Arizona Computer Science

Grade 8

Concept: Computing Systems (CS) 8.CS

D. Subconcept: Devices (D) 8.CS.D

1 Improve the design of computing devices based on an analysis of how users interact them, and consider unintended consequences. 8.CS.D.1

HS. Subconcept: Hardware and Software (HS) 8.CS.HS

1 Design and evaluate projects that combine hardware and software components to collect and exchange data. 8.CS.HS.1

T. Subconcept: Troubleshooting (T) 8.CS.T

1 Systematically identify and develop strategies to fix problems with computing devices and their components. 8.CS.T.

Concept: Networks and the Internet (NI) 8.NI

C. Subconcept: Cybersecurity (C) 8.NI.C

1 Apply multiple methods of encryption to model the secure transmission of information. 8.NI.C.1

2 Evaluate how various physical and digital security measures protect electronic information and how a lack of such measures could lead to vulnerabilities. 8.NI.C.2

NCO. Subconcept: Network, Communication, and Organization (NCO) 8.NI.NCO

1 Develop models to illustrate the role of protocols in transmitting data across networks and the Internet. 8.NI.NCO.1

Concept: Data and Analysis (DA) 8.DA

CVT. Subconcept: Collection, Visualization and Transformation (CVT) 8.DA.CVT

1 Collect data using computational tools and transform the data to make it more meaningful and useful. 8.DA.CVT.1

S. Subconcept: Storage (S) 8.DA.S

1 Represent data using multiple encoding schemes including binary and ASCII. 8.DA.S.1

IM. Subconcept: Inference and Models (IM) 8.DA.IM

1 Design computational models and evaluate them based on the reliability and validity of the data they generate. 8.DA.IM.1

Concept: Algorithms and Programming (AP) 8.AP

A. Subconcept: Algorithms (A) 8.AP.A

1 Develop planning strategies, such as flowcharts or pseudocode, to develop algorithms to address complex problems. 8.AP.A.1

V. Subconcept: Variables (V) 8.AP.V

1 Create named variables that represent different data types and perform operations on their values 8.AP.V.1

C. Subconcept: Control (C) 8.AP.C

1 Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. 8.AP.C.1

M. Subconcept: Modularity (M) 8.AP.M

1 Decompose problems into parts to facilitate the design, implementation, and review of programs. 8.AP.M.1

2 Create procedures with parameters to organize code and make it easier to reuse. 8.AP.M.2

PD. Subconcept: Program Development (PD) 8.AP.PD

1 Seek and incorporate feedback from team members and users to refine a solution that meets user needs. 8.AP.PD.1

2 Incorporate existing code, media, and libraries into original programs, and give attribution. 8.AP.PD.2

3 Systematically test and refine programs using a range of possible inputs. 8.AP.PD.3

4 Distribute and execute tasks while maintaining a project timeline when collaboratively developing computational artifacts. 8.AP.PD.4

5 Document programs to make them easier to follow, test, and debug. 8.AP.PD.5

Concept: Impacts of Computing (IC) 8.IC

C. Subconcept: Culture (C) 8.IC.C

1 Compare and contrast tradeoffs associated with computing technologies that affect people's everyday activities and career options. 8.IC.C 1

2 Develop a solution to address an issue of bias or accessibility in the design of existing technologies. 8.IC.C 2

SI. Subconcept: Social Interactions (SI) 8.IC.SI

1 Collaborate with contributors by using digital technologies when creating a computational product. 8.IC.SI.1

SLE. Subconcept: Safety, Law, and Ethics (SLE) 8.IC.SLE

1 Evaluate the benefits and risks associated with sharing information digitally. 8.IC.SLE.1