

NOTICE OF INTENT
BOARD OF ELEMENTARY AND SECONDARY EDUCATION

Computer Science Content Standards
(LAC 28:CIV.101, 103, 301, 303, 501, 503, 701, 703, 705, 707, 709, 901, 903, 905, 907, 1101, 1103, and 1105; and
LAC 28:LXXV.101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, and 125)

In accordance with the provisions of R.S. 17:6(A)(10) and the Administrative Procedure Act (APA), R.S. 49:953(B)(1) et seq., the Board of Elementary and Secondary Education (BESE) proposes to adopt LAC 28:CIV in *Bulletin 104, Louisiana Computer Science Content Standards*. Over the past year, the Computer Science Content Standards Writing Steering Committee and Grade Band Work Groups worked to write the Louisiana Computer Science Content Standards. The aforementioned content standards replace LAC 28:LXXV in *Bulletin 104, Louisiana K-12 Educational Technology Standards*.

Title 28
EDUCATION

Part CIV. Bulletin 104—Louisiana Computer Science Content Standards

Chapter 1. General Provisions

§101. Introduction

A. The computer science content standards are organized into five core concepts based on the Louisiana Computer Science Framework (LSCF). Each concept is further subdivided into relevant subconcepts which serve as a way to organize essential knowledge or computing skills.

B. The complexity of the standards progresses from kindergarten through twelfth grade. Within each concept, the content standards define the content and skills that students should master by the end of the elementary, middle, and high school grade bands. A standard represents a goal or outcome of an educational program and is not meant to serve as an instructional curriculum or assessment task.

§103. Definitions

Abstraction—the process of reducing complexity by focusing on the most relevant details.

Algorithm—a step-by-step process to complete a task.

Code—any set of instructions expressed in a programming language.

Computational Artifact—anything created by a human using a computational thinking process and a computing device. A computational artifact can be, but is not limited to, a program, image, audio, video, presentation, or web page file.

Computational Thinking—a problem-solving process that can be applied to multiple disciplines and includes decomposition, abstraction, pattern recognition, and their impact on society.

Computer Science—the study of computers and algorithmic processes, including principles, hardware and software designs, implementation, and their impact on society.

Computing System—the collection of one or more computers or computing devices, including both hardware and software, integrated to accomplish shared tasks. A computing system may be used to refer to one device, but is more commonly used to refer to a collection of multiple connected devices, hardware, and computers.

Cyber Citizenship—the responsible use of technology which may include, but is not limited to, accessing and following acceptable, responsible behaviors to access technology within an acceptable use policy (AUP); social media use and limitations by age; data sharing and privacy; responsible personal cybersecurity practices; fact-checking and verifying information from social media outlets; understanding your personal digital footprint; obeying state and federal computing laws; and avoidance of cyber bullying and/or harassment.

Data Transformation—the process of converting, cleaning, and structuring data into a usable format for computers to process. The usable data can be analyzed to support data-driven decision making.

Digital Literacy—the ability to find, evaluate, utilize, share, and create digital content.

Emerging technologies—innovations, unexpected new technologies, new advances in computing, and future innovations that are happening in both the present and potential near future.

Model—a representation of some part of a problem or a system, and can act as a bridge between algorithms and actual implementation software.

Operation—the action that a computer carries out to complete a task. Not to be confused with mathematical operations of addition, subtraction, multiplication, and division. There are five basic types of computer operations: inputting, processing, outputting, storing, and controlling.

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Variable—a symbolic name used to keep track of a value that may change as a program runs.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 3. Computing Systems

§301. Hardware and Software

- A. Grade Band: K-5. By the end of fifth grade, students will:
1. Identify and select the appropriate hardware to complete computing tasks.
 2. Identify and select the appropriate software to complete computing tasks.
 3. Evaluate hardware and software types to meet users' needs in completing various computing tasks.
- B. Grade Band: 6-8. By the end of eighth grade, students will:
1. Analyze the functions and interactions of core components within a computer system.
 2. Explain how hardware and software components work together to perform specific tasks.
- C. Grade Band: 9-12. By the end of twelfth grade, students will:
1. Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday things.
 2. Analyze the levels of interactions between application software and system software as well as the hardware layers.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§303. Troubleshooting

- A. Grade Band: K-5. By the end of fifth grade, students will:
1. Propose potential ways to address computing problems using appropriate hardware and software.
- B. Grade Band: 6-8. By the end of eighth grade, students will:
1. Evaluate possible solutions to a hardware or software problem.
- C. Grade Band: 9-12. By the end of twelfth grade, students will:
1. Generate guidelines that convey systematic troubleshooting strategies that other users can utilize to identify and fix errors.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 5. Networks and the Internet

§501. Hardware and Network Communication

- A. Grade Band: K-5. By the end of fifth grade, students will:
1. Explain how networks connect computers to other computing systems and the Internet.
- B. Grade Band: 6-8. By the end of eighth grade, students will:
1. Analyze the various structures and functions of a network.
 2. Identify and differentiate the protocols utilized in data sharing across networks.
- C. Grade Band: 9-12. By the end of twelfth grade, students will:
1. Evaluate a network's scalability, reliability, and appropriateness by describing the relationship between routers, switches, devices, topology, and addressing (MAC, IP, Subnet, and Gateway).
 2. Illustrate how to trace data through a network model, explaining the interactions that occur throughout the process.
 3. Describe and evaluate the Internet as a digital public infrastructure (DPI) from the highest level to the private service provider level.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§503. Cybersecurity

- A. Grade Band: K-5. By the end of fifth grade, students will:
1. Describe personally identifiable information (PII) and identify practices for when and where sharing PII is appropriate.
 2. Identify ways to maintain data security when using networks.
- B. Grade Band: 6-8. By the end of eighth grade, students will:
1. Explain how physical and digital security practices and measures proactively address threats to users, data, and devices within and across networks.
 2. Analyze threats and vulnerabilities to information security for individuals and organizations.
- C. Grade Band: 9-12. By the end of twelfth grade, students will:
1. Interpret and analyze mechanisms through which malware and other types of cyber attaches can impact hardware, software, and sensitive data.

2. Recommend security measures to address factors that create trade-offs between the usability and security of a computing system.

3. Compare and contrast how software developers protect computing systems and information from unauthorized used access.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 7. Data and Analysis

§701. Data Representation

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Classify types of data and describe the attributes used to sort data.
2. Organize and present data visually to highlight relationships and support claims.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Evaluate the most efficient and effective ways to arrange, collect, and visually represent data to inform others.
2. Analyze and explain the connection between data sets and graphical representations.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Evaluate data representations, propose strategies to reconstruct the data, and visualize data in a variety of ways.
2. Define and describe database structures to optimize the search and retrieval of data.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§703. Data Collection

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Select the appropriate data collection tool and technique to gather data to support a claim or communicate information.
2. Describe and collect data utilizing the appropriate units of measure and discuss how data format impacts a computing system.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Compare and contrast how data is collected using computational and non-computational tools and processes.
2. Analyze scenarios and computing systems to determine the appropriate data entry format for specific tools.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain and describe the impacts of uncertainty and the limitation of data collection technology and tools.
2. Describe the personal and legal impacts of accumulated data, both collected and derived, for given scenarios. Propose tools and techniques to manage the accumulated data appropriately.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§705. Data Storage

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Compare and contrast ways to store data using technology.
2. Explain how to save and name data, search for data, retrieve data, modify data, and delete data using a computing device.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Describe how different representations of real-world phenomena such as letters, numbers, and images are encoded as data.
2. Propose methods to back up data safely and the appropriate practices for data risk management.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain and utilize the appropriate data structural organization system to collaborate and communicate data within a team or user group in given scenarios.
2. Justify choices on how data elements are organized and where data is stored considering cost, speed, reliability, accessibility, privacy, and integrity.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§707. Visualizations and Transformations

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Organize and present data visually in at least three ways to highlight relationships and evaluate a claim.
2. Evaluate data quality and clean data when indicated using the criteria of validity, accuracy, completeness, consistency, and uniformity.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Utilize tools and techniques to locate, collect, and create visualizations of large-scale data sets.
2. Collect and transform data using computational tools to make functional and reliable data for use in hypothesis testing.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Create interactive data visualizations using software tools that explain complex data to others.
2. Utilize data analysis tools to ingest (extract, transform, and load) and process data into relevant information.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§709. Inference and Models

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Analyze data for patterns and relationships.
2. Utilize data to create models, answer investigative questions, and make predictions.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Describe and evaluate the accuracy of a modeled system by comparing the generated results with observed data from the system the data represents.
2. Refine computational models based on data generated by the models.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Apply and evaluate data analysis techniques to identify patterns represented in complex systems.
2. Analyze patterns in data visualizations, then select a collection tool to test a hypothesis and communicate the relevant information to others.
3. Create a model utilizing data with the appropriate simulated variable to develop predictions for real-world phenomena.
4. Evaluate the impact of the variable and the model on the performance of a simulation to refine a hypothesis.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 9. Algorithms and Programming

§901. Variables and Algorithms

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Create clearly named variable representing different data types and perform operations on the variables' values.
2. Create, use, and apply an algorithm to complete a task. Compare the results of algorithm usage trials and refine the algorithm.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Evaluate and use naming conventions for variable to accurately communicate the variables' meaning to other users and programmers.

2. Compare and contrast data constants and variables.
3. Evaluate algorithms in terms of efficiency, correctness, and clarity.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain what computer memory is and how variable are stored and retrieved.
2. Assess variables, then classify the scope and type of variable.
3. Design algorithms that can be adapted to express an idea or solve a problem.
4. Use and adapt classical algorithms to solve computational problems.
5. Identify and explain how a derived data type can be utilized in a real-world scenario.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§903. Control Structures

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Define what a control structure is and create programs that include sequences, conditional, events, and loops.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Explain the functions of various control structures. Compare and contrast examples of control structure types.
2. Design and iteratively develop programs that combine control structures into advanced control structures.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Justify the selection of control structures to balance implementation complexity, maintainability, and program performance.
2. Design and iteratively develop computational artifacts using events to initiate instructions.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§905. Modularity

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Define and apply decomposition to a complex problem in order to create smaller subproblems that can be solved through step-by-step instructions.

2. Modify, remix, or incorporate parts of an existing problem's solution to develop something new or add more advanced features to a program.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Decompose problems to facilitate program design, implementation, and review.
2. Create procedures with parameters to organize code and promote reusability.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Decompose problems into smaller components using constructs such as procedures, modules, and/or objects.
2. Create computational artifacts using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§907. Program Development

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Create a simple program to achieve a goal with expected outcomes.
2. Test and debug a program or algorithm to ensure the program produces the intended outcomes.
3. Collaborate with a team of peers to design, implement, test, and review the stages of program development.
4. Describe and justify the steps taken and choices made during a program's development.
5. Using an iterative process, test a program step-by-step and document areas of refinement.
6. Identify intellectual property rights and apply the appropriate attribution when creating or remixing programs.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Seek and incorporate feedback from peers to employ user-centered design solutions.
2. Incorporate existing resources into original programs and give the proper attributions.
3. Systematically test, document outcomes, and refine programs using a range of test cases.
4. Develop computational artifacts by working as a team, distributing tasks, and maintaining an iterative project timeline.
5. Use applicable industry practices to test, debug, document, and peer review code.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Design and develop programs by working in team roles using version control systems, integrated development environments (IDEs), and collaborative tools and practices.
2. Use a standard library and/or application programming interface (API) to create reusable code components to design simple programs and enhance existing programs.
3. Utilize the Software Development Life Cycle (SDLC) to create software that is a minimum viable product.
4. Iteratively evaluate and modify an existing program to add functionality and discuss intended and unintended implications.
5. Develop and utilize test cases to verify that a program performs according to the program's design specifications.
6. Apply the appropriate documentation techniques to make programs more accessible to debug and to be maintained by others.
7. Evaluate licenses that limit or restrict the use of computational artifacts when utilizing resources such as libraries.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 11. Impacts of Computing

§1101. Intellectual Achievements

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Describe how computing has changed the ways people live and work.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Identify foundational computational advancements through the use of technology innovation cycle.
2. Plan and devise new ideas and solutions for problems with inspiration from previous discoveries in computational knowledge.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Analyze the key milestones of computer science, historical events influenced by computer science, and the people connected to these achievements.
2. Explain how innovations in computer science and technology enable advancements in other fields of study.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§1103. Social Interaction

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Identify examples of cyberbullying with age-appropriate responses.
2. Identify and describe examples of appropriate versus inappropriate computer communications.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Analyze communication technologies and then describe how the technology's use influences individuals and society.
2. Generate designs that increase the accessibility and usability of technology for various groups of users.
3. Develop and propose norms for informal versus formal online communications.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Describe how cyberspace is becoming a universal medium for connecting humans, the economy, business, and computing.
2. Evaluate the adoption and adaptation of social norms from the physical world to the cyber world.
3. Describe and critique how algorithmic feedback loops can shape perceptions, reinforce a limited data set, and limit the sources of information that may inform the individual user.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§1105. Laws, Safety, and Industry Practices

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Describe the safe versus unsafe uses of computing systems at age-appropriate levels.
2. Explain how the school and school system's computing rules and policies keep students safe.
3. Explain how online actions have real-world consequences and that laws and rules may also apply online.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Recommend and propose computing-use guidelines to maintain a user's personal safety, privacy, and well-being.
2. Identify applicable laws that impact personal, industry, or business computing practices.
3. Describe and categorize factors that affect user's access to computing resources locally, nationally, and globally.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Describe and analyze the motive of online threat actors to a user's personal safety, privacy, and well-being.
2. Explain how the interconnectedness of cyberspace can lead to physical and digital vulnerabilities.
3. Compare and contrast the varied approaches used to govern data an intellectual property, control information access, and provide guidance to users.
4. Debate laws and industry regulations that impact the development and use of computational artifacts.
5. Debate the ethical consideration of creating and publishing computational artifacts.
6. Analyze the data provenance of computational artifacts.
7. Explain how individuals and organizations can exert influence on personal and societal perceptions and practices through computing technologies.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Title 28

EDUCATION

Part LXXV. Bulletin 104—Louisiana K-12 Educational Technology Standards

Chapter 1. Purpose

Subchapter A. Educational Technology

§101. Mission Statement

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:891 (May 2009), LR 51:

§103. Philosophy

A. – C. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§105. Definition

A. – B. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

Subchapter B. Standards

§107. Creativity and Innovation (1)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§109. Communication and Collaboration (2)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§111. Research and Information Fluency (3)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§113. Critical Thinking, Problem Solving, and Decision Making (4)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§115. Digital Citizenship (5)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§117. Technology Operations and Concepts (6)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

Subchapter C. Performance Indicators

§119. Grades PreK-2

A. – A.10. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§121. Grades 3-5

A. – A.10. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§123. Grades 6-8

A. – A.12. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2014 (October 2003), amended LR 35:893 (May 2009), LR 51:

§125. Grades 9-12

A. – A.11. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2014 (October 2003), amended LR 35:893 (May 2009), LR 51:

COMPARISON DOCUMENT

Title 28

EDUCATION

Part CIV. Bulletin 104—Louisiana Computer Science Content Standards

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Chapter 3. Computing Systems

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1. Identify and select the appropriate hardware to complete computing tasks.
2. Identify and select the appropriate software to complete computing tasks.
3. Evaluate hardware and software types to meet users' needs in completing various computing tasks.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Analyze the functions and interactions of core components within a computer system.
2. Explain how hardware and software components work together to perform specific tasks.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday things.
2. Analyze the levels of interactions between application software and system software as well as the hardware layers.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§303. Troubleshooting

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Propose potential ways to address computing problems using appropriate hardware and software.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Evaluate possible solutions to a hardware or software problem.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Generate guidelines that convey systematic troubleshooting strategies that other users can utilize to identify and fix errors.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 5. Networks and the Internet

§501. Hardware and Network Communication

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Explain how networks connect computers to other computing systems and the Internet.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Analyze the various structures and functions of a network.
2. Identify and differentiate the protocols utilized in data sharing across networks.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Evaluate a network's scalability, reliability, and appropriateness by describing the relationship between routers, switches, devices, topology, and addressing (MAC, IP, Subnet, and Gateway).
2. Illustrate how to trace data through a network model, explaining the interactions that occur throughout the process.
3. Describe and evaluate the Internet as a digital public infrastructure (DPI) from the highest level to the private service provider level.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§503. Cybersecurity

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Describe personally identifiable information (PII) and identify practices for when and where sharing PII is appropriate.
2. Identify ways to maintain data security when using networks.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Explain how physical and digital security practices and measures proactively address threats to users, data, and devices within and across networks.
2. Analyze threats and vulnerabilities to information security for individuals and organizations.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Interpret and analyze mechanisms through which malware and other types of cyber attaches can impact hardware, software, and sensitive data.
2. Recommend security measures to address factors that create trade-offs between the usability and security of a computing system.
3. Compare and contrast how software developers protect computing systems and information from unauthorized used access.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 7. Data and Analysis

§701. Data Representation

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Classify types of data and describe the attributes used to sort data.
2. Organize and present data visually to highlight relationships and support claims.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Evaluate the most efficient and effective ways to arrange, collect, and visually represent data to inform others.
2. Analyze and explain the connection between data sets and graphical representations.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Evaluate data representations, propose strategies to reconstruct the data, and visualize data in a variety of ways.
2. Define and describe database structures to optimize the search and retrieval of data.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§703. Data Collection

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Select the appropriate data collection tool and technique to gather data to support a claim or communicate information.
2. Describe and collect data utilizing the appropriate units of measure and discuss how data format impacts a computing system.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Compare and contrast how data is collected using computational and non-computational tools and processes.
2. Analyze scenarios and computing systems to determine the appropriate data entry format for specific tools.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain and describe the impacts of uncertainty and the limitation of data collection technology and tools.
2. Describe the personal and legal impacts of accumulated date, both collected and derived, for given scenarios. Propose tools and techniques to manage the accumulated data appropriately.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§705. Data Storage

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Compare and contrast ways to store data using technology.
2. Explain how to save and name data, search for data, retrieve data, modify data, and delete data using a computing device.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Describe how different representations of real-world phenomena such as letters, numbers, and images are encoded as data.
2. Propose methods to back up data safely and the appropriate practices for data risk management.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain and utilize the appropriate data structural organization system to collaborate and communicate data within a team or user group in given scenarios.
2. Justify choices on how data elements are organized and where data is stored considering cost, speed, reliability, accessibility, privacy, and integrity.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§707. Visualizations and Transformations

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Organize and present data visually in at least three ways to highlight relationships and evaluate a claim.
2. Evaluate data quality and clean data when indicated using the criteria of validity, accuracy, completeness, consistency, and uniformity.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Utilize tools and techniques to locate, collect, and create visualizations of large-scale data sets.
2. Collect and transform data using computational tools to make functional and reliable data for use in hypothesis testing.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Create interactive data visualizations using software tools that explain complex data to others.
2. Utilize data analysis tools to ingest (extract, transform, and load) and process data into relevant information.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§709. Inference and Models

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Analyze data for patterns and relationships.
2. Utilize data to create models, answer investigative questions, and make predictions.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Describe and evaluate the accuracy of a modeled system by comparing the generated results with observed data from the system the data represents.
2. Refine computational models based on data generated by the models.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Apply and evaluate data analysis techniques to identify patterns represented in complex systems.
2. Analyze patterns in data visualizations, then select a collection tool to test a hypothesis and communicate the relevant information to others.
3. Create a model utilizing data with the appropriate simulated variable to develop predictions for real-world phenomena.
4. Evaluate the impact of the variable and the model on the performance of a simulation to refine a hypothesis.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 9. Algorithms and Programming

§901. Variables and Algorithms

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Create clearly named variable representing different data types and perform operations on the variables' values.
2. Create, use, and apply an algorithm to complete a task. Compare the results of algorithm usage trials and refine the algorithm.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Evaluate and use naming conventions for variable to accurately communicate the variables' meaning to other users and programmers.
2. Compare and contrast data constants and variables.
3. Evaluate algorithms in terms of efficiency, correctness, and clarity.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Explain what computer memory is and how variables are stored and retrieved.
2. Assess variables, then classify the scope and type of variable.
3. Design algorithms that can be adapted to express an idea or solve a problem.
4. Use and adapt classical algorithms to solve computational problems.
5. Identify and explain how a derived data type can be utilized in a real-world scenario.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§903. Control Structures

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Define what a control structure is and create programs that include sequences, conditional events, and loops.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Explain the functions of various control structures. Compare and contrast examples of control structure types.
2. Design and iteratively develop programs that combine control structures into advanced control structures.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Justify the selection of control structures to balance implementation complexity, maintainability, and program performance.
2. Design and iteratively develop computational artifacts using events to initiate instructions.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§905. Modularity

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Define and apply decomposition to a complex problem in order to create smaller subproblems that can be solved through step-by-step instructions.

2. Modify, remix, or incorporate parts of an existing problem's solution to develop something new or add more advanced features to a program.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Decompose problems to facilitate program design, implementation, and review.

2. Create procedures with parameters to organize code and promote reusability.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Decompose problems into smaller components using constructs such as procedures, modules, and/or objects.

2. Create computational artifacts using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§907. Program Development

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Create a simple program to achieve a goal with expected outcomes.

2. Test and debug a program or algorithm to ensure the program produces the intended outcomes.

3. Collaborate with a team of peers to design, implement, test, and review the stages of program development.

4. Describe and justify the steps taken and choices made during a program's development.

5. Using an iterative process, test a program step-by-step and document areas of refinement.

6. Identify intellectual property rights and apply the appropriate attribution when creating or remixing programs.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Seek and incorporate feedback from peers to employ user-centered design solutions.

2. Incorporate existing resources into original programs and give the proper attributions.

3. Systematically test, document outcomes, and refine programs using a range of test cases.

4. Develop computational artifacts by working as a team, distributing tasks, and maintaining an iterative project timeline.

5. Use applicable industry practices to test, debug, document, and peer review code.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Design and develop programs by working in team roles using version control systems, integrated development environments (IDEs), and collaborative tools and practices.

2. Use a standard library and/or application programming interface (API) to create reusable code components to design simple programs and enhance existing programs.

3. Utilize the Software Development Life Cycle (SDLC) to create software that is a minimum viable product.

4. Iteratively evaluate and modify an existing program to add functionality and discuss intended and unintended implications.

5. Develop and utilize test cases to verify that a program performs according to the program's design specifications.

6. Apply the appropriate documentation techniques to make programs more accessible to debug and to be maintained by others.

7. Evaluate licenses that limit or restrict the use of computational artifacts when utilizing resources such as libraries.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Chapter 11. Impacts of Computing

§1101. Intellectual Achievements

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Describe how computing has changed the ways people live and work.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Identify foundational computational advancements through the use of technology innovation cycle.

2. Plan and devise new ideas and solutions for problems with inspiration from previous discoveries in computational knowledge.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Analyze the key milestones of computer science, historical events influenced by computer science, and the people connected to these achievements.

2. Explain how innovations in computer science and technology enable advancements in other fields of study.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§1103. Social Interaction

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Identify examples of cyberbullying with age-appropriate responses.

2. Identify and describe examples of appropriate versus inappropriate computer communications.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Analyze communication technologies and then describe how the technology's use influences individuals and society.

2. Generate designs that increase the accessibility and usability of technology for various groups of users.

3. Develop and propose norms for informal versus formal online communications.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Describe how cyberspace is becoming a universal medium for connecting humans, the economy, business, and computing.

2. Evaluate the adoption and adaptation of social norms from the physical world to the cyber world.

3. Describe and critique how algorithmic feedback loops can shape perceptions, reinforce a limited data set, and limit the sources of information that may inform the individual user.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

§1105. Laws, Safety, and Industry Practices

A. Grade Band: K-5. By the end of fifth grade, students will:

1. Describe the safe versus unsafe uses of computing systems at age-appropriate levels.

2. Explain how the school and school system's computing rules and policies keep students safe.

3. Explain how online actions have real-world consequences and that laws and rules may also apply online.

B. Grade Band: 6-8. By the end of eighth grade, students will:

1. Recommend and propose computing-use guidelines to maintain a user's personal safety, privacy, and well-being.

2. Identify applicable laws that impact personal, industry, or business computing practices.

3. Describe and categorize factors that affect user's access to computing resources locally, nationally, and globally.

C. Grade Band: 9-12. By the end of twelfth grade, students will:

1. Describe and analyze the motive of online threat actors to a user's personal safety, privacy, and well-being.

2. Explain how the interconnectedness of cyberspace can lead to physical and digital vulnerabilities.

3. Compare and contrast the varied approaches used to govern data an intellectual property, control information access, and provide guidance to users.

4. Debate laws and industry regulations that impact the development and use of computational artifacts.

5. Debate the ethical consideration of creating and publishing computational artifacts.

6. Analyze the data provenance of computational artifacts.

7. Explain how individuals and organizations can exert influence on personal and societal perceptions and practices through computing technologies.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 51:

Title 28

EDUCATION

Part LXXV. Bulletin 104—Louisiana K-12 Educational Technology Standards

Chapter 1. Purpose

Subchapter A. Educational Technology

§101. Mission Statement

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:891 (May 2009), LR 51:

§103. Philosophy

A. – C. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§105. Definition

A. – B. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

Subchapter B. Standards

§107. Creativity and Innovation (1)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§109. Communication and Collaboration (2)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§111. Research and Information Fluency (3)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§113. Critical Thinking, Problem Solving, and Decision Making (4)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2012 (October 2003), amended LR 35:892 (May 2009), LR 51:

§115. Digital Citizenship (5)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§117. Technology Operations and Concepts (6)

A. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

Subchapter C. Performance Indicators

§119. Grades PreK-2

A. – A.10. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§121. Grades 3-5

A. – A.10. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2013 (October 2003), amended LR 35:892 (May 2009), LR 51:

§123. Grades 6-8

A. – A.12. Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2014 (October 2003), amended LR 35:893 (May 2009), LR 51:

§125. Grades 9-12

A. – A.11.

Repealed.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:6.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 29:2014 (October 2003), amended LR 35:893 (May 2009), LR 51:

**BOARD OF ELEMENTARY AND SECONDARY EDUCATION
FAMILY IMPACT STATEMENT
(LA R.S. 49:953 and 972)**

Person Preparing

Statement: Ashley Townsend
Phone: 225.342.3446
Division: Governmental, Administrative, and Public Affairs
Part CIV. Bulletin 104, Louisiana Computer Science Content Standards (LAC 28:CIV.101, 103, 301, 303, 501, 503, 701, 703, 705, 707, 709, 901, 903, 905, 907, 1101, 1103, and 1105) and Part LXXV. Bulletin 104, Louisiana K-12 Educational Technology Standards (LAC 28:LXXV.101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, and 125)
Rule Title: _____

In accordance with Section 953 and 974 of Title 49 of the Louisiana Revised Statutes, there is hereby submitted a Family Impact Statement on the rule proposed for adoption, repeal or amendment. All Family Impact Statements shall be kept on file in the State Board Office which has adopted, amended, or repealed a rule in accordance with the applicable provisions of the law relating to public records.

PLEASE RESPOND (YES, NO, OR LACKS SUFFICIENT INFORMATION TO DETERMINE) TO THE FOLLOWING:

1. Will the proposed Rule affect the stability of the family? No
2. Will the proposed Rule affect the authority and rights of parents regarding the education and supervision of their children? No
3. Will the proposed Rule affect the functioning of the family? No
4. Will the proposed Rule affect family earnings and family budget? No
5. Will the proposed Rule affect the behavior and personal responsibility of children? No
6. Is the family or local government able to perform the function as contained in the proposed Rule? Yes

Signature of Contact Person: Ashley Townsend
Date Submitted: 10/14/2024

**POVERTY IMPACT STATEMENT
(LA R.S. 49:973)**

Person Preparing

Statement: Ashley Townsend
Phone: 225.342.3446
Division: Governmental, Administrative, and Public Affairs
Part CIV. Bulletin 104, Louisiana Computer Science Content Standards (LAC 28:CIV.101, 103, 301, 303, 501, 503, 701, 703, 705, 707, 709, 901, 903, 905, 907, 1101, 1103, and 1105) and Part LXXV. Bulletin 104, Louisiana K-12 Educational Technology Standards (LAC 28:LXXV.101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, and 125)
Rule Title: _____

In accordance with Section 973 of Title 49 of the Louisiana Revised Statutes, there is hereby submitted a Poverty Impact Statement on the rule proposed for adoption, amendment, or repeal. All Poverty Impact Statements shall be in writing and kept on file in the state agency which has adopted, amended, or repealed a rule in accordance with the applicable provisions of the law relating to public records. For the purposes of this Section, the word "poverty" means living at or below one hundred percent of the federal poverty line.

PLEASE RESPOND (YES, NO, OR LACKS SUFFICIENT INFORMATION TO DETERMINE) TO THE FOLLOWING:

1. Will the proposed Rule affect the household income, assets, and financial authority? No
2. Will the proposed Rule affect early childhood development and preschool through postsecondary education development? No
3. Will the proposed Rule affect employment and workforce development? No
4. Will the proposed Rule affect taxes and tax credits? No
5. Will the proposed Rule affect child and dependent care, housing, health care, nutrition, transportation, and utilities assistance? No

Signature of Contact Person: Ashley Townsend
Date Submitted: 10/14/2024

Small Business Statement

The impact of the proposed Rule on small businesses as defined in the Regulatory Flexibility Act has been considered. It is estimated that the proposed action is not expected to have a significant adverse impact on small businesses. The agency, consistent with health, safety, environmental and economic welfare factors has considered and, where possible, utilized regulatory methods in the drafting of the proposed rule that will accomplish the objectives of applicable statutes while minimizing the adverse impact of the proposed rule on small businesses.

Provider Impact Statement

The proposed Rule should not have any known or foreseeable impact on providers as defined by HCR 170 of 2014 Regular Legislative Session. In particular, there should be no known or foreseeable effect on:

1. the effect on the staffing level requirements or qualifications required to provide the same level of service;
2. the total direct and indirect effect on the cost to the providers to provide the same level of service; or
3. the overall effect on the ability of the provider to provide the same level of service.

Public Comments

Interested persons may submit written comments via the U.S. Mail until noon, December 10, 2024, to Tavares Walker, Executive Director, Board of Elementary and Secondary Education, Box 94064, Capitol Station, Baton Rouge, LA 70804-9064. Written comments may also be hand delivered to Tavares Walker, Executive Director, Board of Elementary and Secondary Education, Suite 5-190, 1201 North Third Street, Baton Rouge, LA 70802 and must be date stamped by the BESE office on the date received. Public comments must be dated and include the original signature of the person submitting the comments.

**FISCAL AND ECONOMIC IMPACT STATEMENT
FOR ADMINISTRATIVE RULES**

Person Preparing Statement:	Ashley Townsend	Department:	Louisiana Department of Education, Board of Elementary and Secondary Education
Phone:	225.342.3446	Office:	Governmental, Administrative, and Public Affairs Part CIV. <i>Bulletin 104, Louisiana Computer Science Content Standards</i> (LAC 28:CIV.101, 103, 301, 303, 501, 503, 701, 703, 705, 707, 709, 901, 903, 905, 907, 1101, 1103, and 1105) and Part LXXV. <i>Bulletin 104, Louisiana K-12 Educational Technology Standards</i> (LAC 28: LXXV.101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, and 125)
Return Address:	P.O. Box 94064 Baton Rouge, LA 70804	Rule Title: Date Rule Takes Effect:	Upon final adoption by BESE

SUMMARY
(Use complete sentences)

In accordance with Section 961 of Title 49 of the Louisiana Revised Statutes, there is hereby submitted a fiscal and economic impact statement on the rule proposed for adoption, repeal or amendment. THE FOLLOWING STATEMENTS SUMMARIZE ATTACHED WORKSHEETS, I THROUGH IV AND WILL BE PUBLISHED IN THE LOUISIANA REGISTER WITH THE PROPOSED AGENCY RULE.

I. ESTIMATED IMPLEMENTATION COSTS (SAVINGS) TO STATE OR LOCAL GOVERNMENTAL UNITS (Summary)

The proposed rule change may result in an increase in local fund expenditures to the extent courses currently taught under the existing computer science content standards require changes to meet the new requirements, though any such costs are indeterminable and will vary by local education agency (LEA). The Board of Elementary and Secondary Education (BESE) included \$1 M in its Louisiana Education Quality Trust Fund (8(g)) budget for technical assistance grants of up to \$40,000 per school system. These funds could support efforts related to implementation of the standards. Over the past year, the Computer Science Content Standards Writing Steering Committee and Grade Band Work Groups worked to develop the Louisiana Computer Science Content Standards. The content standards replace LAC 28:LXXV in *Bulletin 104 - Louisiana K-12 Educational Technology Standards*. The Louisiana Department of Education (LDOE) will work to both identify and create resources, open-source when available, to support the development of courses in alignment with the standards. A total of \$250,000 was appropriated in the FY 25 budget for Teacher Leader Advisors (TLA). Eight (8) TLAs, at a cost of \$41,500 SGF will be utilized to develop resources specifically related to computer science content standards. Funding for such work in future years will be requested through the LDOE budget.

II. ESTIMATED EFFECT ON REVENUE COLLECTIONS OF STATE OR LOCAL GOVERNMENTAL UNITS (Summary)


There is no anticipated effect on the revenue collections of state or local governmental units as a result of the proposed rule change.

III. ESTIMATED COSTS AND/OR ECONOMIC BENEFITS TO DIRECTLY AFFECTED PERSONS, SMALL BUSINESSES, OR NON-GOVERNMENTAL GROUPS (Summary)

There are no anticipated costs or benefits to directly affected persons, small business, or nongovernmental groups as a result of the proposed rule change.

IV. ESTIMATED EFFECT ON COMPETITION AND EMPLOYMENT (Summary)

There is no anticipated effect on competition and employment as a result of the proposed rule change.



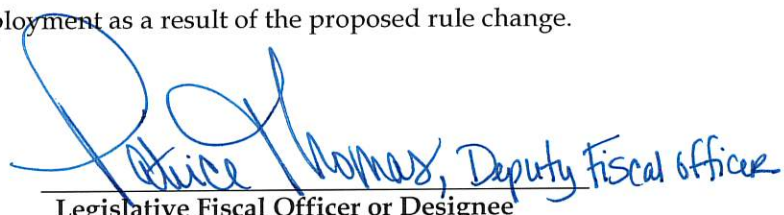
Signature of Head or Designee

Beth Scioneaux, Deputy Superintendent for Management and Finance

Typed Name & Title of Agency Head or Designee

11.7.24

Date of Signature



Legislative Fiscal Officer or Designee

11/08/2024

Date of Signature

**FISCAL AND ECONOMIC IMPACT STATEMENT
FOR ADMINISTRATIVE RULES**

The following information is required in order to assist the Legislative Fiscal Office in its review of the fiscal and economic impact statement and to assist the appropriate legislative oversight subcommittee in its deliberation on the proposed rule.

- A. Provide a brief summary of the content of the rule (if proposed for adoption, or repeal) or a brief summary of the change in the rule (if proposed for amendment). Attach a copy of the notice of intent and a copy of the rule proposed for initial adoption or repeal (or, in the case of a rule change, copies of both the current and proposed rules with amended portions indicated).

The proposed rule change adopts LAC 28: CIV. *Bulletin 104, Louisiana Computer Science Content Standards*, and repeals LAC 28: LXXV. *Bulletin 104, Louisiana K-12 Educational Technology Standards*. The standards provide expectations for what students in kindergarten through grade 12 should know and be able to do related to computer science.

- B. Summarize the circumstances, which require this action. If the Action is required by federal regulation, attach a copy of the applicable regulation.

The proposed rule change repeals and reestablishes *Bulletin 104, Louisiana Computer Science Content Standards*, to replace existing and outdated technology standards contained in *Bulletin 104, Louisiana K-12 Educational Technology Standards*. Act 541 of the 2022 Regular Legislative Session required development of a report to address state content standards in computer science for grades kindergarten through twelve. At the October 2023 Board of Elementary and Secondary Education (BESE) meeting, BESE initiated the development of the standards, which were then approved at the October 2024 BESE meeting.

- C. Compliance with Act 11 of the 1986 First Extraordinary Session

- (1) Will the proposed rule change result in any increase in the expenditure of funds? If so, specify amount and source of funding.

The proposed rule change will marginally increase expenditures. Local costs could be incurred to adapt a course already taught locally to meet the new standards; however, this cost is indeterminable. The Louisiana Department of Education (LDOE) will work to both identify and create resources, open-source when available, to support the development of courses in alignment with the standards. Teacher leader advisors funded through the current-year academic budget will be utilized to develop these resources. Funding for such work in future years will be requested through the LDOE budget.

- (2) If the answer to (1) above is yes, has the Legislature specifically appropriated the funds necessary for the associated expenditure increase?

(a) _____ YES. If yes, attach documentation.

(b) _____ NO. If no, provide justification as to why this rule change should be published at this time

**FISCAL AND ECONOMIC IMPACT STATEMENT
WORKSHEET**

I. A. COSTS OR SAVINGS TO STATE AGENCIES RESULTING FROM THE ACTION PROPOSED

1. What is the anticipated increase (decrease) in costs to implement the proposed action?

The proposed rule change will have no effect on costs or savings to state agencies.

COSTS	FY 25	FY 26	FY 27
PERSONAL SERVICES	\$41,500	\$41,500	\$41,500
OPERATING EXPENSES	\$0	\$0	\$0
PROFESSIONAL SERVICES	\$0	\$0	\$0
OTHER CHARGES	\$0	\$0	\$0
EQUIPMENT	\$0	\$0	\$0
MAJOR REPAIR & CONSTR.	\$0	\$0	\$0
TOTAL	\$41,500	\$41,500	\$41,500
POSITIONS (#)	0	0	0

2. Provide a narrative explanation of the costs or savings shown in "A. 1.", including the increase or reduction in workload or additional paperwork (number of new forms, additional documentation, etc.) anticipated as a result of the implementation of the proposed action. Describe all data, assumptions, and methods used in calculating these costs.

Eight contracted teacher leader advisors are funded through the LDOE budget and will support the work of developing resources to support implementation of the new standards. Funding to continue this work in subsequent years will be requested through the LDOE budget.

3. Sources of funding for implementing the proposed rule or rule change.

The LDOE operating budget will be utilized to fund the teacher leader advisors needed. Funding for FY 25 for these employees was included in the FY 25 LDOE budget, and will be included in future fiscal years.

SOURCE	FY 25	FY 26	FY 27
STATE GENERAL FUND	\$41,500	\$41,500	\$41,500
AGENCY SELF-GENERATED	\$0	\$0	\$0
DEDICATED	\$0	\$0	\$0
FEDERAL FUNDS	\$0	\$0	\$0
OTHER (Specify)	\$0	\$0	\$0
TOTAL	\$41,500	\$41,500	\$41,500

4. Does your agency currently have sufficient funds to implement the proposed action? If not, how and when do you anticipate obtaining such funds?

Yes

B. COST OR SAVINGS TO LOCAL GOVERNMENTAL UNITS RESULTING FROM THE ACTION PROPOSED.

1. Provide an estimate of the anticipated impact of the proposed action on local governmental units, including adjustments in workload and paperwork requirements. Describe all data, assumptions and methods used in calculating this impact.

Local costs could be incurred to adapt a course already taught locally to meet the new standards; however, this cost is indeterminable.

2. Indicate the sources of funding of the local governmental unit, which will be affected by these costs or savings.

\$1 M was included by BESE in its FY 25 8(g) budget for technical assistance grants of up to \$40,000 per school system. These funds could support efforts related to implementation of the standards.

II. EFFECT ON REVENUE COLLECTIONS OF STATE AND LOCAL GOVERNMENTAL UNITS

A. What increase (decrease) in revenues can be anticipated from the proposed action?

REVENUE INCREASE/DECREASE	FY 25	FY 26	FY 27
STATE GENERAL FUND			
AGENCY SELF-GENERATED	\$0	\$0	\$0
DEDICATED	\$0	\$0	\$0
FEDERAL FUNDS	\$0	\$0	\$0
LOCAL FUNDS	See Below	See Below	See Below
TOTAL	See Below	See Below	See Below

*Specify the particular fund being impacted.

Provide a narrative explanation of each increase or decrease in revenues shown in "A." Describe all data, assumptions, and methods used in calculating these increases or decreases.

There is no anticipated effect on the revenue collections of state and local governmental units as a result of the proposed rule change, unless a local district is awarded a computer science technical assistance grant. \$1 M was included in the BESE budget for technical assistance grants of up to \$40,000 per school system. These funds could support efforts related to implementation of the standards.

III. COSTS AND/OR ECONOMIC BENEFITS TO DIRECTLY AFFECTED PERSONS, SMALL BUSINESSES, OR NONGOVERNMENTAL GROUPS

A. What persons, small businesses, or non-governmental groups would be directly affected by the proposed action? For each, provide an estimate and a narrative description of any effect on costs, including workload adjustments and additional paperwork (number of new forms, additional documentation, etc.), they may have to incur as a result of the proposed action.

The proposed rule change will not result in costs or economic benefits to directly affected persons, small businesses, or nongovernmental groups.

B. Also provide an estimate and a narrative description of any impact on receipts and/or income resulting from this rule or rule change to these groups.

Not applicable.

IV. EFFECTS ON COMPETITION AND EMPLOYMENT

Identify and provide estimates of the impact of the proposed action on competition and employment in the public and private sectors. Include a summary of any data, assumptions and methods used in making these estimates.

There is no anticipated impact on competition and employment as a result of the proposed rule change.