PLTW - Standards Alignment

Our programs are designed to empower students to thrive in an evolving world.
As a part of this process, we take standards alignment into account when developing and updating our curriculum. We define alignment as:

- Students complete a designated task(s) that demonstrates the outlined knowledge and/or skills of the specific standard or objective.
- Our multidisciplinary programs align to a variety of standards and provide districts and schools with the flexibility to tailor programs to meet their specific state or local requirements as needed.

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Computing Systems

3A-CS-01 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.

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3A-CS-02 Compare levels of abstraction and interactions between application software, system software, and hardware layers.

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3A-CS-03 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.

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Networks and the Internet

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3A-NI-05 Give examples to illustrate how sensitive data can be affected by malware and other attacks.

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3A-NI-06 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.

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Data and Analysis

3A-DA-09 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.

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3A-DA-10 Evaluate the trade-offs in how data elements are organized and where data is stored.

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3A-DA-11 Create interactive data visualizations using software tools to help others better understand real-world phenomena.

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3A-DA-12 Create computational models that represent the relationships among different elements of data collected from a phenomenon or process.

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Algorithms and Programming

3A-AP-13 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.

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3A-AP-14 Use lists to simplify solutions, generalizing computational problems instead of repeated use of simple variables.

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Computer Science Teachers Association K-12 Computer Science Standards (3A)

3A-AP-15 Justify the selection of specific control structures when trade-offs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made.

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3A-AP-16 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.

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3A-AP-17 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

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3A-AP-18 Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

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3A-AP-21 Evaluate and refine computational artifacts to make them more usable and accessible.

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3A-AP-22 Design and develop computational artifacts working in team roles using collaborative tools.

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Computer Science Teachers Association K-12 Computer Science Standards (3A)

3A-AP-23 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.

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Impacts of Computing

3A-IC-24 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.

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3A-IC-26 Demonstrate ways a given algorithm applies to problems across disciplines.

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3A-IC-28 Explain the beneficial and harmful effects that intellectual property laws can have on innovation.

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3A-IC-29 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users.

Unit 1:	☐ Lesson 1.1	☐ Lesson 1.2	☐ Lesson 1.3
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3A-IC-30 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.

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Computing Systems

3B-CS-02 Illustrate ways computing systems implement logic, input, and output through hardware components.

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Networks and the Internet

3B-NI-03 Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).

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Data and Analysis

3B-DA-05 Use data analysis tools and techniques to identify patterns in data representing complex systems.

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3B-DA-06 Select data collection tools and techniques to generate data sets that support a claim or communicate information.

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3B-DA-07 Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

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Algorithms and Programming

3B-AP-08 Describe how artificial intelligence drives many software and physical systems.

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3B-AP-10 Use and adapt classic algorithms to solve computational problems.

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3B-AP-11 Evaluate algorithms in terms of their efficiency, correctness, and clarity.

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3B-AP-14 Construct solutions to problems using student-created components, such as procedures, modules, and/or objects.

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3B-AP-15 Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.

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3B-AP-16 Demonstrate code reuse by creating programming solutions using libraries and APIs.

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Computer Science Teachers Association K-12 Computer Science Standards (3B)

3B-AP-17 Plan and develop programs for broad audiences using a software life cycle process.

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3B-AP-18 Explain security issues that might lead to compromised computer programs.

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3B-AP-20 Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project.

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3B-AP-21 Develop and use a series of test cases to verify that a program performs according to its design specifications.

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3B-AP-22 Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).

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3B-AP-23 Evaluate key qualities of a program through a process such as a code review.

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Computer Science Teachers Association K-12 Computer Science Standards (3B)

3B-AP-24 Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.

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Impacts of Computing

3B-IC-25 Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.

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3B-IC-26 Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.

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Unit 4:	☐ Lesson 4.1	☐ Lesson 4.2	☑ Lesson 4.3

3B-IC-27 Predict how computational innovations that have revolutionized aspects of our culture might evolve.

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Unit 3:	☐ Lesson 3.1	☐ Lesson 3.2	☐ Lesson 3.3
Unit 4:	☐ Lesson 4.1	☐ Lesson 4.2	☑ Lesson 4.3