Arizona Computer Science

Grade 7

Concept: Computing Systems (CS) 7.CS

D. Subconcept: Devices (D) 7.CS.D

1 Identify some advantages, disadvantages, and consequences with the design of computer devices based on an analysis of how users interact with devices 7.CS.D.1

HS. Subconcept: Hardware and Software (HS) 7.CS.HS

1 Design projects that combine hardware and software to collect and exchange data. 7.CS.HS.1

T. Subconcept: Troubleshooting (T) 7.CS.T

1 Evaluate strategies to fix problems with computing devices and their components within a system. 7.CS.T.1

Concept: Networks and the Internet (NI) 7.NI

C. Subconcept: Cybersecurity (C) 7.NI.C

1 Evaluate multiple methods of encryption for the secure transmission of information. 7.NI.C.1

2 Explain how physical and digital security measures protect electronic information. 7.NI.C.2

NCO. Subconcept: Network, Communication, and Organization (NCO) 7.NI.NCO

1 Compare and contrast models to understand the many protocols used for data transmission. 7.NI.NCO.1

Concept: Data and Analysis (DA) 7.DA

CVT. Subconcept: Collection, Visualization and Transformation (CVT) 7.DA.CVT

1 Collect and analyze data using computational tools to create models that are meaningful and useful. 7.DA.CVT.1

S. Subconcept: Storage (S) 7.DA.S

1 Use multiple encoding schemes to represent data, including binary and ASCII. 7.DA.S.1

IM. Subconcept: Inference and Models (IM) 7.DA.IM

1 Use computational models and determine the reliability and validity of data they generate. 7.DA.IM.1

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Concept: Algorithms and Programming (AP) 7.AP

A. Subconcept: Algorithms (A) 7.AP.A

1 Use planning strategies, such as flowcharts or pseudocode, to develop algorithms to address complex problems. 7.AP.A.1

V. Subconcept: Variables (V) 7.AP.V

1 Compare and contrast variables that represent different data types and perform operations on their values. 7.AP.V.1

C. Subconcept: Control (C) 7.AP.C

1 Design and develop programs that combine control structures, including nested loops and compound conditionals. 7.AP.C.1

M. Subconcept: Modularity (M) 7.AP.M

1 Decompose problems into parts to facilitate the design, implementation, and review of programs. 7.AP.M.1

2 Use procedures with parameters to organize code and make it easier to reuse. 7.AP.M.2

PD. Subconcept: Program Development (PD) 7.AP.PD

1 Seek and incorporate feedback from team members and users to refine a solution that meets user needs. 7.AP.PD.1

2 Incorporate existing code and media into programs, and give attribution. 7.AP.PD.2

3 Systematically test and refine programs using a range of possible inputs. 7.AP.PD.3

4 Distribute and execute tasks while maintaining a project timeline when collaboratively developing computational artifacts. 7.AP.PD.4

5 Document programs to make them easier to follow, test, and debug. 7.AP.PD.5

Concept: Impacts of Computing (IC) 7.IC

C. Subconcept: Culture (C) 7.IC.C

1 Explain how some of the tradeoffs associated with computing technologies can affect people's everyday activities and career options. 7.IC.C.1

2 Discuss how bias and accessibility issues can impact the functionality of existing technologies. 7.IC.C.2

SI. Subconcept: Social Interactions (SI) 7.IC.SI

1 Describe the process for creating a computational product by collaborating with others using digital technologies. 7.IC.SI.1

SLE. Subconcept: Safety, Law, and Ethics (SLE) 7.IC.SLE

1 Identify the benefits and risks associated with sharing information digitally. 7.IC.SLE.1