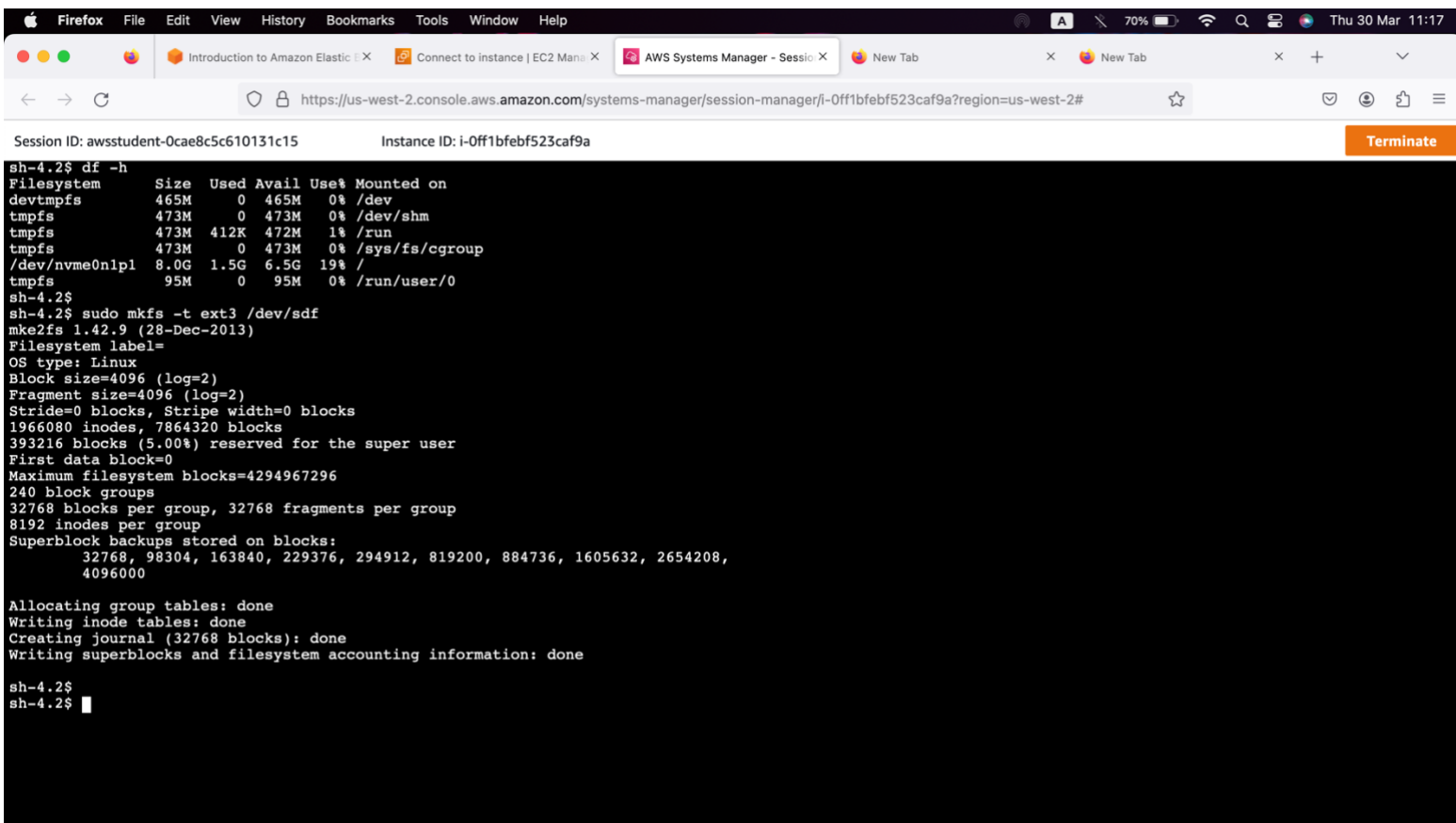


SFA Homework #15

Elizabet Ivanova

AWS Lab: Introduction to Amazon Elastic Block Store (Amazon EBS)

Creating and configuring a file system on an attached EBS volume:



The screenshot shows the AWS Systems Manager console interface. At the top, there's a navigation bar with 'Session ID: awsstudent-0cae8c5c610131c15' and 'Instance ID: i-0ff1bfebf523caf9a'. A 'Terminate' button is visible on the right. The main area displays a terminal window with the following output:

```
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 412K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M   0   95M   0% /run/user/0

sh-4.2$
sh-4.2$ sudo mkfs -t ext3 /dev/sdf
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
1966080 inodes, 7864320 blocks
393216 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
240 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

sh-4.2$
sh-4.2$
```

FirefoxFileEditViewHistoryBookmarksToolsWindowHelp

Introduction to Amazon Elastic EC2 Mana AWS Systems Manager - Sessio New TabNew Tab

https://us-west-2.console.aws.amazon.com/systems-manager/session-manager/ji-0ff1bfebf523caf9a?region=us-west-2#

Session ID: awsstudent-0cae8c5c610131c15Instance ID: i-0ff1bfebf523caf9a

Terminate

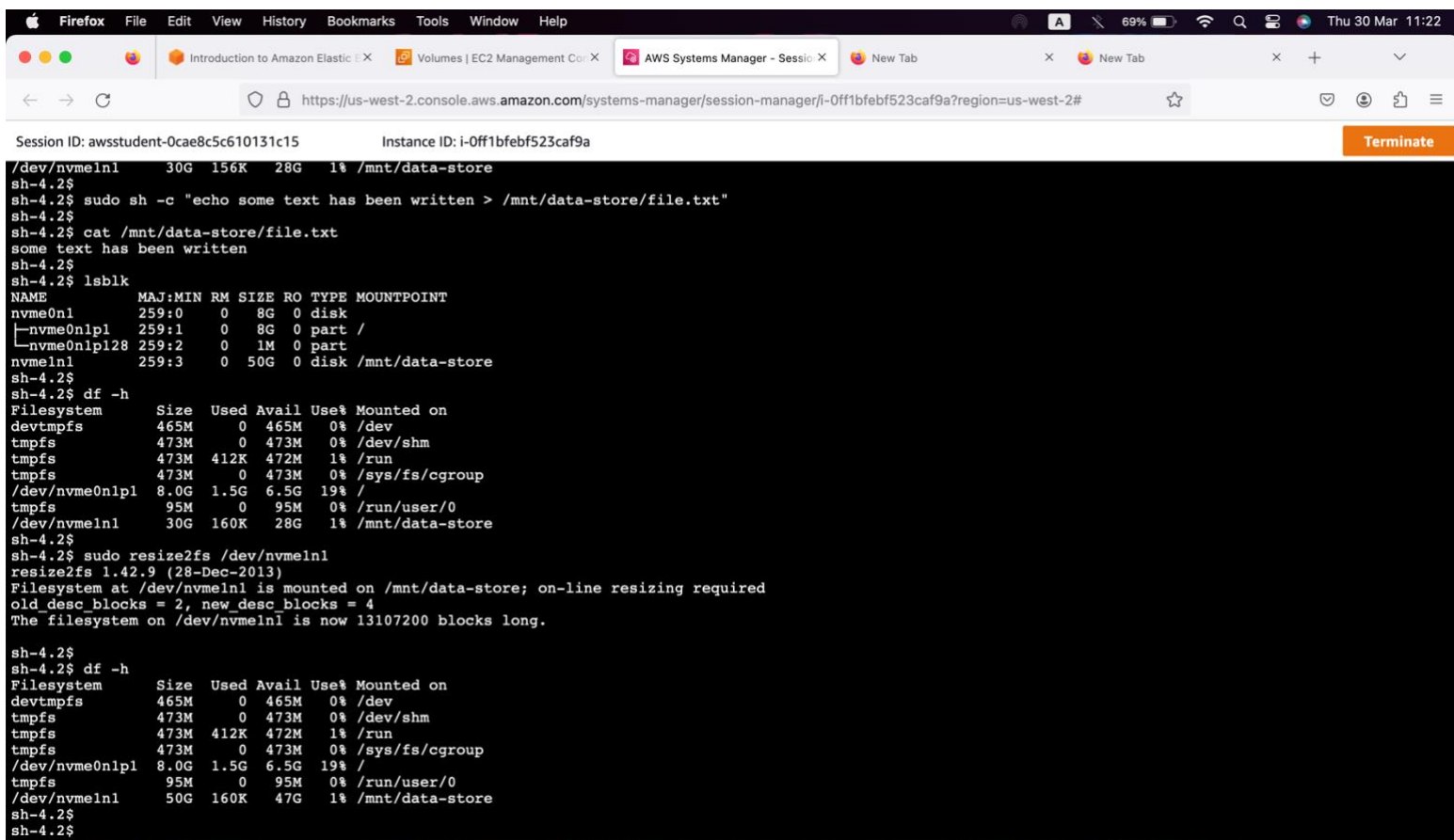
Maximum filesystem blocks=4294967296
240 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
4096000

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

sh-4.2\$
sh-4.2\$ sudo mkdir /mnt/data-store
sh-4.2\$
sh-4.2\$ sudo mount /dev/sdf /mnt/data-store
sh-4.2\$
sh-4.2\$ echo "/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
sh-4.2\$
sh-4.2\$ cat /etc/fstab

UUID=9da90cbe-ac2c-449c-ba5c-c06e3466d676 / xfs defaults,noatime 1 1
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
sh-4.2\$
sh-4.2\$ df -h
Filesystem Size Used Avail Use% Mounted on
devtmpfs 465M 0 465M 0% /dev
tmpfs 473M 0 473M 0% /dev/shm
tmpfs 473M 412K 472M 1% /run
tmpfs 473M 0 473M 0% /sys/fs/cgroup
/dev/nvme0n1p1 8.0G 1.5G 6.5G 19% /
tmpfs 95M 0 95M 0% /run/user/0
/dev/nvme1n1 30G 156K 28G 1% /mnt/data-store
sh-4.2\$
sh-4.2\$ sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
sh-4.2\$
sh-4.2\$ cat /mnt/data-store/file.txt
some text has been written
sh-4.2\$
sh-4.2\$

Expanding the volume of the file system:

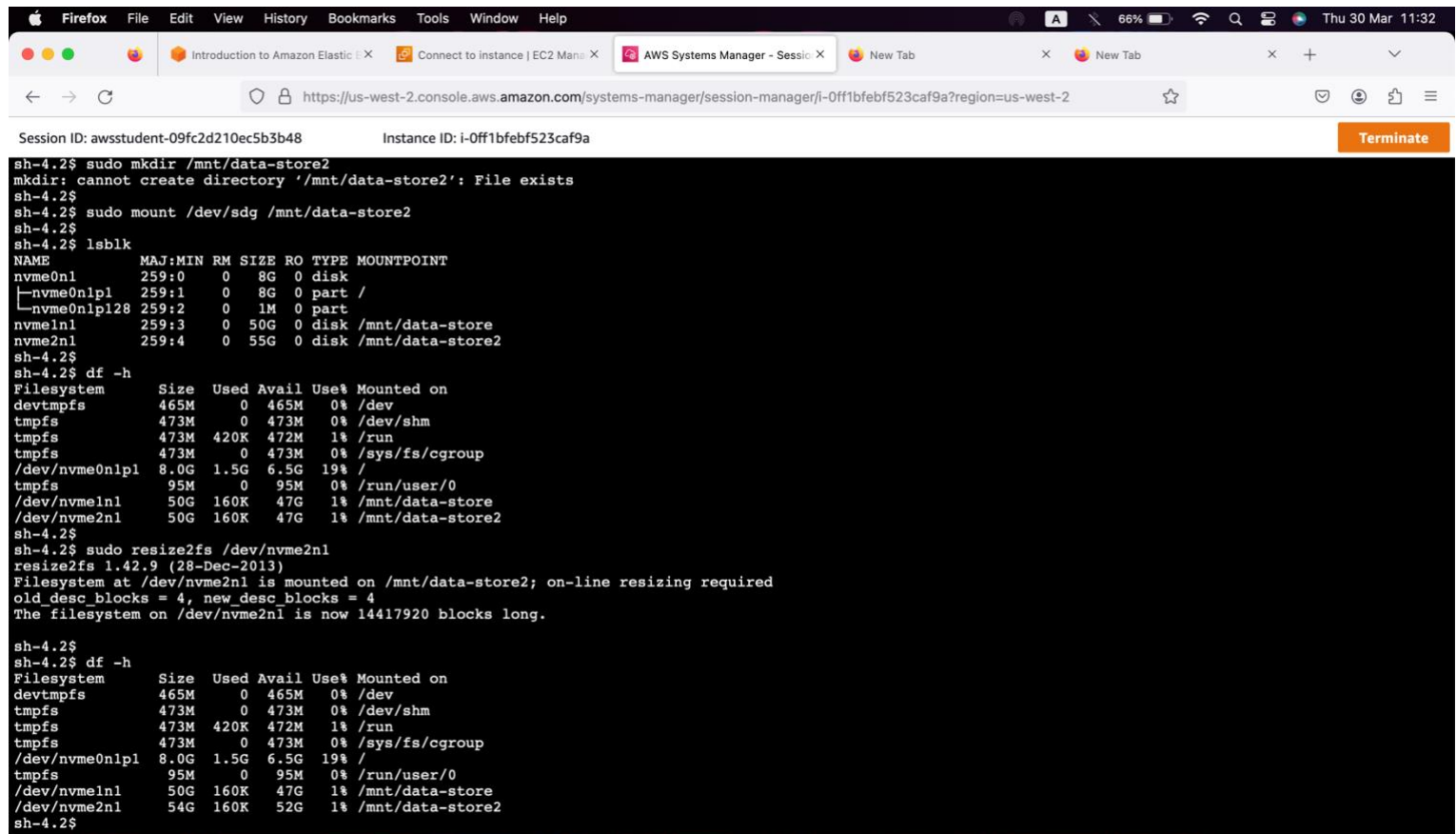


The screenshot shows a terminal window within the AWS Management Console. The terminal is connected to an AWS instance with Session ID: awsstudent-0cae8c5c610131c15 and Instance ID: i-0ff1bfebf523caf9a. The terminal output shows the following commands and results:

```
sh-4.2$ /dev/nvme1n1 30G 156K 28G 1% /mnt/data-store
sh-4.2$ sh-4.2$ sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
sh-4.2$ sh-4.2$ cat /mnt/data-store/file.txt
some text has been written
sh-4.2$ sh-4.2$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
nvme0n1      259:0    0   8G  0 disk 
├─nvme0n1p1  259:1    0   8G  0 part /
├─nvme0n1p128 259:2    0   1M  0 part 
nvme1n1      259:3    0  50G  0 disk /mnt/data-store
sh-4.2$ sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 412K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M   0   95M   0% /run/user/0
/dev/nvme1n1     30G 160K   28G   1% /mnt/data-store
sh-4.2$ sh-4.2$ sudo resize2fs /dev/nvme1n1
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/nvme1n1 is mounted on /mnt/data-store; on-line resizing required
old_desc_blocks = 2, new_desc_blocks = 4
The filesystem on /dev/nvme1n1 is now 13107200 blocks long.
sh-4.2$ sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 412K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M   0   95M   0% /run/user/0
/dev/nvme1n1     50G 160K   47G   1% /mnt/data-store
sh-4.2$ sh-4.2$
```

The terminal output shows the initial state of the file system, the creation of a file, the use of `lsblk` to view disk details, and the use of `df -h` to check disk usage. The `resize2fs` command is used to expand the file system, and the output shows that the file system is now 13107200 blocks long. Finally, `df -h` is used again to show the updated disk usage, confirming that the file system has been expanded to 50G.

Restoring an EBS volume from an existing snapshot (mounting the new volume, extending the new file system, verification):



```
sh-4.2$ sudo mkdir /mnt/data-store2
mkdir: cannot create directory '/mnt/data-store2': File exists
sh-4.2$
sh-4.2$ sudo mount /dev/sdg /mnt/data-store2
sh-4.2$
sh-4.2$ lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
nvme0n1              259:0    0   8G  0 disk 
├─nvme0n1p1          259:1    0   8G  0 part /
└─nvme0n1p128        259:2    0   1M  0 part 
nvme1n1              259:3    0  50G  0 disk /mnt/data-store
nvme2n1              259:4    0  55G  0 disk /mnt/data-store2
sh-4.2$
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 420K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M    0   95M   0% /run/user/0
/dev/nvme1n1     50G  160K   47G   1% /mnt/data-store
/dev/nvme2n1     50G  160K   47G   1% /mnt/data-store2
sh-4.2$
sh-4.2$ sudo resize2fs /dev/nvme2n1
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/nvme2n1 is mounted on /mnt/data-store2; on-line resizing required
old_desc_blocks = 4, new_desc_blocks = 4
The filesystem on /dev/nvme2n1 is now 14417920 blocks long.

sh-4.2$
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 420K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M    0   95M   0% /run/user/0
/dev/nvme1n1     50G  160K   47G   1% /mnt/data-store
/dev/nvme2n1     54G  160K   52G   1% /mnt/data-store2
sh-4.2$
```

Session ID: awsstudent-09fc2d210ec5b3b48

Instance ID: i-0ff1bfebf523caf9a

Terminate

```
nvme0n1      259:0    0   8G  0 disk
└─nvme0n1p1  259:1    0   8G  0 part /
└─nvme0n1p128 259:2    0   1M  0 part
nvme1n1      259:3    0  50G  0 disk /mnt/data-store
nvme2n1      259:4    0  55G  0 disk /mnt/data-store2
sh-4.2$
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M    0  465M   0% /dev
tmpfs           473M    0  473M   0% /dev/shm
tmpfs           473M  420K  472M   1% /run
tmpfs           473M    0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M    0   95M   0% /run/user/0
/dev/nvme1n1     50G  160K   47G   1% /mnt/data-store
/dev/nvme2n1     50G  160K   47G   1% /mnt/data-store2
sh-4.2$
sh-4.2$ sudo resize2fs /dev/nvme2n1
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/nvme2n1 is mounted on /mnt/data-store2; on-line resizing required
old_desc blocks = 4, new_desc blocks = 4
The filesystem on /dev/nvme2n1 is now 14417920 blocks long.

sh-4.2$
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M    0  465M   0% /dev
tmpfs           473M    0  473M   0% /dev/shm
tmpfs           473M  420K  472M   1% /run
tmpfs           473M    0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M    0   95M   0% /run/user/0
/dev/nvme1n1     50G  160K   47G   1% /mnt/data-store
/dev/nvme2n1     54G  160K   52G   1% /mnt/data-store2
sh-4.2$
sh-4.2$ ls /mnt/data-store2/
file.txt  lost+found
sh-4.2$
sh-4.2$ cat /mnt/data-store2/file.txt
some text has been written
sh-4.2$
sh-4.2$
```



Challenge task

Creating a new EBS volume called New_App_Performance:

Successfully attached volume **vol-0cf0f8e135ed5e64d** to instance **i-0ff1bfebf523caf9a**.

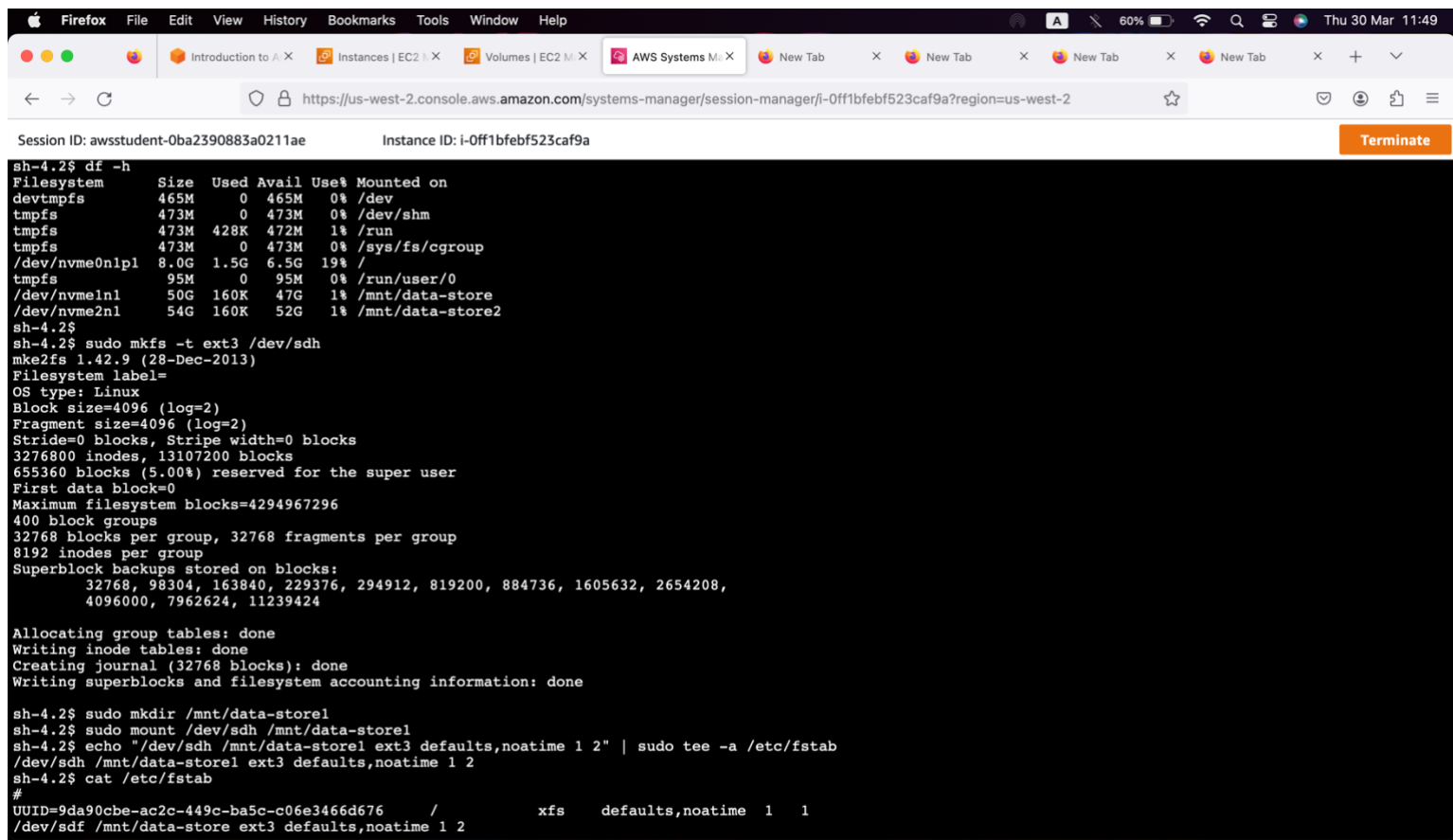
Volumes (6)

	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created
<input type="checkbox"/>	AppLogs	vol-09355924979a7e75b	gp3	20 GiB	6000	250	-	2023/03/30 10:56 GMT+3
<input type="checkbox"/>	Boot_Vol_1	vol-0a2b86cc62bc8a534	gp3	8 GiB	3000	125	snap-0a1b681...	2023/03/30 10:58 GMT+3
<input type="checkbox"/>	Boot_Vol_2	vol-0daf31b4566265923	gp3	8 GiB	3000	125	snap-0a1b681...	2023/03/30 10:58 GMT+3
<input type="checkbox"/>	New_App_Main	vol-08943fc5ea7864fca	gp3	50 GiB	3000	250	-	2023/03/30 11:08 GMT+3
<input type="checkbox"/>	Restored_App...	vol-0bef2e292f081166a	gp3	55 GiB	3000	125	snap-039fea2...	2023/03/30 11:28 GMT+3
<input type="checkbox"/>	New_App_Perf...	vol-0cf0f8e135ed5e64d	io2	50 GiB	20000	-	-	2023/03/30 11:35 GMT+3

Select a volume above

© 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

After attaching the volume to the New_App instance, I mounted the volume to the instance and created a file system on it with a file.txt:



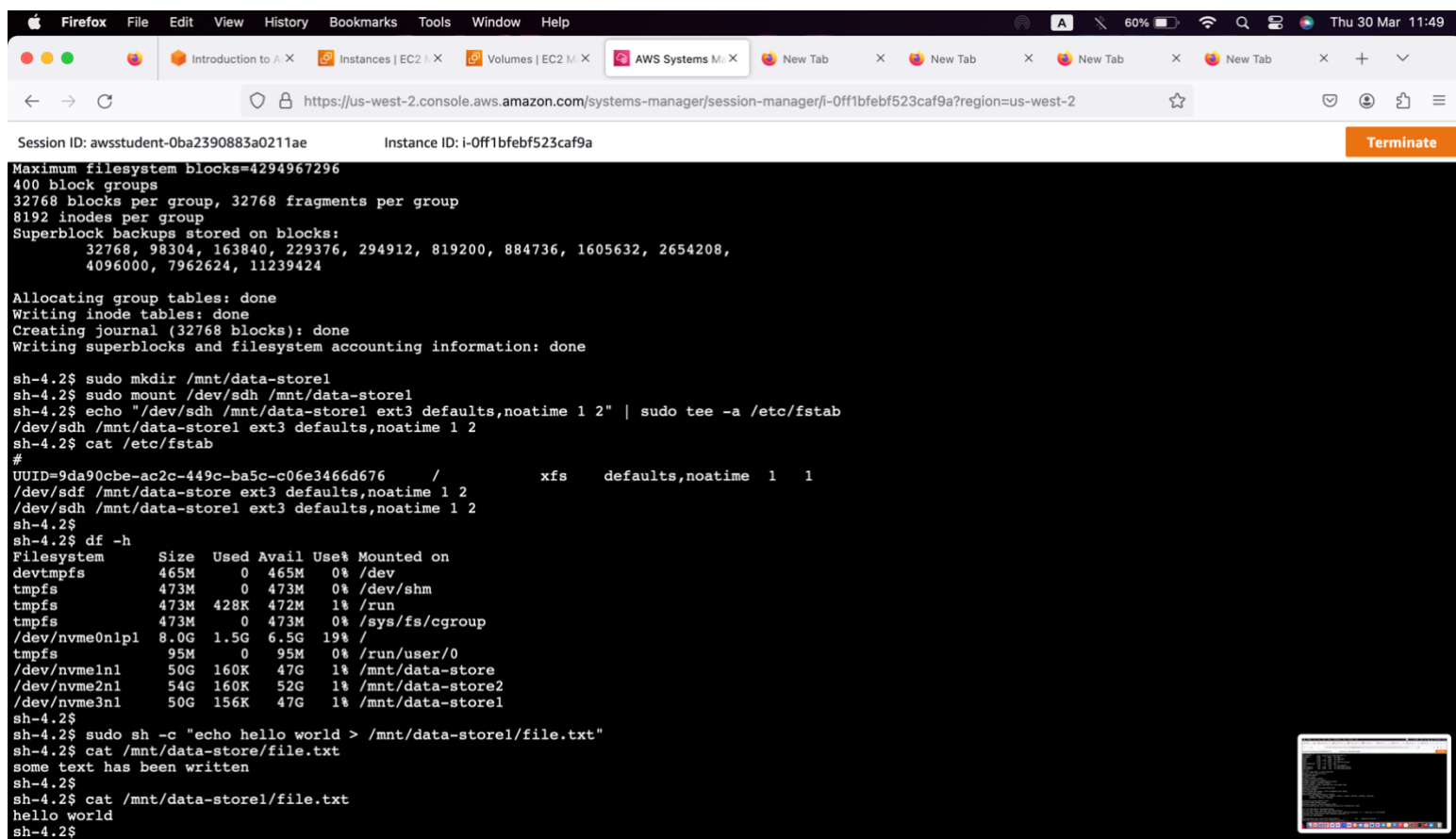
The screenshot shows a web browser window with the AWS Systems Manager console. The session ID is 'awsstudent-Oba2390883a0211ae' and the instance ID is 'i-Off1bfebf523caf9a'. The terminal output shows the following commands and results:

```
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 428K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G   6.5G  19% /
tmpfs           95M   0   95M   0% /run/user/0
/dev/nvme1n1    50G 160K   47G   1% /mnt/data-store
/dev/nvme2n1    54G 160K   52G   1% /mnt/data-store2

sh-4.2$
sh-4.2$ sudo mkfs -t ext3 /dev/sdh
mkfs2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
3276800 inodes, 13107200 blocks
655360 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
400 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

sh-4.2$ sudo mkdir /mnt/data-store1
sh-4.2$ sudo mount /dev/sdh /mnt/data-store1
sh-4.2$ echo "/dev/sdh /mnt/data-store1 ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
/dev/sdh /mnt/data-store1 ext3 defaults,noatime 1 2
sh-4.2$ cat /etc/fstab
#
UUID=9da90cbe-ac2c-449c-ba5c-c06e3466d676      /                xfs      defaults,noatime 1 1
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
```



```
Session ID: awsstudent-0ba2390883a0211ae Instance ID: i-Off1bfebf523caf9a Terminate

Maximum filesystem blocks=4294967296
400 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

sh-4.2$ sudo mkdir /mnt/data-store1
sh-4.2$ sudo mount /dev/sdh /mnt/data-store1
sh-4.2$ echo "/dev/sdh /mnt/data-store1 ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
/dev/sdh /mnt/data-store1 ext3 defaults,noatime 1 2
sh-4.2$ cat /etc/fstab
#
UUID=9da90cbe-ac2c-449c-ba5c-c06e3466d676 / xfs defaults,noatime 1 1
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
/dev/sdh /mnt/data-store1 ext3 defaults,noatime 1 2
sh-4.2$
sh-4.2$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        465M   0  465M   0% /dev
tmpfs           473M   0  473M   0% /dev/shm
tmpfs           473M 428K  472M   1% /run
tmpfs           473M   0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.5G  6.5G  19% /
tmpfs           95M   0   95M   0% /run/user/0
/dev/nvme1n1     50G 160K   47G   1% /mnt/data-store
/dev/nvme2n1     54G 160K   52G   1% /mnt/data-store2
/dev/nvme3n1     50G 156K   47G   1% /mnt/data-store1
sh-4.2$
sh-4.2$ sudo sh -c "echo hello world > /mnt/data-store1/file.txt"
sh-4.2$ cat /mnt/data-store/file.txt
some text has been written
sh-4.2$
sh-4.2$ cat /mnt/data-store1/file.txt
hello world
sh-4.2$
```

***The output first produced “some text has been written” because I did not type the location correctly, so it pointed to the file from the previous tasks. Then, I used the correct file location and the correct output was printed out.

Snapshot of the New_App_Performance: completed.

The screenshot shows the AWS Management Console interface. The left sidebar contains navigation links for various services: EC2, CloudFront, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Scheduled Instances, Capacity Reservations, Images (AMIs, AMI Catalog), Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), CloudShell, Feedback, and Language. The main content area is titled 'Snapshots (2)' and displays a table of snapshots owned by the user. The table has columns for Name, Snapshot ID, Size, Description, Storage..., Snapshot status, and Started. Two snapshots are listed: 'New_App_Per...' with ID 'snap-00a3f280b6e81f447' and 'App_Main_Snap' with ID 'snap-039fea22ff59ec0e5'. Both are 50 GiB in size and have a status of 'Completed'. The 'New_App_Per...' snapshot is circled in red. Below the table, there is a message 'Select a snapshot above.' and three icons for actions.

<input type="checkbox"/>	Name	Snapshot ID	Size	Description	Storage...	Snapshot status	Started
<input type="checkbox"/>	New_App_Per...	snap-00a3f280b6e81f447	50 GiB	Snapshot of New_App_Per...	Standard	Completed	2023/03/30 11:51 G
<input type="checkbox"/>	App_Main_Snap	snap-039fea22ff59ec0e5	50 GiB	Snapshot of App_Main	Standard	Completed	2023/03/30 11:26 G