



Agent: In a computer model, an **agent** is a type of object. There are three types of agents in NetLogo: turtles, patches, and links.

Computer Science is the study of the principles and use of computers. Branches of Computer Science include theory, algorithms, programming languages and paradigms, software engineering, simulation, and applications.

Computational Thinking is the human thought process involved in formulating problems and their solutions so that the solutions can be represented in a form that can effectively be carried out by an information-processing agent. The key elements of computational thinking are abstraction, automation, and analysis.

Computer: A **computer** is an electronic device for storing and processing data, typically in binary format, according to instructions given to it in a computer program. The physical components that make up a computer system are called “hardware”.

Computer System: A **computer system** consists of hardware and software. Hardware is the set of physical components of the machine we call a computer. Software is the set of programs and codes which contain the computer instructions.

Computer Program: A computer program is a sequence of instructions that a computer “runs” or “executes”.

Computer Instructions are simple commands given to a computer in a computer language. Computer instructions are called “commands” in NetLogo.

Computer language: A **computer language** is defined by a set of instructions that can be used to communicate with a computer. NetLogo is a computer language.

Computer Programming is the act of designing and creating computer programs.



Computer Programming Environment: A *computer programming environment*

is a tool in which one develops computer programs. Modern computer programming environments are called IDEs or integrated development environments. NetLogo has its own integrated development environment that consists of a code window, a graphical display window, output windows, probes, and other windows and tools with which to support the act of programming.

Computer Model: A *computer model* is a representation of a real-world phenomenon that is built and developed on a computer. Computer simulation is the execution of a computer model.

Computer Modeling and Simulation is a branch of computer science in which computer scientists and others build and test computer models to enable the study, investigation and perhaps solution to real-world problems through repeated virtual trials of what-if scenarios.

Default value: A value that a computer program or computer language assigns to a variable or state when the programmer hasn't chosen a value.

Expression: In a computer program, an *expression* is the smallest unit of calculation. They represent or evaluate to a value.

Go procedure: In Netlogo, a procedure that runs the model is often called the "*Go procedure*".

GUI (Graphical User Interface): A type of user interface that allows users to interact with electronic devices or input data, instead of by typing commands.

Heading: In Netlogo, *heading* is the direction, given in degrees, that a turtle is facing in a model. The display "up" direction on the display is 0° . The "left" direction is 90°

Logic Error: A programming error that produces unintended or undesired output. Unlike with a syntax error, the program will still run. For instance, " $a + b/2$ " is a logic error for what was meant to be " $(a + b) / 2$ ": both statements will execute in the program, but the first gives the incorrect answer.



Program Execution: Before the program is run or “executed”, it is loaded into the computer’s working memory or RAM. All computer programs take in input and produce output. During execution each instruction contained in the program is carried out in order.

Program State: When a computer program is executing, at each slice of time, the executing program has a “state”, or a snapshot of all the information that is stored in memory at that instant in time. State typically includes a pointer to the instruction to be executed next and the values kept in different memory locations.

Reserved Word: A word that cannot be used as an identifier, such as a name of a variable or procedure, because it already has a built-in meaning in the programming language being used.

Setup procedure: In Netlogo, a procedure that creates and initializes the world.

Statements or Commands: In computer science, a statement or command is the smallest independent unit of code that causes the computer to perform an action.

Syntax: The rules of using a language are called its ***syntax***.

Syntax Error: In computer science, a ***syntax error*** is an error in the sequence of characters that makes an invalid statement in the language. For example, in Netlogo, “ask turtle” is a syntax error and will cause the program not to run. The correct syntax is: “ask turtles”. In Netlogo, syntax errors are checked for by clicking the “check” icon at the top of the code tab.

Turtle: In computer science, a ***turtle*** is a type of agent in an agent-based model.

Turtle attributes (also called turtle states): Each turtle has attributes or states that are specific to it. Some examples are shape, x-coordinate, y-coordinate, color, heading, etc.

Turtle graphics is a name for a set of simple graphics commands often used when first learning how to write a computer program in a Logo-based language.