

**DISCOVERING COMPUTER SCIENCE**  
**South Carolina Computer Science High School Content Standards**  
**As aligned to:**  
**South Carolina Computer Science High School Process and Content Standards**

The South Carolina Computer Science and Digital Literacy Process Standards should be integrated into every grade level within the South Carolina Computer Science and Digital Literacy Content Standards. Because the Process Standards drive the pedagogical component of teaching and serve as the means by which students should demonstrate understanding of the content standards, the process standards must be incorporated as an integral part of overall student expectations when assessing content understanding.

A computer science literate student can:

1. Foster an inclusive computing culture.
  - a. Recognize that equitable access to computing benefits society as a whole.
  - b. Consider others' perspectives as well as one's own perspective when developing computational solutions.
  - c. Consider the needs of a variety of end users regarding accessibility and usability.
2. Collaborate around computing.
  - a. Select appropriate technological tools that can be used to collaborate on a project.
  - b. Collaborate productively with individuals of varying perspectives, skills, and backgrounds.
  - c. Set and implement equitable expectations and workloads when working in teams.
  - d. Integrate constructive feedback while working in teams.
3. Recognize, define, and analyze computational problems.
  - a. Recognize when it is appropriate to solve a problem computationally.
  - b. Make sense of computational problems and persevere in solving them.
  - c. Relate computational problems to prior knowledge.
  - d. Recognize that there may be multiple approaches to solving a problem.
  - e. Approach problem solving iteratively, using a cyclical process.
4. Create, test, and refine computational artifacts.
  - a. Consider the purpose of computational artifacts for practical use, personal expression, and/or societal impact.
  - b. Recognize when to use the same solution for multiple problems.
  - c. Test computational artifacts systematically by considering multiple scenarios and using test cases.
  - d. Approach troubleshooting systematically.
  - e. Consider performance, reliability, usability, and accessibility when evaluating and refining computational artifacts.

5. Communicate about computing.
  - a. Select and use appropriate technological tools to convey solutions to computing problems.
  - b. Communicate about computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.
  - c. Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution

## **South Carolina Computer Science High School Content Standards**

### **Computing Systems**

**Standard 1:** Examine how hardware and software contribute to computing devices solving relevant problems.

HS1.CS.1.1

Analyze the impact that computing devices have in real-world settings (e.g., traffic lights, medical devices, facial recognition).

HS1.CS.1.2

Compare and contrast the elements of a computing system by examining hardware elements for their intended use (e.g., input-output (I/O) devices, random access memory (RAM), read only memory (ROM), storage devices, motherboards, and processors including the arithmetic logic unit (ALU), control unit, registers, cache memory, example implementations of some of these components using logic gates) (Virginia, 2017).

### **Networks and the Internet**

**Standard 2:** Evaluate cybersecurity threats and appropriate security measures across networks.

HS1.NI.2.1

Reflect on case studies or current events in which governments or organizations experienced data leaks or data loss as a result of cybersecurity attacks (CSTA, 2017).

### **Data and Analysis**

**Standard 1:** Evaluate various data collection methods, data storage tools, data analysis tools, data representation tools, and bit representation.

HS1.DA.1.2

Describe the various data storage tools and data organization methods.

**Standard 3:** Create various ways to visually represent data.

HS1.DA.3.1

Identify a data set that could be used to solve a real-world problem.

March, 2019

## **Algorithms and Programming**

**Standard 1:** Design algorithms that can be adapted to express an idea or solve a problem.

HS1.AP.1.1

Create flowcharts and/or pseudocode to express a problem or idea as an algorithm.

**Standard 2:** Build a combination of control structures that supports complex execution, readability, and program performance.

HS1.AP.2.1

Trace the flow of execution of a program that uses a combination of control structures (e.g., conditionals, loops, event handlers, recursion).

HS1.AP.2.2

Trace the flow of execution of a program that uses a variety of programming constructs (e.g., procedures, modules, objects).

**Standard 3:** Divide a task into sets of functional units that can be reused to compose a complex solution.

HS1.AP.3.1

Decompose tasks into smaller, reusable parts to facilitate the design, implementation, and review of programs.

**Standard 4:** Plan, build, test, refine, and document programs using text-based coding languages to solve problems with varying degrees of difficulty.

HS1.AP.4.1

Plan and develop programs for a variety of audiences using a process that incorporates development, feedback, and revision.

HS1.AP.4.2

Seek and incorporate feedback to refine a solution (e.g., users, team members, code review, teachers).

**Standard 5:** Choose data types and data structures based on functionality, storage, and performance tradeoffs.

HS1.AP.5.1

Justify and use appropriate data types (i.e., primitive and non-primitive) in simple programs.

## **Impact of Computing**

**Standard 1:** Evaluate the impact of computing from a global perspective.

HS1.IC.1.1

Research computing solutions to problems in different countries, considering the personal, ethical, social, economic, and cultural impact (e.g., the use of drones to deliver blood and medical supplies in countries in Africa, the use of Uber in India to address traffic congestion).

March, 2019

HS1.IC.1.2

Research traditional and non-traditional computer science careers.

**Standard 2:** Evaluate the evolving legal and ethical tradeoffs that shape computing practices.

HS1.IC.2.1

Select the most appropriate means of communication for given situations (e.g., personal versus professional communication, communication with teachers and employers).

HS1.IC.2.3

Explain the implications of proper and improper use of social media (e.g., college admissions, employment, cyberbullying laws).

**Standard 3:** Understand the importance of access and equity in computing.

HS1.IC.3.1

Identify factors (e.g., net neutrality, government regulations, infrastructure, funding) that impact equitable access to computing resources for underrepresented groups (e.g., race, ethnicity, gender, geographic location, socioeconomic status).

HS1.IC 3.3

Identify the advantages and disadvantages of diverse perspectives and backgrounds when solving computational problems.