March 26, 2021

Time: on or before 4:00pm

Please mail your completed assignment to kalpana@startsmartlabs.com

Your file name should be your name along with your initials

If you have any questions/clarifications, please mail to kalpana@startsmartlabe.com

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1) Write a simple program in your preferred language to demonstrate memory leak and fix it

2) You are given the sample file where each row contains state name and city name separated by comma.

You need to write a program in your preferred language to fold different cities of same state in single row separated by semicolon.

#Input file

Tamil Nadu,Chennai

Kerala,Palakkad

Karnataka,Bangalore

Kerala,Kochi

Tamil Nadu,Trichy

#Output

Tamil Nadu,Chennai;Trichy

Kerala,Palakkad;Kochi

Karnataka;Bangalore

3) Create a shell script to print all words on lines of a file in reverse order

#Input file

Hello World

First in First out

#Output

World Hello

out First in First

4) You will be provided with a block of text,You need to write a program to find the unique e-mail addresses present in the text.

Note: "@" sign can be used for a variety of purposes.

#Input File

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5. Find all the parent processes of the applications running in a linux environment and group it based on the application. Monitor the collective memory utilization of a process(parent+child) over every minute for 5minutes and if it is consistently higher than 90%, restart/kill the process and note the time it is restarted and id of the process.

Write a shell script to achieve the above scenario

sample:

```
    $: ps -ef

      8000   1     command1 -- parent pid of the app1

      8002  8000    --- child process of app1

      8003  8000    --- child process of app2

      7000   1     command2. -- parent pid of app2

      7001  7000.  -- child process of app2
```

Output: App1: 8000: 8002,8003

        App2: 7000: 7001

collect the memory utilization each minute for 5minutes and based on threshold(90%) restart/kill the process and note the time and pid

6. Draw a network diagram of the outgoing request to `www.aqfer.com` which has been hit in a terminal using curl. Include all the OSI layers in the diagram and mention the place/file to be modified if that request to be redirected to one of the servers present in the same environment.

Sample: I have a group of servers with a CIDR range of 10.0.0.0/24. A request has been made to `www.aqfer.com` from server1 with ip 10.0.0.5 and that request should end up at the server 10.0.0.1. Mention which layer/place has to be modified to achieve the given scenario in the network diagram