PACING GUIDE

COURSE: Computer Science: Programming in C++ **GRADE(S):** 11-12

MONTH/ DAYS	UNIT #	STANDARDS/SKILLS	ASSESSMENTS What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered?	CONTENT Topics being covered? What do students need to know? (nouns)	SKILLS Identify the skills used to transfer the content (range of rigor using Bloom's verbs)	ACTIVITIES w/Integration of Technology & Career Ready Practices
September (3 week)	1	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal	- What is computer ethics? - HW: Computer Ethics Paper Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Intro to Computer Systems Test: Intro To C++ Quiz: Algorithms	Computer Ethics and Social Implications - Computer Systems: Hardware and Software - Parts of a Program - Computer Organization - Computer Languages - History of Computers and C++. - Algorithms, Psuedocode, Flowchart - Variables and Data Types - Arithemtic Operators - C++ IDE - ASCII Art	• Apply Concepts learned • Connect Previous Lessons • Create Programs • Critically Think • Debug Programs • Design Programs • Organize	- Lesson: Computer Ethics Paper • Lesson: Programming Languages • Lesson: Computer Systems • Homework: Simple Algorithms - Lesson: C++ IDE - Input and Output - History of Programming - Variables & Data Types - Order of Operations - Program: Celsius and Fahrenheit - Program: Sales Tax - Program: Class Schedule - Program: Math Operators - Program: Stock Transactions

		issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert				

		resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				
Sep- Oct (3 weeks)	2	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Logical Operators Quiz: Relational Operators Test: Decision Structures	- Logical Operators - Relational Operators - If - If Else - If Else If Else - Switch Statements - Breaks	• Apply Concepts from Lectures • Create Programs • Debug Programs • Design Algorithms • Recall Previously Learned Tools • Critically Think • Organize	•Lesson: Logical Operators - Lesson: If..Else if..Else - Lesson: Relational Operators - Program: Flip a Coin - Program: If Then Samples - Program: Class / Teachers Switch - Program: Password - Program: Stock Commission - Program: Chemistry - Program: Lottery

		gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances				

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Oct (3 weeks)	3	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Type of Loops Test: Repetition Structures	- While Loops - Counters - Running totals - For Loops - Random - Sentinel Values - Nested For Loops	• Apply Concepts from Lectures • Create Programs • Debug Programs • Design Algorithms • Recall Previously Learned Tools • Critically Think • Organize	•Lesson: For Loop - Lesson: Nested For Loop - While Loop - Random - Sentinel Value - Program: Flip a 100 Coins - Program: For Samples - Program: While Samples - Program: Average Rainfall - Program: Bug Collector - Program: Guess a Number - Program: Math Quiz - Program: Ocean Levels - Program: Pattern Display - Program: Text Based Battle

		research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				

Oct - Nov (3 weeks)	4	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Naming parts of Functions Test: Functions	- Functions labels - Introduction to functions - Local and Global Scope - Parameters and Arguments - Pass By Value - Pass By Reference - Value returning and Void Functions	• Apply Concepts Previously Learned • Create Programs • Critically Think through problems • Debug Programs • Design Pseudocode • Organize through topics • Recall Previous lessons	• Lesson: Introduction to Functions - Lesson: Local and Global Scope - Lesson: Parameters and Arguments - Lesson: Pass by Value and Pass by Reference - Lesson: Value Returning and Void Function - Program: Follow the Function Calls - Program: Parameters and Argument samples - Class Program: Math Functions - Program: Catering - Program: Falling Distance - Program: Is Prime Number - Program: Order of Operations

		appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				
Nov- Dec (4 weeks)	5	TECH.8.1.12.A Students demonstrate a sound understanding of	Students will enter room, log onto computers and load appropriate programs for class.	- Numeric Array - String Arrays - Parallel Array - Multi-Dimensional Array	• Apply Concepts Previously Learned • Create Programs	• Lesson: Numeric Array - Lesson: String Array - Lesson: Parallel Array

		technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems	Students will save and log off of the computers Quiz: Simple Array Test: Arrays	- Sorting - Searching	• Critically Think through problems • Debug Programs • Design Pseudocode • Organize through topics • Recall Previous lessons	- Lesson: Multi- Dimensional Array - Lesson: Sorting and Searching Program: Music Rack Program: Teacher Array Program: 1 to 100 Array Program: 12 Days of Hogwarts Program: 2D Array Program: Coffee Array Program: Month Array Program: Payroll Array Program: Types of searches Program: Types of sorts

		impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				
Dec-Jan (2 Weeks)	6	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Video Game the Movie	- History of Video Games - Video Game Genres - Video Game Developers	• Apply Concepts Previously Learned • Create Programs • Critically Think through problems • Debug Programs • Design Pseudocode	• Lesson: Evolution of the Video Game - Lesson: Parts of Video Games - Video: Video Game the Movie - HW: Students own Video Game History

		knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human,	Test: History of Video Games		• Organize through topics • Recall Previous lessons	

		cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge. .				
Jan - Mar (10 weeks)	7	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: RGB Quiz: Simple Shapes Test: Vector Graphics, Text, RGB and Events	- Text Objects - C++ Skeleton - Keyboard and Mouse Events - Collide Point - RGB Color Numbers - Vector Graphics	• Apply Concepts from lessons • Connect from Previous Lessons • Create Programs • Critically Think through Activities • Debug Programs • Design flowcharts	• Lesson: AGK2 Structure - Lesson: Color and Alpha Transparency - Lesson: Displaying Text Objects - Lesson: Using Photoshop - Lesson: Keyboard Mouse Controls - Lesson: Sprites - Program: AGK2 Set-up and Sample Codes - Program: Bouncing Head

		TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing				- Program: Haunted House - Program: Starry Night - Program: Vector Robot

		technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				
Mar - Apr (7 weeks)	8	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Quiz: Animation Quiz: Virtual Buttons Test: Advanced AGK2	- Simple Animations - 2D Animations - Sprites - Sounds and Music - Creating Sprite Maps - Virtual Buttons - Particles	• Connect terms from other Activities • Create Programs • Debug Programs • Design Algorithms • Organize Code • Apply Concepts • Critically Think	• Lesson: 2d Animations - Lesson: Simple Animations - Lesson: Adding Images to Program - Lesson: Creating a Sprite Map - Lesson: Sound and Music - Lesson: Virtual Buttons - Lesson: Particles - Lesson: Collision - Program: Animation - Program: Particles - Program: Virtual Buttons - Program: Animated Fish Tank - Program: Car Radio - Program: Crystal Ball - Program: Dealing Cards

		collaboratively, including at a distance, to support individual learning and contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society.				- Program: Patriotic Particles - Program: Shell Game - Program: Whack a Mole

		TECH.8.2.12.C The design process is a systematic approach to solving problems. TECH.8.2.12.D The designed world is the product of a design process that provides the means to convert resources into products and systems. TECH.8.2.12.E Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.				
May - Jun (5 weeks)	9	TECH.8.1.12.A Students demonstrate a sound understanding of technology concepts, systems and operations. TECH.8.1.12.B Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. TECH.8.1.12.C Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and	Students will enter room, log onto computers and load appropriate programs for class. Students will save and log off of the computers Major Program: Big Game Project	- Big Game Project - Keeping a Daily Programming Log	• Apply Concepts previously learned • Connect through arrays • Create Programs • Critically Think by 2D	- Lesson: Switching from Intro to Gameplay to Game Over Screens - Lesson: Video Game Development - Program: Screen Switching

		contribute to the learning of others. TECH.8.1.12.D Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. TECH.8.1.12.E Students apply digital tools to gather, evaluate, and use information. TECH.8.1.12.F Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. TECH.8.2.12.A Technology systems impact every aspect of the world in which we live. TECH.8.2.12.B Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society. TECH.8.2.12.C The design process is a systematic approach to solving problems.				

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