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Programming in UNIX Environment (DV1457)

Assignment – 1 (Shell Programming)

ASSIGNMENT – 1 SHELL PROGRAMMING

Problems Faced with environment:

Initially it was quite difficult for us to work with the Linux Environment as it is completely new for us and we do not have prior experience working with a Linux Interface. Later we faced problem with installation of VS Code. This issue is solved by giving the executable permissions. Initially it was tough to write a shell script but as time passed, we got some idea over shell scripting.

Problems Faced with Script:

First, we faced an issue with reading a file, we tried many ways to read the log file. Later we resolved it by using a while loop to read the file line by line.

1. We tried many ways for pattern matching, but we could succeed with `grep -Eo` command for pattern matching and storing the IP addresses. We have used this to search the expression (pattern) and store them. To count the connection attempts we have used the “`uniq -c`” command, but we did not get the accurate results as it works with the continuous set of data. We found a technique to overcome this issue from Internet, that by sorting IP addresses initially then applying `uniq -c` and then sorting them in reverse order to get the decreasing order.
2. Other parts of the code use similar commands with a few minor changes in the first part. As the status code of format 2XX indicates the successful connection, it is must to search a three-digit number starting with 2, but there might be other three-digit numbers starting with 2 other than status code, which gave false results. So, we started searching from “HTTP” till status code and finally got desired output.
3. In this we have directly accessed the 9th column in log file which contains the status code and stored them in the decreasing order. Then the IP addresses are grouped according to the status codes. Finally, status codes followed by their corresponding IP addresses are printed in decreasing order.
4. This uses a case similar to that of identification of successful attempts. Here in order to find the failed connections, we need to concentrate on status codes of format 4XX. Because 4XX indicates the failed connection attempt. Thus, the IP addresses are arranged in decreasing order again.
5. Final part of the code is quite tricky as only successful connections results in the bytes transmission. 10th column indicates the number of bytes transmitted. Initially IP addresses and the number of bytes transmitted are stored and inverted `grep` is used to identify the unmatched patterns, that is to identify the IP addresses which does not have any transmitted bits and remove them to get the only IP addresses that have transmitted the bytes. A for loop is used to add number of bytes transmitted from same IP address and finally they are stored and printed in the decreasing order.

We have achieved the swapping of arguments by considering the positions of “-n” and used the “`getopts`” for identifying the commands.