: IsDocument
ab:  size > 50
ac:  ~ab
ad:  (ab || ac)
Input Command:
```

Troubleshooting: "One or more criteria not found." will be shown if the name of the criterion is null (does not exist).

```
Input Command:
newBinaryCri ad aa || ac
One or more criteria not found.
```

13.printAllCriteria

This command prints out all the defined criteria in the form containing only attribute name, comparison operator, value, logic operator, or IsDocument.

How to use: Input the command “printAllCriteria” to display all the criteria in resolved form.

Instruction: Enter “printAllCriteria”.

(Screenshots of this method are shown in above test case)

Troubleshooting: N/A

14.search

This command lists files directly contained in the working directory that satisfy the specified criterion and output the total number and size of files listed.

How to use: Input the command “search” with the criterion name to search for files based on that criterion.

Instruction: Enter “search Cr” to search for files based on the criterion named Cr.

```
list
Document: hello.txt, Size: 44 bytes
Document: hi.java, Size: 52 bytes
Total files: 2, Total size: 96
Input Command:
search ab
File: hi, Size: 52 bytes
Total files: 1, Total size: 52 bytes
Input Command:
|
```

ab: size > 50

Troubleshooting: "Criterion not found: " will be shown if the name of the criterion null (does not exist).

```
Input Command:
search vv
Criterion not found: vv
Input Command:
```

15.rSearch

This command recursively searches for files in the working directory that meet the specified criterion and output the total number and size of files listed.

How to use: Input the command “rSearch” with the criterion name to search for files based on that criterion recursively.

Instruction: Enter “rSearch Cr” to search for files based on the criterion named Cr recursively.

```
rList
Document: hello.txt, Size: 44 bytes
Document: hi.java, Size: 52 bytes
Directory: dir1, Size: 134
    Document: test.txt, Size: 52 bytes
    Document: test2.java, Size: 42 bytes
Total files: 3, Total size: 230
```

```
rSearch ab
File: hi, Size: 52
File: dir1, Size: 134
    File: test, Size: 52
Total files: 1, Total size: 52
Total files: 2, Total size: 186
Input Command:
```

Troubleshooting: "Criterion not found: " will be shown if the name of the criterion is null (does not exist).

```
rSearch vv
Criterion not found: vv
Input Command:
```

16.save

This command saves the working virtual disk and its contents into a file on the local file system.

How to use: Input the command “save” with the path where the disk should be saved.

Instruction: Enter “save /path/to/disk/file” to save the disk to /path/to/disk/file.

Troubleshooting: "Error saving virtual disk: " will be shown if the path you provide is unfound.

17.load

This command loads a virtual disk from a file on the local file system, making it the working virtual disk.

How to use: Input the command “load” with the path of the file containing the disk data.

Instruction: Enter “load /path/to/disk/file” to load a virtual disk at /path/to/disk/file.

Troubleshooting:

"Error saving virtual disk: " will be shown if the path you provide is unfound.

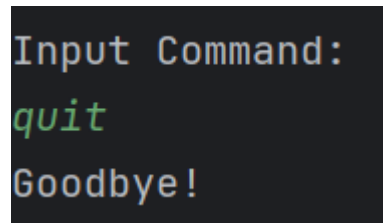
"Class not found: " will be shown if the class is unable to find.

18.quit

This command terminates the current execution of the system.

How to use: Input the command “quit” to close the file system tool and end the current session.

Instruction: Enter “quit”.



```
Input Command:  
quit  
Goodbye!
```

Troubleshooting: N/A