Maryland Computer Science

Grade 7

Computing Systems CS

D. Devices D

1 Evaluate existing computing devices and make recommendations for improvements to design that consider usability through a variety of lenses (accessibility, ergonomics, learnability, security). 7.CS.D.01

HS. Hardware & Software HS

1 Select appropriate hardware and software components for a project considering what type of data will be collected, stored, retrieved, and exchanged. 7.CS.HS.01

T. Troubleshooting T

1 Identify and fix problems with computing devices and their interfaced components using a variety of strategies (e.g. lost data retrieval, hardware password recovery, file restoration, key logging). 7.CS.T.01

Networks and the Internet NI

NCO. Network Communication & Organization NCO

1 Explain and model the process to replace lost packets using a protocol for information transfer. 7.NI.NCO.01

C. Cybersecurity C

1 Explain how to protect electronic information using both physical (hard drive) and digital measures; explain existing cybersecurity concerns with the internet and the systems it uses. 7.NI.C.01

Data Analysis DA

S. Storage S

1 Represent data using multiple encoding schemes. 7.DA.S.01

CVT. Collection, Visualization & Transformation CVT

1 Collect data using computational tools and hardware (e.g., sensors) and transform the data to make it more useful and reliable. 7.DA.CVT.01

IM. Inference & Models IM

1 Verify a model's accuracy by comparing the results with observed data. 7.DA.IM.01

Algorithms and Programming AP

A. Algorithms A

1 Select and modify existing algorithms and pseudocode to solve complex problems. 7.AP.A.01

V. Variables V

1 Create clearly named variables that represent different types of data. 7.AP.V.01

C. Control C

1 Develop secure programs that utilize combinations of loops, compound conditionals, and the manipulation of variables representing different data types. 7.AP.C.01

M. Modularity M

1 Decompose problems and subproblems into parts to facilitate the secure design, implementation, and review of increasingly complex programs. 7.AP.M.01

2 Create and use a function in a program to repeat instructions in order to organize code and make it easier to reuse. 7.AP.M.0

PD. Program Development PD

1 Seek and incorporate feedback from team members and users to refine the solution to a problem. 7.AP.PD.01

2 Incorporate existing code, media and libraries into original programs of increasing complexity, from secure sources, and give appropriate attribution 7.AP.PD.02

3 Test and refine existing and original programs using user input and secure software development guidance. 7.AP.PD.03

4 Explain how effective communication between participants is required for successful collaboration when developing computational artifacts. 7.AP.PD.04

5 Document complex programs in order to make them easier to understand, test, and debug. 7.AP.PD.05

Impacts of Computing IC

C. Culture and Diversity C

1 Explain how computing impacts people's everyday activities, career options, and diversity in innovation in computing and non-computing fields. 7.IC.C.01

2 Explain issues of bias and accessibility that occur in the design of existing computing technologies and describe the role and responsibility of a designer in reducing bias. 7.IC.C.02

SI. Social Interactions SI

1 Individually and collaboratively use advanced tools to design and create online content (e.g., digital portfolio, multimedia, blog, webpage). 7.IC.SI.01

SLE. Safety, Law & Ethics SLE

1 Explain the connection between the longevity of data on the internet, personal online identity, and personal privacy. 7.IC.SLE.01