

# Utah K-5 Computer Science Standards

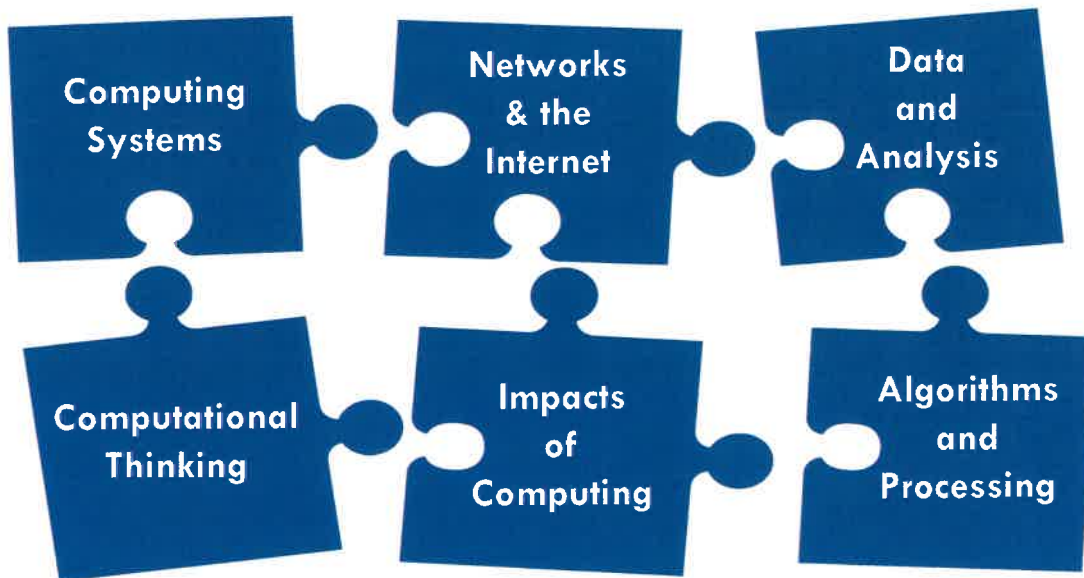
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## Strand Language<sup>4</sup>:

### Core Concepts



### Computing Systems (CS):

People interact with a wide variety of computing devices that collect, store, analyze, and act upon information in ways that can affect human capabilities, both positively and negatively. The physical components (hardware) and instructions (software) that make up a computing system communicate and process information in digital form. An understanding of hardware and software is useful when troubleshooting a computing system that does not work as intended.

### Network and the Internet (NI):

Computing devices typically do not operate in isolation. Networks connect computing devices to share information and resources and are an increasingly integral part of computing. Networks and communication systems provide greater connectivity in the computing world by providing fast, secure communication and facilitating innovation.

<sup>4</sup> K-12 Computer Science Framework. (October 2016) Retrieved from:  
<https://k12cs.org/wpcontent/uploads/2016/09/K%E2%80%9312-Computer-Science-Framework.pdf>

### Data and Analysis (DA):

Computing systems exist to process data. The amount of digital data generated in the world is rapidly expanding, and the need to process data effectively is increasingly important. Data is collected and stored so it can be analyzed to better understand the world and make more accurate predictions.

### Algorithms and Programming (AP):

An algorithm is a sequence of steps designed to accomplish a specific task. Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems. The development process to create meaningful and efficient programs involves choosing which information to use and how to process and store it, breaking apart large problems into smaller ones, recombining existing solutions, and analyzing different solutions.

### Impacts of Computing (IC):

Computing affects many aspects of the world in both positive and negative ways at local, national, and global levels. Individuals and communities influence computing through their behaviors and cultural and social interactions, and in turn, computing influences new cultural practices. An informed and responsible person should understand the social implications of the digital world, including equity and access to computing.

### Computational Thinking (CT):

Computational thinking (CT) is a problem-solving process that includes several characteristics, such as logically ordering and analyzing data and creating solutions using a series of ordered steps (or algorithms), and dispositions, such as the ability to confidently deal with complexity and open-ended problems. CT is essential to the development of computer applications, but it can also be used to support problem-solving across all disciplines, including math, science, and the humanities. Students who learn CT across the curriculum can begin to see a relationship between subjects as well as between school and life outside of the classroom<sup>5</sup>.

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<sup>5</sup> Exploring Computer Science - Google Resources. Retrieved from:  
<https://edu.google.com/resources/programs/exploring-computational-thinking/>