

STORAGE MONITORING IN LINUX

AIM : Create a Python script to verify disk space output from Linux

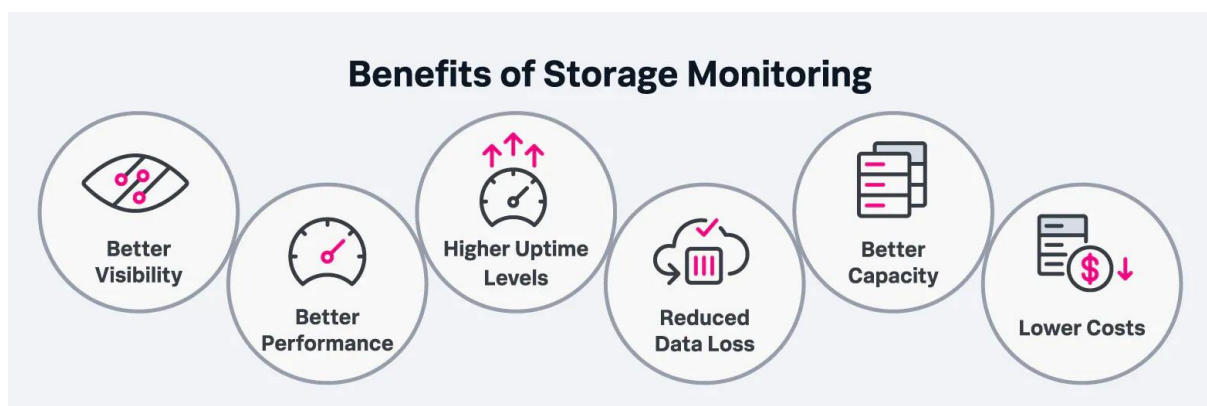
APPLICATIONS :

- LINUX(UBUNTU)
- PYCHARM
- PUTTY

WHAT IS STORAGE MONITORING?

Storage monitoring, or storage performance monitoring, is the practice of tracking the performance, availability and overall health of physical and virtual storage devices. Data storage (provided by vendors such as Dell, EMC, Microsoft as well as countless others) is the backbone of all types of computing endeavors, whether you're working on a spreadsheet, checking your email or playing a video game on your Xbox over the internet. In fact, there is virtually no mainstream computing operation that does not require access to some form of storage.

WHAT ARE THE BENEFITS OF STORAGE MONITORING?



some of the primary advantages of Storage Monitoring

- Better Visibility
- Better Performance
- Higher Uptime Levels
- Reduce Data Lose

- Better Capacity
- Lower Cost

PYTHON SCRIPT :

```
import os
from psutil import disk_usage
import sys
import logging
import subprocess

THRESHOLD_PERCENTAGE = 90

# Defining logger
def make_logger():
    log = logging.getLogger(__name__)
    log.setLevel(logging.INFO)
    formatter = logging.Formatter('%(filename)s - %(asctime)s - %(levelname)s - %(message)s')
    handler = logging.StreamHandler(sys.stdout)
    handler.setFormatter(formatter)
    log.addHandler(handler)
    return log

def display_disk_usage():
    disk = disk_usage(os.path.realpath('/'))

    logger.info("Total disk space: %d GiB" % (disk.total // (2 ** 30)))
    logger.info("Used disk space: %d GiB" % (disk.used // (2 ** 30)))
    logger.info("Free disk space: %d GiB" % (disk.free // (2 ** 30)))
```

```
logger.info("Used disk percentage: %d" % disk.percent + '%')
```

```
return disk.percent
```

```
def disk_usage_threshold(in_use_disk_percentage):
```

```
    if in_use_disk_percentage < THRESHOLD_PERCENTAGE:
```

```
        return 'Disk usage is under the threshold level'
```

```
    logger.warning(f'\nWarning your disk usage above the threshold it is  
{in_use_disk_percentage}% full')
```

```
    ask_user_for_action = input('If you wish to delete logs and local postgres data  
print "yes"\n')
```

```
    if ask_user_for_action == 'yes':
```

```
        clean_disk_usage()
```

```
        logger.info('clean disk usage')
```

```
    else:
```

```
        logger.info(f'Be careful your disk usage is {in_use_disk_percentage}%')
```

```
def clean_disk_usage():
```

```
    # Stop docker and PM2
```

```
    logger.info('\nStopping Dockers and PM2 processes\n')
```

```
    subprocess.run('sudo sh  
/home/pi/Desktop/speedboatBox/scripts/stop_speedboatbox.sh', shell=True,  
capture_output=True,  
check=True)
```

```
    logger.info('\nDeleting log.out directory\'s content ...\n')
```

```
    subprocess.run('sudo truncate -s 0 /home/pi/Desktop/log.out', shell=True,  
capture_output=True, check=True)
```

```
    logger.info('\nDeleting local postgres data-base ...\n')
```

```
    try:
```

```

        subprocess.run('sudo sh
/home/pi/Desktop/speedboatBox/postgresql_service/delete_db.sh', shell=True,
                        capture_output=True)

except subprocess.CalledProcessError as e:
    logger.info(e)

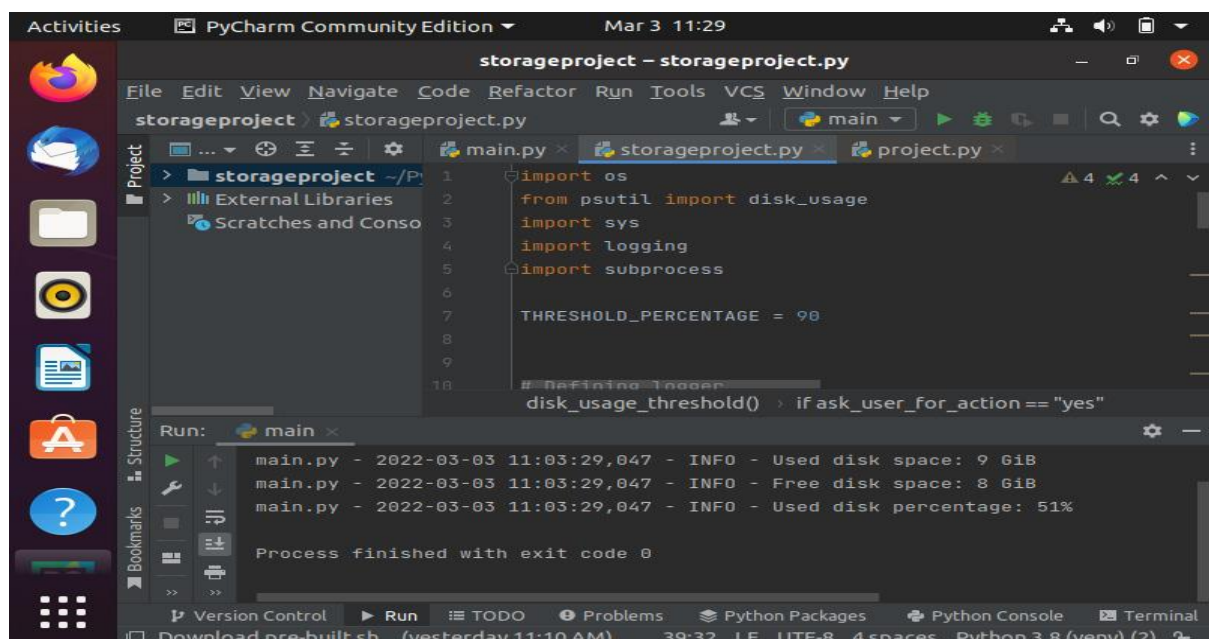
display_disk_usage()

# Start dockers and PM2 processes
logger.info('\nStarting dockers and PM2 processes ...\n')

subprocess.run('sudo sh
/home/pi/Desktop/speedboat/scripts/start_speedboatbox.sh', shell=True,
capture_output=True,
                check=True)

if __name__ == '__main__':
    logger = make_logger()
    in_use_disk_percentage = display_disk_usage()
    disk_usage_threshold(in_use_disk_percentage)

```



OUTPUT :

Used disk space = 9 GIB

Free disk space = 8 GIB

Used disk space = 51%

PUTTY :

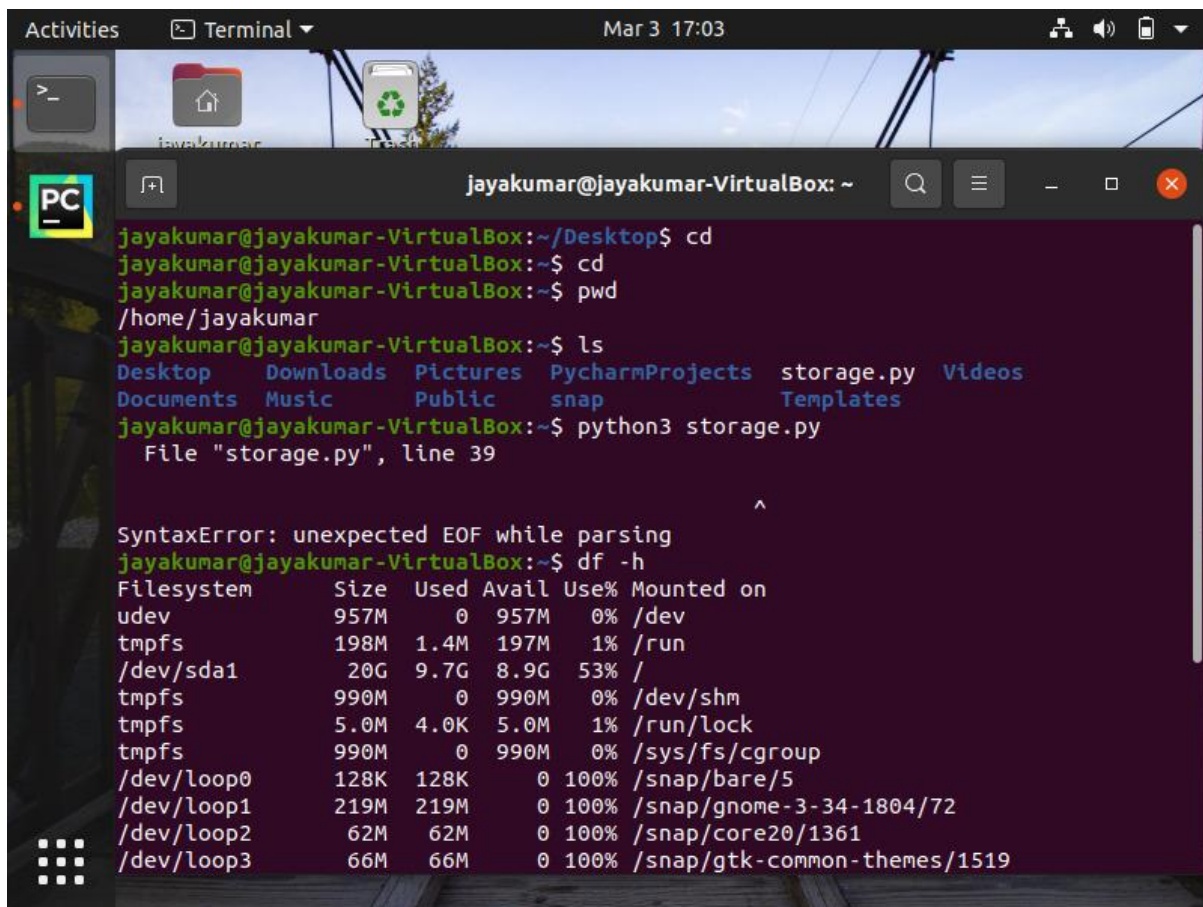
```
user4@vm1:~  
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
NameError: name 'df' is not defined  
>>> df -h  
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
NameError: name 'df' is not defined  
>>>  
[user4@vm1 ~]$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
devtmpfs        307M   0  307M   0% /dev  
tmpfs           342M   0  342M   0% /dev/shm  
tmpfs           342M  35M  307M  11% /run  
tmpfs           342M   0  342M   0% /sys/fs/cgroup  
/dev/mapper/ocivolume-root 36G   5.2G   31G  15% /  
/dev/mapper/ocivolume-oled 10G  125M   9.9G   2% /var/oled  
/dev/sda2       1014M 298M  717M  30% /boot  
/dev/sda1       100M   5.1M   95M   6% /boot/efi  
tmpfs           69M    0   69M   0% /run/user/0  
tmpfs           69M    0   69M   0% /run/user/987  
tmpfs           69M    0   69M   0% /run/user/1005  
tmpfs           69M    0   69M   0% /run/user/1003  
tmpfs           69M    0   69M   0% /run/user/1004  
[user4@vm1 ~]$
```

LINUX OUTPUT :

Command : df -h

```
jayakumar@jayakumar-VirtualBox: ~  
jayakumar@jayakumar-VirtualBox: ~  
jayakumar@jayakumar-VirtualBox:~$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
udev            957M   0  957M   0% /dev  
tmpfs           198M  1.4M  197M   1% /run  
/dev/sda1       20G   9.6G   9.0G  52% /  
tmpfs           990M   0  990M   0% /dev/shm  
tmpfs           5.0M  4.0K   5.0M   1% /run/lock  
tmpfs           990M   0  990M   0% /sys/fs/cgroup  
/dev/loop0      128K  128K    0 100% /snap/bare/5  
/dev/loop1      56M   56M    0 100% /snap/core18/2128  
/dev/loop2      62M   62M    0 100% /snap/core20/1361  
/dev/loop4      219M  219M    0 100% /snap/gnome-3-34-1804/77  
/dev/loop3      66M   66M    0 100% /snap/gtk-common-themes/1515  
/dev/loop5      249M  249M    0 100% /snap/gnome-3-38-2004/99  
/dev/loop6      66M   66M    0 100% /snap/gtk-common-themes/1519  
/dev/loop7      219M  219M    0 100% /snap/gnome-3-34-1804/72  
/dev/loop8      529M  529M    0 100% /snap/pycharm-community/267  
/dev/loop9      44M   44M    0 100% /snap/snapd/14978  
/dev/loop10     51M   51M    0 100% /snap/snap-store/547  
/dev/loop11     56M   56M    0 100% /snap/core18/2284  
/dev/loop12     55M   55M    0 100% /snap/snap-store/558  
tmpfs           198M   60K  198M   1% /run/user/1000  
jayakumar@jayakumar-VirtualBox:~$
```

Command : python3 storage.py



The screenshot shows a terminal window titled "jayakumar@jayakumar-VirtualBox: ~" with a date and time of "Mar 3 17:03". The user is in the directory ~/Desktop and has run the command "python3 storage.py". This results in a "SyntaxError: unexpected EOF while parsing" at line 39 of the file. The user then runs "df -h" to display disk usage information.

```
jayakumar@jayakumar-VirtualBox:~/Desktop$ cd
jayakumar@jayakumar-VirtualBox:~$ cd
jayakumar@jayakumar-VirtualBox:~$ pwd
/home/jayakumar
jayakumar@jayakumar-VirtualBox:~$ ls
Desktop  Downloads  Pictures  PycharmProjects  storage.py  Videos
Documents Music      Public    snap              Templates
jayakumar@jayakumar-VirtualBox:~$ python3 storage.py
File "storage.py", line 39
^
SyntaxError: unexpected EOF while parsing
jayakumar@jayakumar-VirtualBox:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            957M   0    957M   0% /dev
tmpfs           198M  1.4M  197M   1% /run
/dev/sda1       20G   9.7G   8.9G  53% /
tmpfs           990M   0    990M   0% /dev/shm
tmpfs           5.0M  4.0K   5.0M   1% /run/lock
tmpfs           990M   0    990M   0% /sys/fs/cgroup
/dev/loop0      128K  128K   0 100% /snap/bare/5
/dev/loop1      219M  219M   0 100% /snap/gnome-3-34-1804/72
/dev/loop2       62M   62M   0 100% /snap/core20/1361
/dev/loop3       66M   66M   0 100% /snap/gtk-common-themes/1519
```

RESOURCE :

- <https://youtu.be/asnGiNwo4RU>
- www.nagios.com/solutions/storage-monitoring/
- https://www.w3schools.com/python/python_modules.asp
- <https://youtu.be/KEIvXwUm8iE>

