Abstraction is the capturing of essential characteristics while disregarding nonessential characteristics, or the process of generalizing from specific instances.

Analysis is finding out whether the abstractions that were chosen were correct and correctly implemented using validation and verification.

Automation is the use of a computer as a labor saving device that replicates tasks quickly and efficiently.

Base 2 is a Representation numeric values using only the digits 0 and 1

Computer components: Most computers have several components in common. On the inside, they have a Central Processing Unit, and two kinds of memory. The Central processing unit is the part that follows the computer program's instructions. On the outside computers have input and output devices. Input devices include keyboards, track pads, and mice. Output devices include monitors, speakers, etc.

Computer Memory: Computers have memory or locations or real estate to hold data. This data includes the computer programs you write. Main memory is for intermediate calculations and for holding the computer program you are currently running. Main memory is often called RAM for Random access memory. Auxiliary memory, such as thumb drives, disk drives, DVDs, a secondary memory used to store things when they are not actively in use.

CPU (Central Processing Unit): is the hardware within a computer that carries out the instructions of a computer program by performing the basic arithmetical, logical, and input/output operations of the system.

Decomposition is breaking down a large program, process, or system into smaller functional components.

Digital data: Data of various kinds are encoded into bits and bytes. The digital data on your computer includes pictures, movies, music, documents, spreadsheets, slide shows, etc. Each type of data file might be encoded in a different way. File name extensions like .doc or .html or .nlogo tell us what file type and encoding scheme was used for the data in that file.

Hard Disk: Memory that holds all your files, applications

Model Verification is the process of confirming the model is correctly implemented: 1) Are the assumptions reasonable with respect to the question the model is attempting to answer? 2) Is the data used in the model accurate

enough? 3) Does the model do what the designers think it does (does it contain incorrect equations, mistaken logic, do goofy things with some data sets)?

Model Validation is the process of checking the accuracy of the model's representation of the real system. For example, if the model is of the traffic in a particular city, does the time the model shows for a car to travel from a particular location to a particular location at a particular time of day accurate? If a particular type of accident is added to a place along the route in both the model and in the real world, then does the model show a delay time that matches what is observed in the real world?

Mother board: The ***mother board*** is the heart of the computer, everything sits on it or is attached to it

Optical Drives: Uses a laser to write to CDs and DVDs.

Power Supply: Converts the power from a standard wall outlet to a form that the different components of the computer needs and supplies the converted power to those components.

Procedure: A named block of code that can be called by other procedures.

RAM (Random Access Memory) a form of computer data storage that is usually: 1) much smaller than the hard disk, 2) much faster than the hard disk, 3) much more expensive per byte than the hard disk and 3) volatile (forgets everything when the power is turned off). The reason it is called “random access” is because the order that data is accessed has no effect on the time it takes to access the data. Thus, it is okay to access the data in a random order. By contrast, with a tape drive, hard disk drive or DVD, data that is near the current location of the read head or laser is faster to read than data that is far away.

Units of Computer Memory: My computer's memory is 4 Gigabytes (GB), what does that mean? A byte is a quantity of memory. A bit is the most basic unit of memory. It is one digit that can hold either the value 0 or 1. A byte is composed of 8 bits in a row. The computer's main memory consists of real estate or bytes. In my case, 4 Gigabytes = 4,194,304 bytes or 33,554,432 bits. If you think of each location as a house and computer memory as a many rows and columns of houses, then I have a large city's worth. Continuing this metaphor, each house has an address. Each memory can be divided up into different sized chunks. For example, some representations of numbers can take up 8 bits (integers) while other representations of numbers can take up 24 bits (floating point).

Here are some other common units of memory:

A bit is a value of either a 1 or 0 (on or off).
A Nibble is 4 bits.
A Byte is 8 bits.
A Kilobyte is 1,024 bytes.
A Megabyte is 1,048,576 bytes or 1,024 Kilobytes
    873 pages of plaintext (1,200 characters)
    4 books (200 pages or 240,000 characters)
A Gigabyte is 1,073,741,824 (230) bytes or 1,024 Megabytes
    894,784 pages of plaintext (1,200 characters)
    4,473 books (200 pages or 240,000 characters)
    341 digital pictures (with 3MB average file size)
    256 MP3 audio files (with 4MB average file size)
    1 650MB CD
A Terabyte is 1,099,511,627,776 (240) bytes or 1,024 Gigabytes

Video Card: Connects to mother board and creates images that appear on your screen.