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**Tesla Software Product Support Intern Skill Test**

Instructions

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Complete as many questions as you can. If you’re not sure how to answer the question, explain how you would go about learning or experimenting to solve the problem.

Problem #1 Git related question

-What is git? What is version control?

Ans: Git is used for tracing changes in source code during software development. And version control is the practice of managing changes to a set of files over time. It allows multiple people to work on the same project simultaneously.

-Explain the function of following Git commands

1. git clone

Ans: This command is used to copy of an existing repository, and it allows me to work on the project independently from the original repository.

1. git push

Ans: This command is used to upload my local repository content to a remote repository. It can be used after I have made changes to my local repository, and have committed these changes.

1. git add

Ans: This command is used to add changes in the working directory to the staging area. It will tell Git that I want to include updates to a particular files in the next commit.

1. git commit

Ans: This command is used to save my changes to the local repository. It captures a snapshot of the project;s currently staged changes.

- What is the correct syntax to add a message to a commit?

Ans: git commit -m “The commit message should be here”

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Problem #2 This part will test your basic Linux command. Please write down the command to complete the following task.

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-Copy a “test.sh” file from /tmp to /var

Ans: cp /tmp/test.sh /var

-Execute that script in var folder

Ans: cd /var

bash test.sh

-How to check disk space in linux system

Ans: df -h

-How to check cpu usage in linux system

Ans: mpstat

-Print the line contains “teslacar” in /var/log/log1.txt.

Ans: grep “teslacar” /var/log/log1.txt

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Problem #3 This part will test your scripting/programming skills . Assuming that you have an alerts.csv file contains number of individual alerts triggered in different vehicle. (noted that each line present the counts for a single alert triggered on a single vehicle.) Use this file as your input.

Print **Top Five** alerts that has been triggered and the total number of times it has been triggered.

Example format:

|  |  |  |
| --- | --- | --- |
| Alerts(str) | VIN(str) | Number of alerts(int) |
| ABC\_3533 | 00001 | 5 |
| ABC\_3534 | 00001 | 3 |
| XYZ\_8800 | 00001 | 2 |
| ABC\_3533 | 00002 | 3 |
| ABC\_3534 | 00002 | 5 |
| …… | …….. | ….. |
| …… | …….. | ….. |
| ABC\_3533 | 01000 | 10 |
| XYZ\_9402 | 01000 | 2 |

Ans:

csv\_file\_path = ‘/../alerts.csv’

df = pd.read\_csv(csv\_file\_path)

grouped\_df = df.groupby(‘Alerts’)[‘Number of alerts’].sum().reset\_index()

top\_alerts = grouped\_df.sort\_value(by=’Number of alerts’, ascending=False).head(5)

print(top\_alerts)

Assuming you have a list of strings in the following format:

["VIN:LRW03021, alerts: 'high\_temp, low\_soc', timestamp:1645442338",

"VIN:LRW08090, alerts:", timestamp:1645452319",

"VIN:LRW03021, alerts: 'low\_vol', timestamp:1645442349",

"VIN:LRW03021, alerts: 'high\_temp, low\_soc', timestamp:1645442339",

……

"VIN:LRW03021, alerts: '', timestamp:1645442351"]

"VIN" represents the unique identifier of each vehicle, and "alerts" contain all alerts triggered on the vehicle at that timestamp (normally we do not have alerts on vehicles). There are more than one VIN in the list, and there are six kinds of alerts as the following:

'isolation', 'high\_temp', 'low\_vol', 'low\_soc', 'high\_vol', 'crash'

Please write down your own test cases and a script to parse the strings in the list and generate the following outputs:

1. A designed JSON file that presents the following information:  
   a) For each VIN in the list, all alerts triggered  
   b) For each alert triggered, the starting and ending timestamp

Ans: I will attach my answer as a p3q1.py file in the email

1. One figure that presents the following data:  
   a) Total numbers of times all alerts are triggered  
   b) Percentage of number of times each alert triggered to total number of strings in the list

Ans: I will attach my answer as a p3q2.py file in the email

Plot I get as below:

