

AP Computer Science Unit 8: Advanced Data Structures

Unit #:	APSDO-00019748	Duration:	3.0 Week(s)	Date(s):	
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Team:
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Grades:
11, 12

Subjects:
Mathematics, Science

Unit Focus

In this unit, students will focus on how to use advanced data structures (collections, linked lists, stacks, queues). A comparison of traversal algorithms applied to various ADS's is evaluated. In-order, pre-order and post order traversals are hand traced. Summative assessments may include projects, labs and tests. Primary instructional materials include: Java Software Solutions for AP Computer Science, Lewis Loftus and Cocking, APCentral Computer Science Course Webpage.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer	
<p>Common Core <i>Mathematics: 11</i></p> <ul style="list-style-type: none"> Look for and express regularity in repeated reasoning. <i>CCSS.MATH.MP.8</i> Look for and make use of structure. <i>CCSS.MATH.MP.7</i> Use appropriate tools strategically. <i>CCSS.MATH.MP.5</i> 	<p>T1 (T51) Examine alternate methods to accurately and efficiently solve problems. T2 (T10) Describe, classify, and compare objects/numbers and sets of objects/numbers. T3 (T13) Move from one representation to another without changing the quantity.</p>	
	Meaning	
	Understandings	Essential Questions
	<p>U1 (U502) Effective problem solvers identify and apply an appropriate model, tool, or strategy. U2 (U530) Every problem belongs to a category of problems that has a similar structure and set of characteristics; which means it can be solved using a similar model. U3 (U561) Recognition of patterns and</p>	<p>Q1 (Q501) What do I picture/visualize when I look at this problem? Q2 (Q503) What strategies/approaches are best for this problem? Q3 (Q531) What values, numbers, quantities, and/or symbols can be used to solve a problem? Q4 (Q540) What tool(s) is appropriate for use</p>

		structures fosters efficiency in solving problems.	with this model?
		Acquisition of Knowledge and Skill	
		Knowledge	Skills
			<p>S1 The applications of link lists, stacks and queues</p> <p>S2 The traversal of sets, maps and trees</p> <p>S3 The definition of heaps and hashtables</p> <p>S4 The comparison of the attributes and benefits of different abstract data types</p>
Stage 3: Learning Plan			
Coding	Code	Description of Learning Activity	