Your Name

Instructor Name

Course Number

Date

Assignment 1

1. What are Bits and Bytes? Why do we need/use Bytes?

Information on a computer system is described into different units, where a Bit is the smallest unit. Conceptually a bit is a single point of binary data translating computer information into on or off, yes or no, and in also up or down. A bit can either be 1 or 0. A byte is a memory unit which is equal to 8 bits (*Internal Computer Hardware — Introduction to Information and Communication Technology*). In other words, in order to decode a single character, we require 8 bits. Although a computer deals with the data and instructions in bits but we measure and describe it in bytes. It is because there is a possibility that bits come out of order during their transmission, which makes it more accurate and intuitive to determine the speed and storage in factors of bits.

1. Discuss the storage capacity in bytes, kilobytes, megabytes, gigabytes, terabytes, petabytes, exabytes, zettabytes, yottabytes.

Byte is actually a unit of data that contains eight single points of binary data (bits). Byte stores one character and is itself used to describe the storage capacity of the information. A kilobyte is equivalent to 1024 bytes and usually considered as the smallest unit of information (while describing the storage). The storage capacity of one megabyte is equivalent to 1,048,576 bytes and is often used to describe the size of large files. The storage capacity of a terabyte is equivalent to 1000 GB’s and can store the information approximately equal to 1 trillion Bytes. Petabyte is even bigger unit and has a storage capacity of 1000 TBs(Hoffman). An Exabyte has the capacity to store a massive amount of data and is equivalent to 1000 Petabyte. The storage capacity of the zettabyte is equivalent to 1021 or 1000 Exabytes. The yottabyte is arguably the greatest data unit and exists practically because the entire data in the world is made up of a few zettabytes.

1. What is your computer’s Primary Memory (RAM) and secondary Memory (Hard Drive/SSD)

RAM is a Random Access memory and is a volatile memory. The storage capacity of RAM is not as much as that of Hard Drives because it is used to store computer data, not personal data. It supports the functions of the Central Processing Unit. Primary Memory or Ram of my personal computer is 8 Gigabytes, which is equivalent to 8 \* 1, 073, 741, 824 bytes(*How The Computer Works: The CPU and Memory*). As far as Hard drives are concerned, their storage capacity is always greater than that of RAM. Hard drives are used to store a user's personal information, and one can add as many external hard drives as needed. The hard drive of my personal computer is 298~ 300 GB, which is way more than that of the memory of RAM.

1. How many books can you save into your secondary memory?

If we assume that the book contains 500,000 characters, and one character is equal to 8 bits= 1 Byte. So one book contains the capacity of 500 K Bytes (considering 250 pages of an average book and a space equal to one character). The total secondary memory of my computer is 298 GB. We have to determine how many books of 250 pages and 500 K Bytes can be stored in 298 GB. The calculation of the problem is as follows.

Number of books = 298 \* 109 / 5 \* 105 = 59.6 \* 104

That means 5.96 \* 105 books can be stored in the storage capacity of my computer’s hard drive. This shows that you can store a huge amount of data in your hard drive according to your requirements (*Understanding RAM Timings - Hardware Secrets*).

**Works Cited**

Hoffman, Chris. “Why You Can’t Use CPU Clock Speed to Compare Computer Performance.” *How-To Geek*, https://www.howtogeek.com/177790/why-you-cant-use-cpu-clock-speed-to-compare-computer-performance/. Accessed 10 Jan. 2020.

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