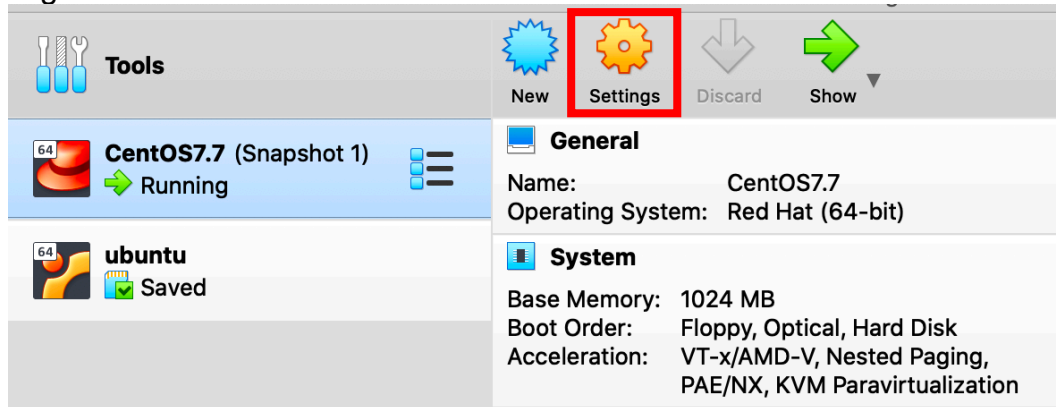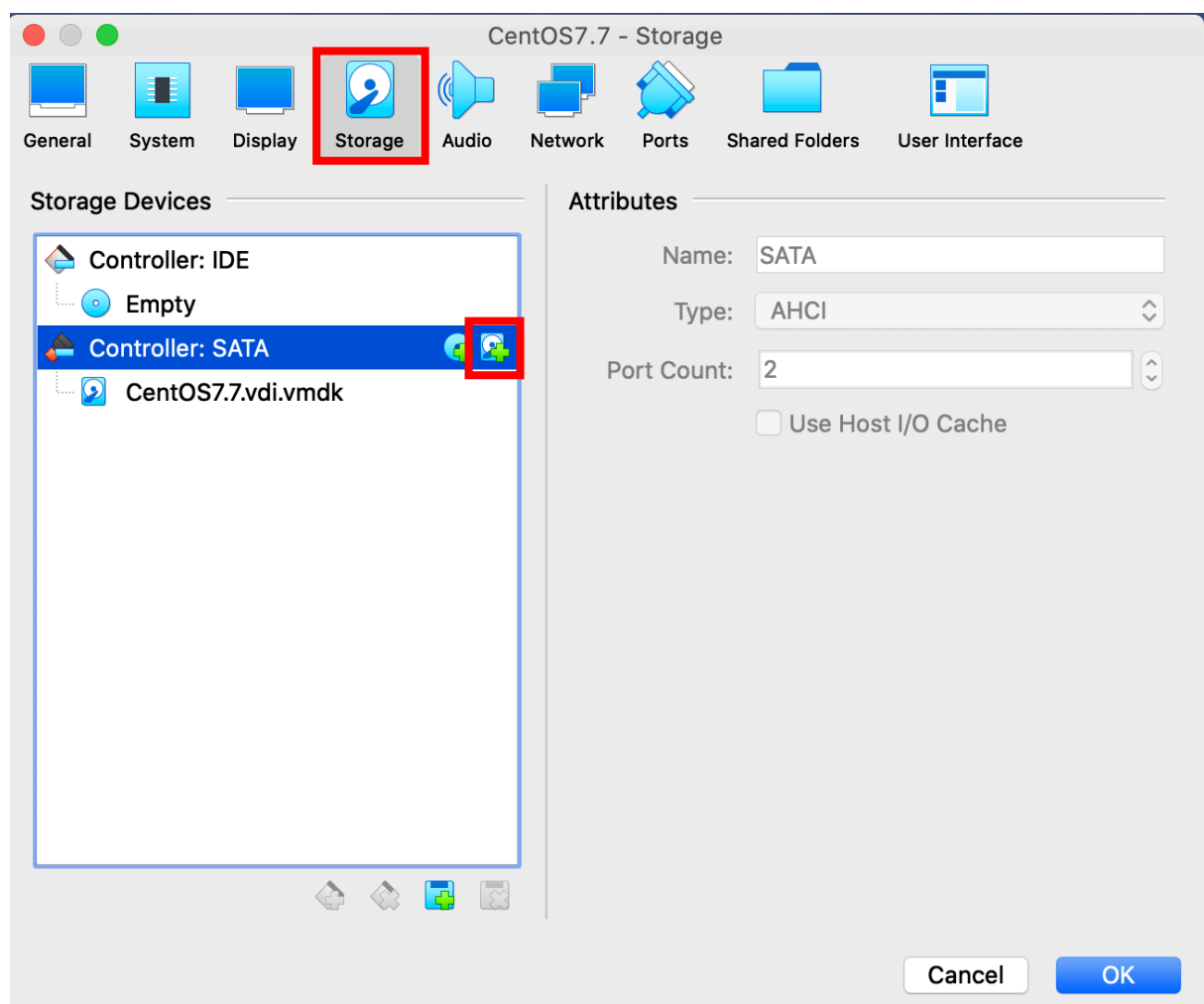# Exsercise 8: Configuring Hardware - Part 2
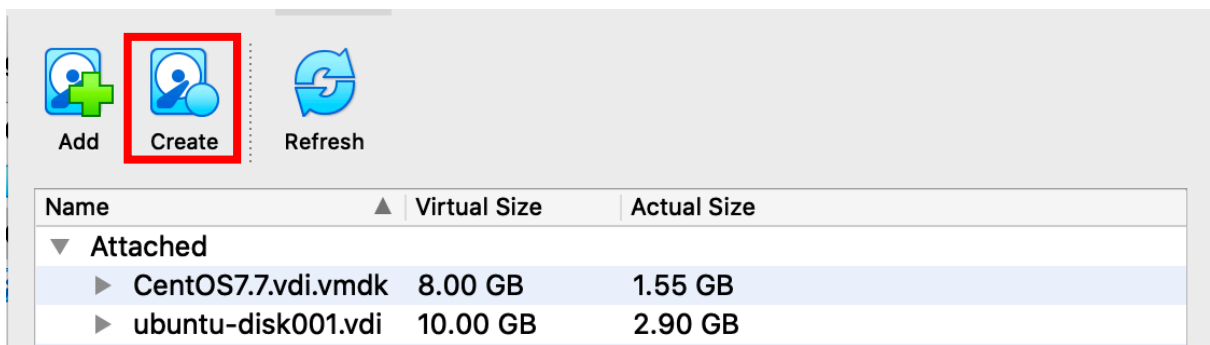
I. Prepare the environment

1. Add the second hard disk to the CentOS VM as the following steps
   From the Oracle VM Virtual Manager windows, select the CentOS VM and click setting
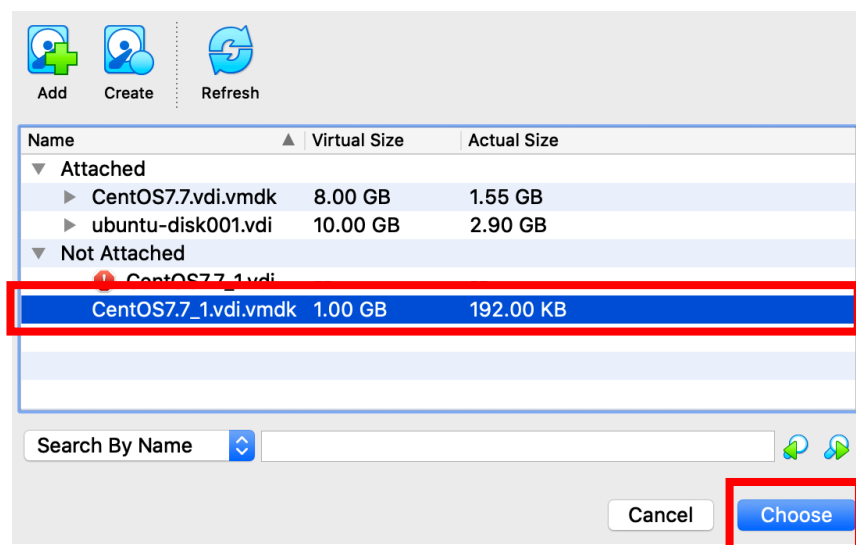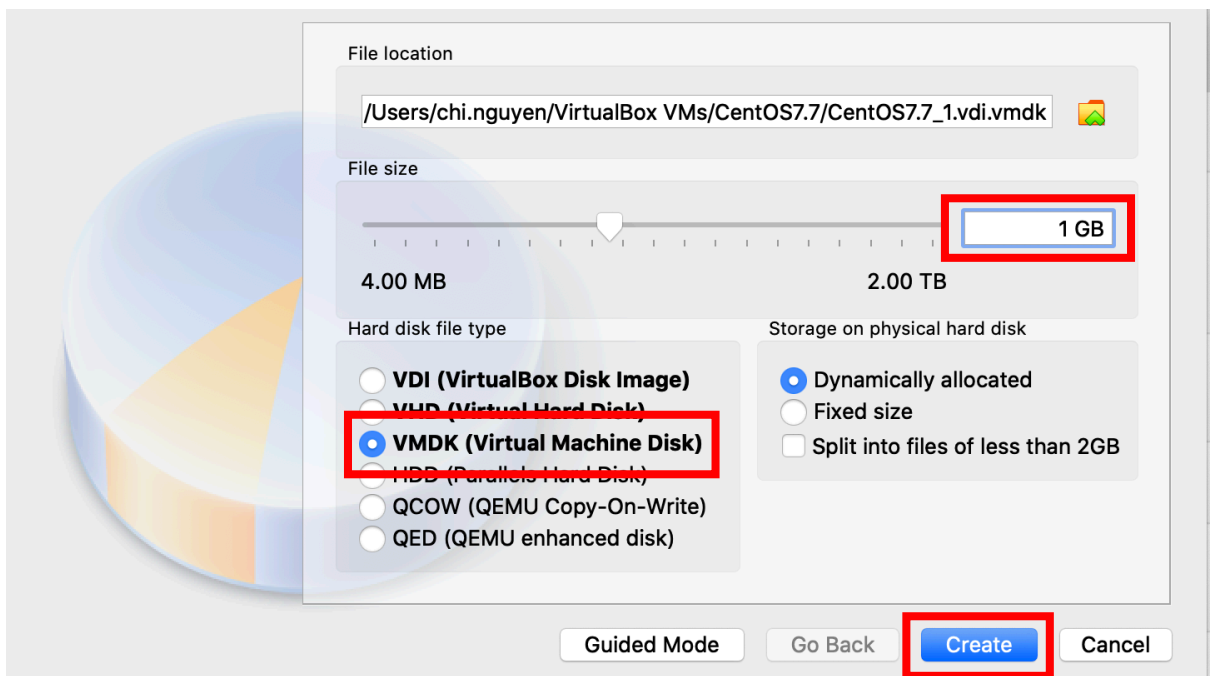

Click on Storage icon, on the Controller: SATA click add hard disk button

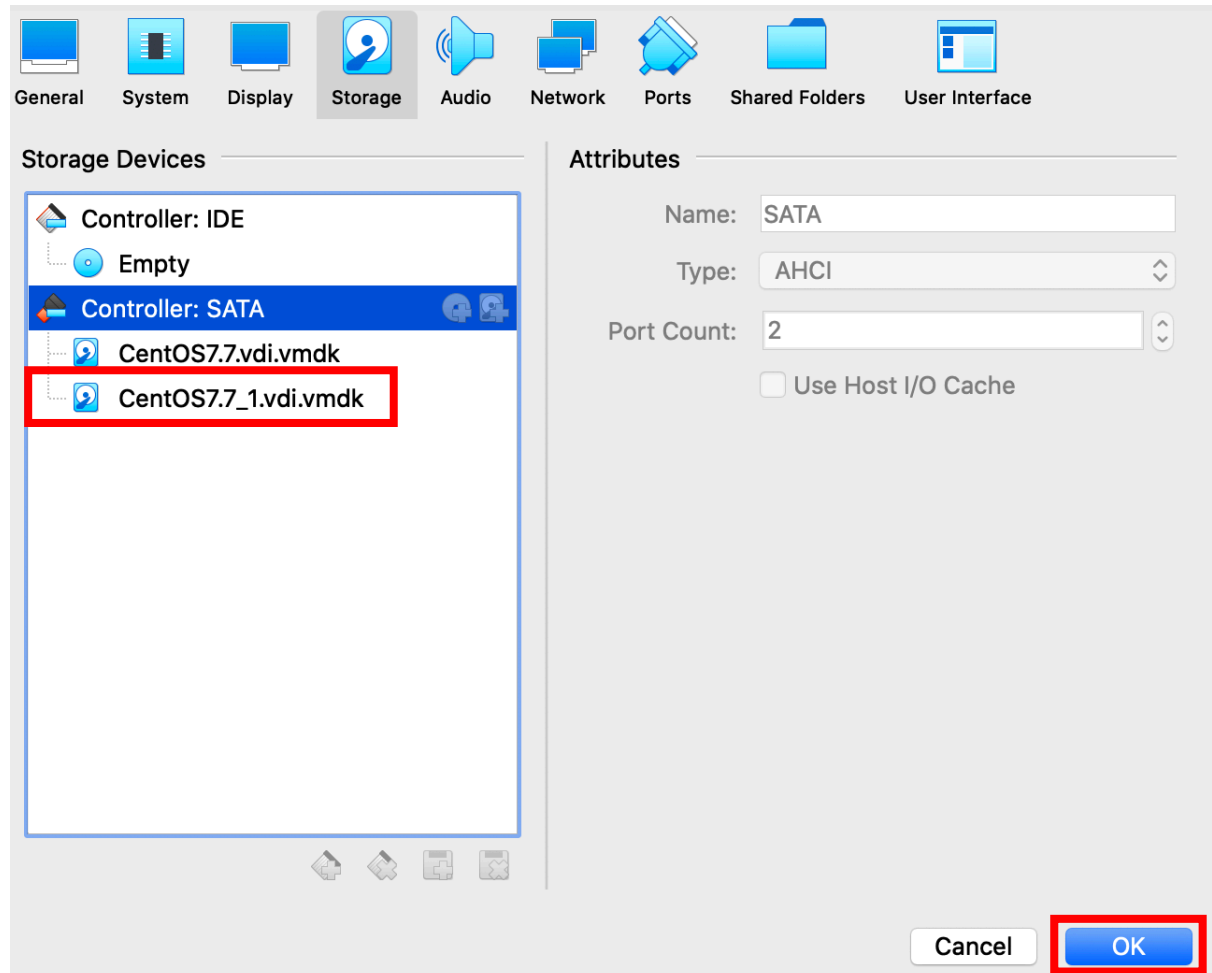On the next window, click on the create button

On the next window, select the appropriate folder to store the new virtual disk, set the file size to 1GB, and selet VMDK as the hard disk type. Click Create to creating

Select the newly created virtual disk and click choose or double click to the virtual disk to add it to the VM.

Click OK to complete.

II. Working with partitioning tools

1. Login to the CentOS system with student.
2. Display the information of all scsi block devices existing. Do you see the new disk's just added to the system.

Using fdisk

3. Assume that the new disk capacity is less than 2TB and you decide to create partitions as MBR style. Using the appropriate tool to create partitions as follows
   - The first partition has 10% of total capacity
   - The second partition has 30% of total capacity
   - The third partition has 20% of total capacity
4. Your manager ask you to add two more regions for two other purpose with 10% capacity for each. Use the appropriate tool to satisfy that requirement.
5. Delete all of the partitions you created to prepare for the next step

Using gdisk

6. Now imagine that the new disk is more than 2TB and to utilize all the disk capacity you need to create partitions as GPT style. Using the appropriate tool to create partitions as the same layout with step 2
7. The manager ask you to add two more regions again, how you can satisfy that requirement? What is the difference between what you did on this step and on step 3?

Using parted

8. The manager ask you to reduce the two regions created on step 6 to 5% of total capacity. Use the appropriate tool do that.
9. Using parted to create one more partition with 5% of total capacity in size.
10. Using partedn to delete all the partitions you created.

Exsercise Instructions

I. Prepare the environment
II. Working with partitioning tools

1. Login to the CentOS system with student.

   Log int to the Ubuntu system with the user name and password provided: **student/lpic1@123**

2. Display the information of all scsi block devices existing. Do you see the new disk's just added to the system.

   $ lsblk

```
[student@centos7 ~]$ lsblk
NAME                MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda                     8:0   0    8G  0 disk
├─sda1                  8:1   0    1G  0 part /boot
└─sda2                  8:2   0    7G  0 part
  ├─centos-root     253:0   0  6.2G  0 lvm  /
  └─centos-swap     253:1   0  820M  0 lvm  [SWAP]
sdb                    8:16   0    1G  0 disk
sr0                    11:0   1 1024M  0 rom
```

   Using fdisk

3. Assume that the new disk capacity is less than 2TB and you decide to create partitions as MBR style. Using the appropriate tool to create partitions as follows
   - The first partition has 10% of total capacity
   - The second partition has 30% of total capacity
   - The third partition has 20% of total capacity

   $ sudo fdisk /dev/sdb

```
[student@centos7 ~]$ sudo fdisk /dev/sdb
WARNING: fdisk GPT support is currently new, and therefore in an experimental phase. Use at your own
 discretion.
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): _
```

   Type m for help

```
Command (m for help): m
Command action
   d    delete a partition
   g    create a new empty GPT partition table
   G    create an IRIX (SGI) partition table
   l    list known partition types
   m    print this menu
   n    add a new partition
   o    create a new empty DOS partition table
   p    print the partition table
   q    quit without saving changes
   s    create a new empty Sun disklabel
   t    change a partition's system id
   v    verify the partition table
   w    write table to disk and exit
   x    extra functionality (experts only)

Command (m for help): _
```

Type n to create new partition

```
Command (m for help): n
Partition type:
   p    primary (0 primary, 0 extended, 4 free)
   e    extended
Select (default p): _
```

Type p or just enter to create a primary partition. Select the partition number (from 1 to 4) to create or just enter to select 1 as the partition number.

```
Select (default p):
Using default response p
Partition number (1-4, default 1):
```

Select the first sector or just enter to select the default number

```
First sector (2048-2097151, default 2048):
```

Select the last sector or specify the size of the partition you want to create with + sign and capacity end with K for Kilobyte, M for Megabyte or G for Gigabyte.

```
Last sector, +sectors or +size{K,M,G} (2048-2097151, default 2097151): +100M
Partition 1 of type Linux and of size 100 MiB is set

Command (m for help): _
```

Re-do the previous steps to create other partitions.

4. Your manager ask you to add two more regions for two other purpose with 10% capacity for each. Use the appropriate tool to satisfy that requirement.

Create new extended partition for hosting logical volume

```
Command (m for help): n
Partition type:
   p   primary (1 primary, 0 extended, 3 free)
   e   extended
Select (default p): e
Partition number (2-4, default 2): 4
First sector (206848-2097151, default 206848):
Using default value 206848
Last sector, +sectors or +size{K,M,G} (206848-2097151, default 2097151): +200M
Partition 4 of type Extended and of size 200 MiB is set
```

Create two logical volume as the the requirement.

```
Command (m for help): n
Partition type:
   p   primary (1 primary, 1 extended, 2 free)
   l   logical (numbered from 5)
Select (default p): l
Adding logical partition 5
First sector (208896-616447, default 208896):
Using default value 208896
Last sector, +sectors or +size{K,M,G} (208896-616447, default 616447): +100M
Partition 5 of type Linux and of size 100 MiB is set
```

5. Delete all of the partitions you created to prepare for the next step

Using d command to delete all the partitions one by one

```
Command (m for help): d
Partition number (1,4,5, default 5): 5
Partition 5 is deleted
```

Using gdisk

6. Now imagine that the new disk is more than 2TB and to utilize all the disk capacity you need to create partitions as GPT style. Using the appropriate tool to create partitions as the same layout with step 2.

   Re-do the steps as you did with fdisk on step 2

7. The manager ask you to add two more regions again, how you can satisfy that requirement? What is the difference between what you did on this step and on step 3?

   You can add two more primary partitions as you did on steps 6.

Using parted

8. The manager ask you to reduce the two regions created on step 6 to 5% of total capacity. Use the appropriate tool do that.

   $ sudo parted /dev/sdb

   Using the resizepart to resize the partitions

   Syntax:
   resizepart NUMBER END
   NUMBER: partition number
   END: you can put the size you want to resize to

```
(parted) p
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 1074MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start    End    Size   Type      File system  Flags
 1      1049kB  106MB  105MB  primary
 4      106MB   316MB  210MB  extended

(parted) resizepart 1 50MB
warning: Shrinking a partition can cause data loss, are you sure you want to continue?
Yes/No? yes
(parted) p
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 1074MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start    End     Size   Type      File system  Flags
 1      1049kB  50.0MB  49.0MB  primary
 4      106MB   316MB   210MB   extended

(parted) _
```

9. Using parted to create one more partition with 5% of total capacity in size.

10. Using parted to delete all the partitions you created.