**CORE**

UNIX

Foundation Exercises

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**Exercise 1**

## File Systems

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| **Perform the following tasks** |
| 1. Create a directory in your home directory called tradingSystem. |
| 1. Create 2 files in your home directory called countries and places. |
| 1. Move the countries file to your tradingSystem directory.   Rename the places file with a new name of cities  Copy the cities file to your tradingSystem directory |
| 1. Create a file called myProgram in your home directory.   Look at the permissions on myProgram.  Change the permissions on myProgram to -rwxr-x--x |
| 1. Create a directory called temp.   Copy your myProgram into temp.  Delete the temp directory and all its contents. |
| 1. Identify the type of contents held in the following files using the file command   /etc/hosts  /dev/fd0  /dev/tty0  /bin/touch |
| 1. Copy all the files from /student\_files which end in .dat to your tradingSystem directory |
| 1. Copy the directories day1 and day2 and their contents, from /student\_files into your home directory. |
| 1. Move into your tradingSystem directory. Identify the biggest file in this directory |
| 1. Display the last 2 lines of the places.dat file. |

1. Display the first 5 lines of the companies.dat file.

**Exercise 2**

**Exe**

## Redirection and Piping

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| **Perform the following tasks** |
| 1. List all the contents of your home directory and save the output in a file called homeList.   List the contents of your tradingSystem directory and append to the homeList file. |
| 1. Store the last 20 lines of the /etc/passwd in a file called newUsers. |
| 1. List the contents of your home directory and then count the number of lines in this output.  * Step 1 list the contents of your directory * Step 2 identify the command to count the number of lines * Step 3 combine these commands with a pipe |
| 1. .List the contents of your home directory. Store this output in a file called newHomeList, and then count the lines of this output |
| 1. Using the head and tail commands display only line 3 from the companies.dat file in your tradingSystem directory |
| 1. List the contents of your home directory, ordered by size. Keep the entries for the five biggest files and output them to a file called bigFiles.txt. |
| 1. Output a list of files that end in .dat from the /student\_files directory to a file called datFiles. Also, display on screen how many files were found. |
| 1. Display lines 7-9 of brokers.dat. |

**Exercise 3**

## Searching and Pattern Matching

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| **Perform the following tasks** |
| 1. Move to your tradingSystem directory. |
| 1. Using the brokers.dat file  * Identify all the brokers called Smith * List all lines that do not start with a number * Identify all the brokers whose last name ends with n |
| 1. Using the companies.dat file  * Identify all the companies with a letter b in their name, upper or lower case * Display the number of companies with a b in their name * Identify all the companies with more than 1 word in their name |
| 1. Using the currency.dat file  * Identify all the British currencies * Display the line that contains the $ symbol (No cheating – search for the $) |
| 1. Find all the files in your home directory and its subdirectories which have a filename ending in .dat |
| 1. Find all the files within the /student\_files directory which are larger than 1k in size and display their size |
| 1. Find all empty files in your home directory and interactively remove them |
| 1. List the contents of your home directory and display only the lines which refer to files |

1. What does the following command do?

* find /var –mtime -36 –print
* Run this command and inspect results
* Run this command and redirect the errors to /dev/null
* What is the advantage of redirecting the errors?
* What does /dev/null mean?

**Exercise 4**

## Job Control

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| **Perform the following tasks** |
| 1. Run the sleep command for 1000 seconds in the background |
| 1. Use the ps command to identify the PID of the sleep command |
| 1. Kill the sleep command and check it was successful |
| 1. Start another sleep command for 1000 seconds in the background |
| 1. Use the jobs command to identify the JID of the sleep command |
| 1. Bring the sleep command into the foreground |
| 1. Kill the sleep command and check it was successful |

**Exercise 5**

## vi

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| Task – vi editor |

1. Create a file called accounts using the vi editor.
2. Screen should show an empty file and a tildes (~) indicating each blank line

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1. By default you are in command mode. To start typing, press the i key to go into insert mode first.

1. Enter the following text into the file

PIN534:Dale Cooper:Current Account:1000

PIN756:Ray Manzarek:Saving Account:510

PIN210:Paul Atreides:ISA Account:620

PIN535:Sheldon Cooper:Money Market:1024

PIN757:Leonard Hofstadter:Checking:637

PIN769:Howard Wolowitz:Checking with Interest:213

PIN123:Rajesh Koothrappali:IRA:556

PIN535:Sheldon Cooper:12 Month CD:847

The colon (:) is used to separate the fields. The first field represents pin numbers, the second filed represents the users’ first and last names, the third field represents account types and the fourth field represents the balance.

1. When you have finished writing your text, press **Esc** to return to the command mode. Then invoke **:** (colon). The **:**  indicates that you are about to give a series of commands to vi. It should appear at the bottom of your screen.

To save the file type “w” (write) and press enter.

Esc:w

To return to the command line, type q (quit) and press enter

Esc:q

You can also combine w and q together (save and quit)

Esc:wq

1. Which command(s) will display the contents of the accounts file?

**Exercise 6.1**

## More Commands

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| Task – Using the cut command |  |

1. Which command will display the fifth character of each line in the accounts file?
2. Write a command to display the fifth character of “FDM Academy” .
3. We can also provide a range. Now give the command to display the first 4 characters of each line in the accounts file.
4. Display the first and sixth characters of each line in the accounts file.
5. We can extract a field by defining a delimiter. Which command will display the first and last names for every person in the accounts file.
6. Display the account type and balance for every person in the accounts file. Replace the colon with a space.
7. Retrieve Ray Manzarek’s balance.

**Exercise 6.2**

## More Commands

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| Task – Using the sort command |  |

1. Use the head command to print the first 5 lines of /etc/passwd file.
2. Use head and sort commands together to display the first 5 lines in alphabetical order.
3. We can define which field that we want to sort. Use –t option to define the delimiter and –k option to define the field. Display the accounts file sorted by last name.
4. Use –n option to sort the accounts file numerically by balance.
5. The –r option can be used to reverse order. Use cut and sort command together to print the account types in reverse order for every user in accounts file
6. Use output redirection to store every account holder’s first and last names in alphabetical order in the file called “sortedByName.txt”

**Exercise 6.3**

## More Commands

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| Task – Using the tr command |  |

1. The tr command can be used to perform translation on the selected set of characters.

Let’s change all the digits in the accounts file to “\*”

1. Use –d option to delete the capital letters from the accounts file
2. Now, print first and last names in capital letters for every user in accounts file
3. Use output redirection to store accounts file as a comma-separated file called “commaStorage.txt”

1. Let’s print only the pin numbers (first column) for each user in the accounts file, ie without the string “PIN”

**Exercise 7**

**Exercise 7**

## Using basic UNIX commands

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| **Perform the following tasks** |
| 1. Count how many times the sleep command is used in /student\_files/day1/batchprog. |
| 1. Display the account details for pin number 534 from the accounts file |
| 1. Retrieve the users’ username (first field) from the /etc/passwd file in alphabetical order. |
| 1. Count how many files you have in your home (~) directory.   Count how many directories you have in your home (~) directory. |
| 1. Display your details from the finger command in upper letters. |
| 1. Retrieve the second line of accounts file | |
| 1. Store the total line number of accounts file into a file called totalLine.txt. | |
| 1. Delete the second line of the accounts file and store it in deletedStorage.txt file.   Hint: You may need to use temporary files. | |
| 1. What is the difference between the more and less commands? | |
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