

# 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
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### 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
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### 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
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## 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
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### 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
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## Data Analysis DA

### S. Storage S

- 1 Represent data using multiple encoding schemes. 7.DA.S.01
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### 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
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### IM. Inference & Models IM

- 1 Verify a model's accuracy by comparing the results with observed data. 7.DA.IM.01
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## Algorithms and Programming AP

### A. Algorithms A

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

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

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**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