Arizona Computer Science

# High School

## Concept: Computing Systems (CS) HS.CS

### D. Subconcept: Devices (D) HS.CS.D

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

### HS. Subconcept: Hardware and Software (HS) HS.CS.HS

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

### T. Subconcept: Troubleshooting (T) HS.CS.T

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

## Concept: Networks and the Internet (NI) HS.NI

### C. Subconcept: Cybersecurity (C) HS.NI.C

1 Describe how sensitive data can be affected by malware and other attacks. HS.NI.C.1

2 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. HS.NI.C.2

3 Compare various security measures, considering tradeoffs between the usability and security of a computing system. HS.NI.C.3

### NCO. Subconcept: Network, Communication, and Organization (NCO) HS.NI.NCO

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

## Concept: Data and Analysis (DA) HS.DA

### CVT. Subconcept: Collection, Visualization and Transformation (CVT) HS.DA.CVT

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

### S. Subconcept: Storage (S) HS.DA.S

1 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. HS.DA.S.1

2 Evaluate the tradeoffs in how and where data is stored. HS.DA.S.2

**IM. Subconcept: Inference and Models (IM)** HS.DA.IM

1 Analyze computational models to better understand real-world phenomena. HS.DA.IM.1

**Concept: Algorithms and Programming (AP)** HS.AP

**A. Subconcept: Algorithms (A)** HS.AP.A

1 Create prototypes that use algorithms for practical intent, personal expression, or to address a societal issue HS.AP.A.1

**V. Subconcept: Variables (V)** HS.AP.V

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

**C. Subconcept: Control (C)** HS.AP.C

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

2 Use events that initiate instructions to design and iteratively develop computational artifacts HS.AP.C.2

**M. Subconcept: Modularity (M)** HS.AP.M

1 Decompose problems into smaller components using constructs such as procedures, modules, and/or objects. HS.AP.M.1

2 Use procedures within a program, combinations of data and procedures, or independent but interrelated programs to design and iteratively develop computational artifacts. HS.AP.M.2

**PD. Subconcept: Program Development (PD)** HS.AP.PD

1 Evaluate and refine computational artifacts to make them more usable and accessible. HS.AP.PD.1

2 Use team roles and collaborative tools to design and iteratively develop computational artifacts. HS.AP.PD.2

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

**Concept: Impacts of Computing (IC)** HS.IC

**C. Subconcept: Culture (C)** HS.IC.C

1 Evaluate the ways access to computing impacts personal, ethical, social, economic, and cultural practices. HS.IC.C.1

2 Test and refine computational artifacts to reduce bias and equity deficits. HS.IC.C.2

3 Demonstrate ways a given algorithm applies to problems across disciplines. HS.IC.C.3

### SI. Subconcept: Social Interactions (SI) HS.IC.SI

1. Analyze the impact of collaborative tools and methods that increase social connectivity. HS.IC.SI.1

### SLE. Subconcept: Safety, Law, and Ethics (SLE) HS.IC.SLE

1. Explain the beneficial and harmful effects that intellectual property laws can have on innovation. HS.IC.SLE.1
2. Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. HS.IC.SLE.2
3. Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. HS.IC.SLE.3