

Introduction to Computer Programming 2022-23			
Day #	Topic/Section	Components	NYS State Standards (CSDF)
Unit 1: Building Blocks of Code			
Objectives: • Use appropriate variable names • Manipulate int, float, and str data			
1	Tower Building	Design planning	
2	VS Code and File Management	Open interactive shell Set keyboard shortcut for “run”	
3	Variables and Data Types	Data types Print statements	2-3.CT.7 4-6.CT.7
4	Computational Algorithms	Data types Algorithmic thinking Variables	7-8.CT.5 7-8.CT.7
5	String Operations	Data types Algorithmic thinking Variables	4-6.CT.6 7-8.CT.6 7-8.CT.7
6	Review	Collaborate to design and create multiple programs that rely on variables and different data types.	2-3.CT.7 4-6.CT.7 7-8.CT.5 4-6.CT.6 7-8.CT.6
7	Assessment	Paper and code component	2-3.CT.7 4-6.CT.7 7-8.CT.5 4-6.CT.6 7-8.CT.6

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Day #	Topic/Section	Components	NYS State Standards (CSDF)
Unit 2: Flow Control			
Objectives: • Evaluate simple and compound Boolean conditions • Use if/else and elif statements to control program flow • Use <i>for</i> and <i>while</i> loops for repetition • Handle invalid user inputs			
1	Conditionals	Variables If/Else Unplugged	4-6.CT.4 7-8.CT.7 2-3.CT.8 7-8.CT.10
2	Using Conditionals to Control Flow	Variables If/Else Indenting User Input	4-6.CT.4 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
3	Nested & Compound Conditions	Variables If/Else Indenting User Input	4-6.CT.4 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
4	Conditionals: Review	Variables If/Else Indenting User Input	4-6.CT.4 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
5	Loops: <i>while</i>	Variables Conditions Indenting Loops	4-6.CT.4 4-6.CT.5 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
6	Loops: <i>for</i>	Variables Conditions Indenting Loops	4-6.CT.4 4-6.CT.5 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
7	Loops	Variables Conditions Indenting Loops User Input	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 4-6.CT.8 7-8.CT.10
8	Input Validation & Error Handling	Variables Conditions	4-6.CT.4 4-6.CT.5

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		Indenting Loops User Input	4-6.CT.6 7-8.CT.6 7-8.CT.7 4-6.CT.8 9-12.CT.9 7-8.CT.10
9	Assessment	Paper and code component	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
10	Project: Text-based Adventure	Variables Conditions Indenting Loops User Input	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10

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Day #	Topic/Section	Components	NYS State Standards (CSDF)
Unit 3: Data Structures			
Objectives: • Use lists to store multiple values or track a single value's changes • Use tuples to store and access values • Differentiate between lists and tuples • Use dictionaries to store named data • Choose appropriate data structures to manipulate and store values in a larger program			
1	Lists	Variables Conditions Indenting Loops	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
2	Project: List Design Challenges		4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
3	Tuples	Immutability	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
4	Searching	Linear Search Binary Search	4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 9-12.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9



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			7-8.CT.10
5	Sorting		4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 9-12.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
6	Dictionaries		4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
7	Project: Data Structures Challenges		4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
8	Assessment		4-6.CT.4 4-6.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10



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Day #	Topic/Section	Components	NYS State Standards (CSDF)
Unit 4: Functions			
Objectives: - Define a function for repeated tasks - Choose and name parameters to make functions more flexible - Subdivide tasks into smaller tasks that can be written as functions - Write clear documentation for functions - Write recursive functions to achieve repetition			
1	Defining Functions		7-8.CT.4 9-12.CT.4 7-8.CT.5 9-12.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
2	Function Parameters		7-8.CT.4 9-12.CT.4 7-8.CT.5 9-12.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
3	Recursion		7-8.CT.4 9-12.CT.4 7-8.CT.5 9-12.CT.5 4-6.CT.6 7-8.CT.6 9-12.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
4	Functional Decomposition		7-8.CT.4 9-12.CT.4 7-8.CT.5



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			9-12.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10
5	Docstrings		7-8.CT.4 9-12.CT.4 7-8.CT.5 9-12.CT.5 4-6.CT.6 7-8.CT.6 7-8.CT.7 9-12.CT.7 4-6.CT.8 9-12.CT.8 9-12.CT.9 7-8.CT.10 9-12.CT.10
6	Project: Game		
7	Assessment		

