Kansas Computer Science

Grades 9-12 L1

Computing Systems CS

D. Devices D

1 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. L1.CS.D.01

HS. Hardware and Software HS

1 Compare levels of abstraction and interactions between application software, system software, and hardware layers. L1.CS.HS.01

2 Compare computer systems and determine advantages and drawbacks of each system. L1.CS.HS.02

IO. Input and Output IO

1 Demonstrate efficient use of input and output devices. L1.CS.IO.01

T. Troubleshooting T

1 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. L1.CS.T.01

Networks & the Internet NI

NCO. Network Communication & Organization NCO

1 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing. L1.NI.NCO.01

2 Compare various security measures, considering tradeoffs between the usability and security of a computing system. L1.NI.NCO.02

C. Cybersecurity C

1 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. L1.NI.C.01

2 Explain tradeoffs when selecting and implementing cybersecurity recommendations. L1.NI.C.02

Data Analysis DA

S. Storage S

1 Analyze storage types and locations. L1.DA.S.01

2 Evaluate the tradeoffs in how data elements are organized and where data is stored. L1.DA.S.02

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C. Collection C

1 Collect and analyze data. L1.DA.C.01

CVT. Visualization & Transformation CVT

1 Create interactive data visualizations using software tools to help others better understand real-world phenomena. L1.DA.CVT.01

IM. Inference and Models IM

1 Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. L1.DA.IM.01

Algorithms and Programming AP

A. Algorithms A

1 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests. L1.AP.A.01

V. Variables V

1 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables. L1.AP.V.01

C. Control C

1 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made. L1.AP.C.01

2 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions. L1.AP.C.02

3 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. L1.AP.C.03

M. Modularity M

1 Create computational artifacts by systematically organizing, manipulating and/or processing data. L1.AP.M.03

2 Systematically design and develop programs for broad audiences by incorporating feedback from users. L1.AP.M.02

PD. Program Development PD

1 Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries. L1.AP.PD.01

2 Evaluate and refine computational artifacts to make them more usable and accessible. L1.AP.PD.02

3 Design and develop computational artifacts working in team roles using collaborative tools. L1.AP.PD.03

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4 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs. L1.AP.PD.04

Impacts of Computing IC

C. Culture C

1. Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. L1.IC.C.01
2. Test and refine computational artifacts to reduce bias and equity deficits. L1.IC.C.02
3. Demonstrate how a given algorithm applies to problems across disciplines. L1.IC.C.03

SI. Social Interactions SI

1. Compare and contrast the benefits and drawbacks of social media. L1.IC.SI.01

H. History H

1. Hypothesize the impact of the innovations of computing systems for the next decade. L1.IC.H.01

SLE. Safety, Law, & Ethics SLE

1. Explain the beneficial and harmful effects that intellectual property laws can have on innovation. L1.IC.SLE.01
2. Explain the privacy concerns related to the collection and generation of data through automated processes (e.g., how businesses, social media, and the government collects and uses data) that may not be evident to users. L1.IC.SLE.02
3. Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. L1.IC.SLE.03

CP. Community Partnerships CP

1. Explore computing, software, and data storage systems in local industries. L1.IC.CP.01