Lab – Disk CLI Commands

Introduction

In this lab, you will work with disk CLI commands.

Required Resources

- A Windows PC
- An additional partition with an NTFS file system

Instructions

Part 1: The chkdsk Command Options

In this part, you will explore the Windows command that allow you to scan and repair disks.

Step 1: Explore the chkdsk command

a. Open a command prompt.

b. Open the help page the command **chkdsk**. Enter **help chkdsk** or **chkdsk /?** at the prompt to answer the following questions:

Questions:

What is the option to fix errors on the drive?

Type your answers here.

What is the option to force the volume to dismount first if necessary?

Type your answers here.

What is the option to locate bad sectors and recover readable information?

Type your answers here.

c. Enter the **chkdsk** command to check the C:\ drive with the options from the questions in the previous step.
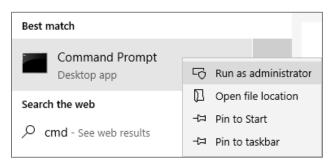
Question:

What happened? Explain.

Type your answers here.

Step 2: Use the chkdsk command options.

a. Open a Command Prompt window with elevated privileges. Click **Start** and search for **Command Prompt**. Within the search results, right-click **Command Prompt** and select **Run as administrator**.

b. In the Command Prompt window with elevated privileges, enter the command **chkdsk C: /F /X /R** to check the status of this drive. Enter **y** when prompted. Note the change in the prompt.

```
C:\Windows\system32> chkdsk C: /F /X /R
The type of the file system is NTFS.
Cannot lock current drive.


Chkdsk cannot run because the volume is in use by another
process.  Would you like to schedule this volume to be
checked the next time the system restarts? (Y/N) y


This volume will be checked the next time the system restarts.
```

Note that the volume will be checked when the system restarts that next time because the volume is in use and it cannot be checked at this time.

Question:

What is the file system of the drive?

Type your answers here.

c. A second partition was created in a previous lab. You can perform the **chkdsk** command on the second partition. The I: drive will be used in this example.

```
C:\Windows\system32> chkdsk I: /F /X /R
The type of the file system is NTFS.
Volume label is ITEINFO.

Stage 1: Examining basic file system structure ...
  256 file records processed.
File verification completed.
  0 large file records processed.
  0 bad file records processed.
<some output omitted>
```

Part 2: Create a new partition using DiskPart

In this part, you will shrink the second partition on the hard drive and create a third partition.

Note: Please back up any data from the drives before proceeding in this part. Because a new partition will be created by shrinking a volume and the new partition will be formatted. All data will be erased during the formatting process.

Step 1: List the disks, partitions, and volume.

a. Using a command prompt with elevated privilege, enter **diskpart** at the prompt.

```
C:\Windows\system32> diskpart

Microsoft DiskPart version 10.0.17763.1

Copyright (C) Microsoft Corporation.
On computer: DESKTOP-PUU52R2


DISKPART>
```

b. Notice the prompt indicated that you are in the diskpart utility. Enter **help** at the **DISKPART>** prompt to list the available commands within the diskpart utility. You can also use the **help** command anytime while you are in the diskpart utility. For example, enter **help list disk** at the prompt to view more information about the **list disk** command.

```
DISKPART> help list disk

    Displays a list of disks.

Syntax:  LIST DISK

    Displays a list of disks and information about them, such as their
    size, amount of available free space, whether the disk is a basic
    or dynamic disk, and whether the disk uses the master boot record
    (MBR) or GUID partition table (GPT) partition style. The disk marked
    with an asterisk (*) has focus.
```

c. Enter **list disk** at the **DISKPART>** prompt to list all the disks in the PC.

```
DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online           50 GB  1024 KB
  Disk 1    Online         5120 MB  1024 KB
```

Question:

Enter **list partition** to list all the partitions on the disk. How many partitions are on the disk?

Type your answers here.

d. Enter **list partition** command to list the partitions on the disk. **Note**: If you only have 1 disk, the disk is selected by default. If you have more than 1 disk in your PC as listed in the **list disk** command, you will need to select the desired disk. If you are interested in disk 0, enter **select disk 0**.

```
DISKPART> select disk 0

Disk 0 is now the selected disk.
```

---

e. Enter **list partition** to list all the partition on the selected disk.

```
DISKPART> list partition

  Partition ###  Type              Size     Offset
  -------------  ----------------  -------  -------
  Partition 1    Primary            549 MB  1024 KB
  Partition 2    Primary             47 GB   550 MB
  Partition 3    Primary           2047 MB    47 GB
```

f. Enter **list volume** to list all the volumes on the computer. This will include the volumes on all the disks.

```
DISKPART> list volume

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0    E                        CD-ROM         0 B  No Media
  Volume 1         System Rese  NTFS   Partition   549 MB  Healthy    System
  Volume 2    C                 NTFS   Partition    47 GB  Healthy    Boot
  Volume 3    I    ITEINFO      NTFS   Partition   2048 MB  Healthy
  Volume 4    D    SecondDisk   NTFS   Partition   5117 MB  Healthy
```

g. Select the volume that will be used to create a new partition in the next step.

```
DISKPART> select volume 3

Volume 3 is the selected volume.
```

Step 2: Shrink a volume.

a. Review the **shrink** command. Enter **help shrink** at the DISKPART prompt.

```
DISKPART> help shrink

    Reduces the size of the volume with focus by the specified amount. Makes
    free disk space available from unused space at the end of the volume.

Syntax:  SHRINK [DESIRED=<N>] [MINIMUM=<N>] [NOWAIT] [NOERR]
        SHRINK QUERYMAX [NOERR]
<some output omitted>
```

Question:

What option is used to determine the maximum number of bytes that the volume can be shrink by?

Type your answers here.

b. Use the **shrink** command with the option **querymax** to determine the maximum number of bytes that the volume can be shrink by.

Question:

What is the maximum number of reclaimable bytes?

Type your answers here.

c. Enter **shrink desired=500** to reduce the size of volume by 500 megabytes.

```
DISKPART> shrink desired=500
```

```
The maximum number of reclaimable bytes is:  500 MB
```

Step 3: Create a new partition.

In the previous step, you have create 973 MB free space on the disk. In this step, you will create a primary partition with 500 MB with an NTFS file system.

a. Enter **create partition primary** at the DISKPART prompt.

```
DISKPART> create partition primary


DiskPart succeeded in creating the specified partition.
```

Note: If there are already 3 primary partitions, you will need to create logical partition, instead of primary partitions.

```
DISKPART> create partition extended
DISKPART> create partition logical
```

b. List the partition to verify that you have created a new partition. Notice the asterisk (*) next to partition 4 to indicate the partition is currently selected.

```
DISKPART> list partition


  Partition ###   Type              Size     Offset
  -------------   ----------------  -------  -------
  Partition 1     Primary            549 MB  1024 KB
  Partition 2     Primary             47 GB   550 MB
  Partition 3     Primary           1548 MB    47 GB
* Partition 4     Primary            501 MB    49 GB
```

c. List the volumes to verify that a new volume was created and is automatically selected. Note the file system is listed as RAW.

```
DISKPART> list volume


  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0     E                       CD-ROM          0 B  No Media
  Volume 1          System Rese  NTFS   Partition   549 MB  Healthy    System
  Volume 2     C                 NTFS   Partition    47 GB  Healthy    Boot
  Volume 3     I    ITEINFO      NTFS   Partition  1548 MB  Healthy
  Volume 4     D    SecondDisk   NTFS   Partition  5117 MB  Healthy
* Volume 5                       RAW    Partition   501 MB  Healthy
```

d. The new volume needs to be formatted with an appropriate file system before it can be used. The new volume will be format as NTFS and it will be labeled as **new**.

```
DISKPART> format fs=ntfs label=new


  100 percent completed


DiskPart successfully formatted the volume.
```

e. The new volume will be assigned as drive letter **w**.

```
DISKPART> assign letter=w
```

```
DiskPart successfully assigned the drive letter or mount point.
```

f. List the volume to verify the new modification.

```
DISKPART> list volume

  Volume ###  Ltr  Label        Fs     Type        Size     Status    Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0     E                       CD-ROM          0 B  No Media
  Volume 1          System Rese  NTFS   Partition   549 MB  Healthy    System
  Volume 2     C                NTFS   Partition    47 GB  Healthy    Boot
  Volume 3     I    ITEINFO      NTFS   Partition  1548 MB  Healthy
  Volume 4     D    SecondDisk   NTFS   Partition  5117 MB  Healthy
* Volume 5     W    new          NTFS   Partition   501 MB  Healthy
```

g. Enter **exit** at the DISKPART> to exit the DiskPart utility.

Step 4: Format the new volume as a FAT file system.

Formatting can also be done outside of the DiskPart utility.

a. In an elevated command prompt, enter the **format** command to reformat w: to use an FAT32 file system.
When prompted, enter **new** as the current volume label. Enter the **NewVol** as the new volume label.

```
C:\Windows\system32> format /fs:fat32 w:
The type of the file system is NTFS.
The new file system is FAT32.
Enter current volume label for drive W: new

WARNING, ALL DATA ON NON-REMOVABLE DISK
DRIVE W: WILL BE LOST!
Proceed with Format (Y/N)? y
Formatting 500.0 MB
Initializing the File Allocation Table (FAT)...
Volume label (11 characters, ENTER for none)? NewVol
Format complete.
     496.0 MB total disk space.
     496.0 MB are available.

      4,096 bytes in each allocation unit.
    126,975 allocation units available on disk.

         32 bits in each FAT entry.

Volume Serial Number is 90C2-A65F
```

b. Navigate to the newly created W: drive and create folders and files, if desired.

Part 3: Clean up

After you have verified that the new partition is working, you will delete the newly created volume and the free
space will rejoin the original second partition.

a. At the elevated command prompt, enter **diskpart** to return to the DiskPart utitliy.

---

b. List all the disks for the computer by issuing the **list disk** command.

```
DISKPART> list disk

  Disk ###  Status        Size     Free     Dyn  Gpt
  --------  ------------  -------  -------  ---  ---
  Disk 0    Online          50 GB     0 B
  Disk 1    Online        5120 MB  1024 KB
```

c. Select the appropriate disk that has the newly created volume.

```
DISKPART> select disk 0

Disk 0 is now the selected disk.
```

d. List all the volume for the computer by using the **list volume** command.

```
DISKPART> list volume

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0    E                        CD-ROM          0 B  No Media
  Volume 1         System Rese  NTFS   Partition   549 MB  Healthy    System
  Volume 2    C                 NTFS   Partition    47 GB  Healthy    Boot
  Volume 3    I    ITE          NTFS   Partition  1148 MB  Healthy
  Volume 4    W    NEWVOL       FAT32  Partition   500 MB  Healthy
  Volume 5    D    SecondDisk   NTFS   Partition  5117 MB  Healthy
```

e. Select the volume that should be deleted.

```
DISKPART> select volume 4

Volume 4 is the selected volume.
```

f. Delete the volume using the **delete volume** command.

```
DISKPART> delete volume

DiskPart successfully deleted the volume.
```

g. Verify that the volume has been deleted by using the **list volume** command.

```
DISKPART> list volume

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0    E                        CD-ROM          0 B  No Media
  Volume 1         System Rese  NTFS   Partition   549 MB  Healthy    System
  Volume 2    C                 NTFS   Partition    47 GB  Healthy    Boot
  Volume 3    I    ITE          NTFS   Partition  1148 MB  Healthy
  Volume 4    D    SecondDisk   NTFS   Partition  5117 MB  Healthy
```

h. Now you can recover the free space from the deleted volume 4 by extending volume 3 to include the free space. Select volume 3 and use the **extend** command to extend volume 3.

```
DISKPART> select volume 3

Volume 3 is the selected volume.
```

```
DISKPART> extend

DiskPart successfully extended the volume.
```

i. Use the **list partition** command to verify that the newly created partition was deleted and the shrunk partition is back to the original capacity.

```
DISKPART> list partition

  Partition ###  Type              Size     Offset
  -------------  ----------------  -------  -------
  Partition 1    Primary            549 MB  1024 KB
  Partition 2    Primary             47 GB   550 MB
  Partition 3    Primary           2049 MB    47 GB
```

j. Enter **exit** at the DISKPART> to exit the DiskPart utility.