Unit 0 Study Notes

Computers & Computing

A _____ is a device that accepts _____ or _____ and processes it in some way to _____ produce a result.

Computing in the most general sense means _____.

Forms of _____ are keyboard presses, mouse clicks, taps on a touch screen.

Forms of _____ are what is on the screen, sounds, motion.

What are some other forms of the above?

According to the book, computer science is the study of _____.

An _____ is a set of rules that a computer must follow. It must be unambiguous, well ordered, produces a result, and halts in a finite amount of time. What does all this mean?

Programming is providing the computer with _____, in order to perform a particular task.

What are some different ways to 'program' a device?

Describe the computational process:

How Computers Work

The physical parts of the computer are called _____, while the virtual, or the non-tactile, parts are called _____. We can get smaller and smaller until we get to the _____ which in turn give us the language of the computer, _____.

Some types of hardware include monitor, _____, CPU, which stands for _____, HDD.

The _____ manages interaction between the user and the other software and the hardware of the computer.

HDD is different from SDD, in that the _____ has moving parts, where the _____ does not.

Binary & ASCII

The binary number system uses only _____ digits: _____ & _____.

DECIMAL	BINARY
0	
1	
2	
3	
4	
5	
6	
7	
8	
	1111

The word **bit** is short for _____ _____.

With 8 bits, we can count as high as _____ and have _____ different values.

Binary is base _____.

ASCII is a character _____ standard which gives characters unique number to identify them.

Originally ASCII used only _____ bits but was expanded to use _____ bits allowing for _____ total possible characters.

With ASCII there are a lot of characters like the Asian languages and mathematical symbols which cannot be represented. Because of this, _____ was developed which allows for more than 1 million possible characters.

If we subtract the decimal representation of 'A' and 'a', what do we end up with? Is this the same thing for all uppercase and lowercase numbers? Why do you think this may be important?

What types of problems would we have if we didn't use ASCII, or other such standards?

Logic & Processors

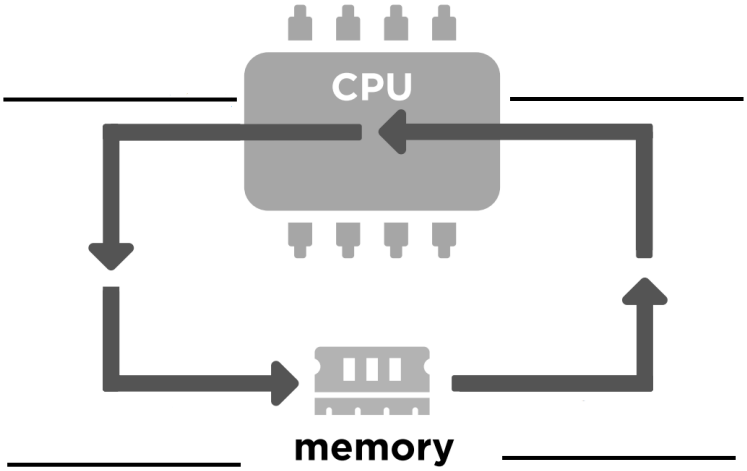
Computers use _____ to represent the 0's and 1's. These are made of _____ and act as switches for electric current.

With these, we can create Boolean Gates:

A	B			
true	**true**			
true	**false**			
false	**true**			
false	**false**			

Processors, or _____, are the brains of the computer. The processor is made up of billions of microscopic _____ that handle the instructions of the 0's and 1's. The tasks can be broken into 4 main steps: _____, _____, _____, & _____.

Label these steps on the diagram below.



The _____ connects all of a computer's internal hardware components. Phones and other smaller devices have something called _____. This is the entire system, CPU, GPU, memory, and other parts, on one single chip.

Memory (And Bits & Bytes)

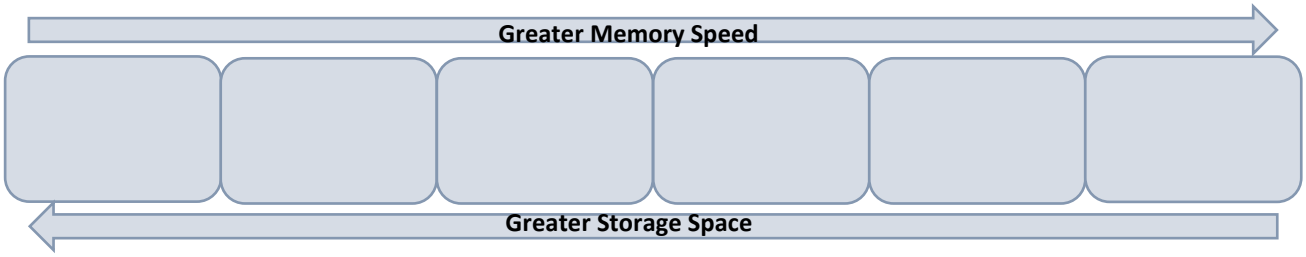
A byte is _____ bits. 1 megabyte (MB) is approximately _____ minute(s) of MP3 music, while 1 gigabyte (GB) is approximately _____ minutes of an HD movie.

There are many types of memory in your computer… the most common type, when we say memory, is _____, which is volatile. Volatile means that what happens when the power is turned off to the memory?

In contrast to volatile memory, we have non-volatile, which does what when the power is turned off?

Modern processors can store _____ bits of data at any given time.

As the size of our memory increases, speed _____. To demonstrate this, fill in the diagram below.



Algorithms

What are the key characteristics of an algorithm?