Oklahoma Academic Standards for Computer Science {Level 1 Final Public Draft}

Concept	Subconcept	By the end of 10th Grade
Computing Systems	Devices	L1.CS.D.01 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.
	Hardware & Software	L1.CS.HS.01 Explain the interactions between application software, system software, and hardware.
	Troubleshooting	L1.CS.T.01 Develop and apply criteria for systematic discovery of errors and systematic strategies for correction of errors in computing systems.
Networks & The Internet	Network Communication & Organization	L1.NI.NCO.01 Evaluate the scalability and reliability of networks by identifying and illustrating the basic components of computer networks (e.g., routers, switches, servers, etc.) and network protocols (e.g., IP, DNS, etc.).
	Cybersecurity	L1.NI.C.01 Compare physical and cybersecurity measures by evaluating trade-offs between the usability and security of a computing system.
		L1.NI.C.02 Illustrate how sensitive data can be affected by attacks.
		L1.NI.C.03 Recommend security measures to address various scenarios based on information security principles.
		L1.NI.C.04 Explain tradeoffs when selecting and implementing cybersecurity recommendations from multiple perspectives such as the user, enterprise, and government.
Data Analysis	Storage	L1.DA.S.01 Translate and compare different bit representations of data types, such as characters, numbers, and images.
		L1.DA.S.02 Evaluate the trade-offs in how data is organized and stored digitally.
	Collection, Visualization, & Transformation	L1.DA.CVT.01 Use tools and techniques to locate, collect, and create visualizations of small- and large-scale data sets (e.g., paper surveys and online data sets).
	Inference & Models	L1.DA.IM.01 Show the relationships between collected data elements using computational models.
Algorithms & Programming	Algorithms	L1.AP.A.01 Create a prototype that uses algorithms (e.g., searching, sorting, finding shortest distance) to provide a possible solution for a real-world problem.
	Variables	L1.AP.V.01 Demonstrate the use of lists (e.g., arrays) to simplify solutions, generalizing computational problems instead of repeatedly using primitive variables.
	Control	L1.AP.C.01 Justify the selection of specific control structures (e.g., sequence, conditionals, repetition, procedures) considering program efficiencies such as readability, performance, and memory usage.
	Modularity	L1.AP.M.01 Break down a solution into procedures using systematic analysis and design.
		L1.AP.M.02 Create computational artifacts by systematically organizing, manipulating and/or processing data.
		L1.AP.PD.01 Create software by analyzing a problem and/or process, developing and documenting a solution, testing outcomes, and adapting the program for a variety of users.

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	Program Development	L1.AP.PD.02 Define and classify a variety of software licensing schemes (e.g., open source, freeware, commercial) and discuss the advantages and disadvantages of each scheme in software development.
		L1.AP.PD.03 While working in a team, develop, test, and refine event-based programs that solve practical problems or allow self expression.
		L1.AP.PD.04 Using visual aids and documentation, illustrate the design elements and data flow (e.g. flowcharts, pseudocode, etc.) of the development of a complex program.
		L1.AP.PD.05 Evaluate and refine computational artifacts to make them more user-friendly, efficient and/or accessible.
Impacts of Computing	Culture	L1.IC.C.01 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.
		L1.IC.C.02 Test and refine computational artifacts to reduce bias and equity deficits.
		L1.IC.C.03 Demonstrate how a given algorithm applies to problems across disciplines.
	Social Interactions	L1.IC.SI.01 Demonstrate how computing increases connectivity among people of various cultures.
	Safety, Law, & Ethics	L1.IC.SLE.01 Explain the beneficial and harmful effects that intellectual property laws can have on innovation.
		L1.IC.SLE.02 Explain the privacy concerns related to the large-scale collection and analysis of information about individuals (e.g., how businesses, social media, and the government collects and uses data) that may not be evident to users.
		L1.IC.SLE.03 Evaluate the social and economic consequences of how law and ethics interact with digital aspects of privacy, data, property, information, and identity.