

Introduction to Java Unit 3: Advanced Data Types

ESTABLISHED GOALS:	Transfer	
<u>Competencies:</u>	<i>Students will be able to independently use their learning to select the most appropriate tool to solve a variety of problems.</i>	
- Students will demonstrate the ability to create a coding solution in order to solve a problem. - Students will demonstrate the ability to create test cases and use debugging techniques in order to correct solutions. - Students will demonstrate the ability to deconstruct a problem to utilize data structures and recognize patterns in order to develop a solution. - Students will demonstrate the ability to analyze and summarize text as well as integrate knowledge to make meaning of discipline-specific materials. - Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences. - Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style.	Meaning	
	ENDURING UNDERSTANDINGS <i>Students will understand that...</i> - Java is one of the simpler programming languages. - the language of Java supports many of the programs we use daily on our devices.	ESSENTIAL QUESTIONS How would using abstract thinking improve the quality of your life?
	Acquisition	
<u>Content Standards:</u> CSTA - Computer Science Teacher Association CSTA 3B-A-4-13: Compare and contrast fundamental data structures and their uses (e.g. lists, maps, arrays, stacks, queues, trees, graphs.) CSTA 3B-A-3-17: Decompose a large-scale computational problem by identifying generalizable patterns and applying them in a solution. CSTA 3B-A-5-7: Decompose a problem by creating new data types, functions, or classes. CSTA 3B-A-3-20: Develop and use a series of test cases to verify that a program performs according to its design specifications. CSTA 3A-A-6-12: Use a systematic approach and debugging tools to independently debug a program (e.g., setting breakpoints, inspecting variables with a debugger).	<i>Students will know....</i> - that Java advanced data types include strings and user defined objects. - that Java classes use the new operator to create objects. - that Java objects encapsulate data and behaviors. to create solutions to problems. - the power of Java programs comes from object oriented programming rather than procedural programming. - that objects are created by Java classes to organize information and behaviors as well as send and/or receive messages. <u>Vocabulary:</u> accessor, argument, encapsulation, formal parameter, instantiation, length function, method, mutator, new, scope, string, value returning function, void	
	<i>Students will be skilled at...</i> - declaring and using memory addresses to access data objects. - breaking down problems by creating new data types, functions, or classes. - using existing Java classes to create objects. - designing and writing classes that encapsulate data and behaviors to perform specific tasks. - developing test cases to verify program performance. - debugging programs using a systematic approach. - comparing and contrasting data structures. - breaking down calculations by identifying patterns in computational problems.	
Content Area Literacy Standards		21st Century Skills
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 <i>grades 11-12 texts and topics</i> . WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical		<i>Solve Problems</i> <i>Think Creatively</i> <i>Use and Manage Information</i>

processes.	
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<i>Evaluative Criteria</i>	<i>Assessment Evidence</i>
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

<i>Summary of Key Learning Events and Instruction</i>	
<i>Language Arts Integration</i>	<i>Mathematics Integration</i>
1.OA.1 Use	1.OA.1 Use
<i>Technology Integration</i>	<i>District Materials</i>
1.OA.1 Use	