Oklahoma Computer Science

Eleventh and Twelfth Grades: Level 2 (L2)

Computing Systems L2.CS

D. Devices L2.CS.D

1 Students will continue to apply the standards and practices from the previous grade levels. L2.CS.D.01

HS. Hardware & Software L2.CS.HS

1 Identify and categorize the roles of a variety of operating system software. L2.CS.HS.01

T. Troubleshooting L2.CS.T

Networks & The Internet L2.NI

NCO. Network Communication & Organization L2.NI.NCO

1 Describe the issues that impact network functionality (e.g., bandwidth, load, latency, topology). L2.NI.NCO.01

CY. Cybersecurity L2.NI.CY

1 Compare and refine ways in which software developers protect devices and information from unauthorized access. L2.NI.CY.01

Illustrate how understanding the ways hardware components facilitate logic, input, output, and storage in computing systems will support troubleshooting. L2.CS.T.01

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Data Analysis L2.DA

S. Storage L2.DA.S

1 Students will continue to apply the standards and practices from the previous grade levels. L2.DA.S.01

CVT. Collection, Visualization, & Transformation L2.DA.CVT

1 Use data analysis tools and techniques to identify patterns from complex real-world data. L2.DA.CVT.01

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2 Generate data sets that use a variety of data collection tools and analysis techniques to support a claim and/or communicate information. L2.DA.CVT.02

IM. Inference & Models L2.DA.IM

1 Use models and simulations to help plan, conduct, and refine investigations. L2.DA.IM.01

A. Algorithms L2.DA.A

1 Model and use appropriate terminology to describe how artificial intelligence algorithms drive many software and physical systems (e.g., autonomous robots, pattern recognition, text analysis). L2.DA.A.01

2 Develop an artificial intelligence algorithm to play a game against a human opponent or solve a real-world problem. L2.DA.A.02

3 Critically examine and trace classic algorithms (e.g., selection sort, insertion sort, binary search, linear search). L2.DA.A.03

4 Evaluate algorithms (e.g., sorting, searching) in terms of their efficiency and clarity. L2.DA.A.04

Algorithms & Programming L2.AP

V. Variables L2.AP.V

1 Compare and contrast data structures and their uses (e.g., lists, stacks, queues). L2.AP.V.01

C. Control L2.AP.C

1 Model the execution of repetition (e.g., loops, recursion) of an algorithm illustrating output and changes in values of named variables. L2.AP.C.01

M. Modularity L2.AP.M

1 Construct solutions to problems using student-created components (e.g., procedures, modules, objects). L2.AP.M.01

2 Design or redesign a solution to a large-scale computational problem by identifying generalizable patterns. L2.AP.M.02

3 Create programming solutions by reusing existing code (e.g., libraries, Application Programming Interface (APIs), code repositories). L2.AP.M.03

PD. Program Development L2.AP.PD

1 Create software that will provide solutions to a variety of users using multiple software development processes. L2.AP.PD.01

2 Design software in a project team environment using integrated development environments (IDEs), versioning systems, and collaboration systems. L2.AP.PD.02

3 Develop programs for multiple computing platforms. L2.AP.PD.03

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4 Systematically examine code for correctness, usability, readability, efficiency, portability, and scalability through peer review. L2.AP.PD.04

5 Develop and use a series of test cases to verify that a program performs according to its design specifications. L2.AP.PD.05

6 Explain security issues that might lead to compromised computer programs. L2.AP.PD.06

7 Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality). L2.AP.PD.07

Impacts of Computing L2.IC

CU. Culture L2.IC.CU

1 Evaluate the beneficial and harmful effects that computational artifacts and innovations have on society. L2.IC.CU.01

2 Evaluate the impact of location and user audience on the distribution of computing resources in a global society. L2.IC.CU.02

3 Design and implement a study that evaluates or predicts how creating, testing, and refining computational artifacts has revolutionized an aspect of our culture and how it might evolve (e.g., education, healthcare, art/entertainment, energy). L2.IC.CU.03

SI. Social Interactions L2.IC.SI

1 Students will continue to apply the standards and practices from the previous grade levels. L2.IC.SI.01

SLE. Internet Safety, Law, & Ethics L2.IC.SLE

1 Debate laws and regulations that impact the development and use of software. L2.IC.SLE.01