

Time Frame: 5 Weeks	Unit Title: Algorithms and Programming	Course Name: Technology and Society
Stage 1 - Desired Results		
<p>Established Goals</p> <p>NH Computer Science Standards</p> <p>Algorithms and Programming</p> <ul style="list-style-type: none"> ● <i>1B-AP-15 Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.</i> ● <i>2-AP-11 Create clearly named variables that represent different data types and perform operations on their values.</i> ● <i>2-AP-13 - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.</i> 	Transfer	
	<p><i>Students will be able to independently use their learning to...</i></p> <p>creatively solve problems by coding software applications.</p>	
	Meaning	
	<p>UNDERSTANDINGS</p> <p><i>Students will understand that....</i></p> <ul style="list-style-type: none"> ● Programs are lists of instructions, in a very specific syntax, that are executed by computers. ● Programs can be used to develop a wide array of solutions to complex problems. ● Complex problems can be solved by breaking them into smaller subproblems that can be solved more easily. 	<p>ESSENTIAL QUESTIONS</p> <p><i>Students will keep considering</i></p> <ul style="list-style-type: none"> ● How does programming enable creativity and individual expression? ● What practices and strategies will help me as I write programs?
	Acquisition	
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> ● that Python is one of many programming languages. ● That programming solutions use an array of computer science techniques such as loops, conditionals, variables and functions. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ● <i>Breaking down complex problems into smaller components that can be solved more easily.</i> ● <i>Developing Python programs to draw images on a computer canvas.</i> 	

- *2-AP-14: Create procedures with parameters to organize code and make it easier to reuse.*
- *2-AP-17 - Systematically test and refine programs using a range of test cases.*
- *2-AP-19 - Document programs in order to make them easier to follow, test, and debug.*
- *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.*
- *3A-AP-18: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but*

- *Reducing code repetition through the use of loops.*
- *Reusing code through the use of functions and parameters.*
- *Developing programs that make decisions through the use of if/else statements.*

interrelated programs.

Content Area Literacy Standards

- *RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.*
- *RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.*
- *RST.11-12.4 Determine the meaning of symbols, key terms, and other*

domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

- *RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.*
- *WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*

<p>21st Century Skills</p> <ul style="list-style-type: none">• <i>Reason Effectively</i>• <i>Access and Evaluate Information</i>• <i>Be Self-directed Learners</i>• <i>Solve Problems</i>		
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