**CSCI 340 Homework 9**

1. Device Information
   1. Program lsblk:

A screenshot of a computer screen

Description automatically generated

* Name – name of the device
* MAJ:MIN – the major number, which indicates the drivers used by the device, and the minor number which is used to identify between devices that share the same major number
* RM – indicates if the device is removable (1 if it is)
* SIZE – size of the device
* RO – indicates if the device is read only (1 if it is)
* Type – indicates if it is disk, partition, or rom
* MOUNTPOINT – indicates where the device is mounted
  1. Program lsusb:

A screenshot of a computer screen

Description automatically generated

* Bus – where the usb is attached
* Device – the number of the device attached to a specific hub
* ID – vendor ID: device ID
* Vendor and Device

1. Storage Nomenclature
   1. Host Bus Adapter (HBA)

A host bus adapter is a physical connection between the host and other devices, such as storage or network devices. It can be a separate thing or part of the motherboard. It can handle I/O processing as well. HBAs seem to refer to several types of adapters.

* 1. Serial ATA (SATA)

Serial ATAs attach HBAs to storage devices. SATA stands for Serial Advanced Technology Attachment. Serials ATA replaced Parallel ATA, which sent the data in parallel as opposed to a bit at a time like Serial ATA does. SATA has two data paths, one to receive and one to output, which is a plus over parallel. Less wires are needed for SATA as well.

* 1. Fiber Channel

Fiber Channel is used to transfer data between computers. It is also replacing SCSI and being used between host and memory devices. The data through fiber channel comes in order and no packets are lost.

* 1. iSCSI

Internet Small Computer Interface (iSCSI) is used for transporting data across networks and across different data devices. iSCSI works over LANs, WANs, and the internet. iSCSI used TCP to transport the data. The data is also able to be managed from a distance using iSCSI

* 1. Storage Area Network

Storage Area Network is a way to manage block-level storage. There are two types of SAN. The types are Fiber Channel and iSCSI. SANs are used across different servers and storage devices. Server vendors offer Server Area Network.

* 1. Network Attached Storage (NAS)

Network Attached Storage manages file-level storage in contrast to SAN which does not do file-based storage. Network Attached Storage looks different to the operating system than SAN does as well. NAS can be computer based, integrated, or ASIC chip based.