

Overview of Java Programming AP Edition

AP EXAM FORMAT

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AP Computer Science Course and Exam

- Java Programming and Language proficiency (AP Java subset)
- Object Oriented Programming
- Basic data structure and algorithm (**Search, Sort, Recursion**)
- Read and understand programs
- Understand the software design life cycle: Planning, Design, Coding, Debugging, and Software maintenance.
- Software engineering Issues and other computer knowledge.
- Recognizes the ethical and social impacts and implications of computer use
- 3 Programming Lab Exercises (**Magpie, Picture, Elevens**)
- (Test Concepts but not contents).





AP Java Subset Link:

<https://apstudent.collegeboard.org/apcourse/ap-computer-science-a/about-the-exam/java-subset>





AP Computer Science Format

The exam is three hours long and has two parts — multiple choice and free response. Each section is worth 50% of the final exam grade.

You will not be tested on minor points of Java syntax.

All responses involving code must be answered in Java. If your free response answer involves too much materials not in AP Java. That means you are going into a wrong direction.





AP Computer Science Exam Format and Score Allocation (New since 2016)

- **Section I: Multiple Choice** — 40 Questions;
1 hour and 30 minutes
- **Section II: Free Response** — 4 questions;
1 hour and 30 minutes
Each 9 points
(Total score curved to 40)

Total 80 points. Best score 80/80.





Multiple Choice Problem

1 point/question no deduction.

1. Consider the following code segment.

```
int value = 15;
while (value < 28)
{
    System.out.println(value);
    value++;
}
```

What are the first and last numbers output by the code segment?

- | | <u>First</u> | <u>Last</u> |
|-----|--------------|-------------|
| (A) | 15 | 27 |
| (B) | 15 | 28 |
| (C) | 16 | 27 |
| (D) | 16 | 28 |
| (E) | 16 | 29 |





Free Response Problem

No Computer, No Graphics, Handwriting !!!

- 1. This question involves reasoning about one-dimensional and two-dimensional arrays of integers. You will write three static methods, all of which are in a single enclosing class, named `DiverseArray` (not shown). The first method returns the sum of the values of a one-dimensional array; the second method returns an array that represents the sums of the rows of a two-dimensional array; and the third method analyzes row sums.

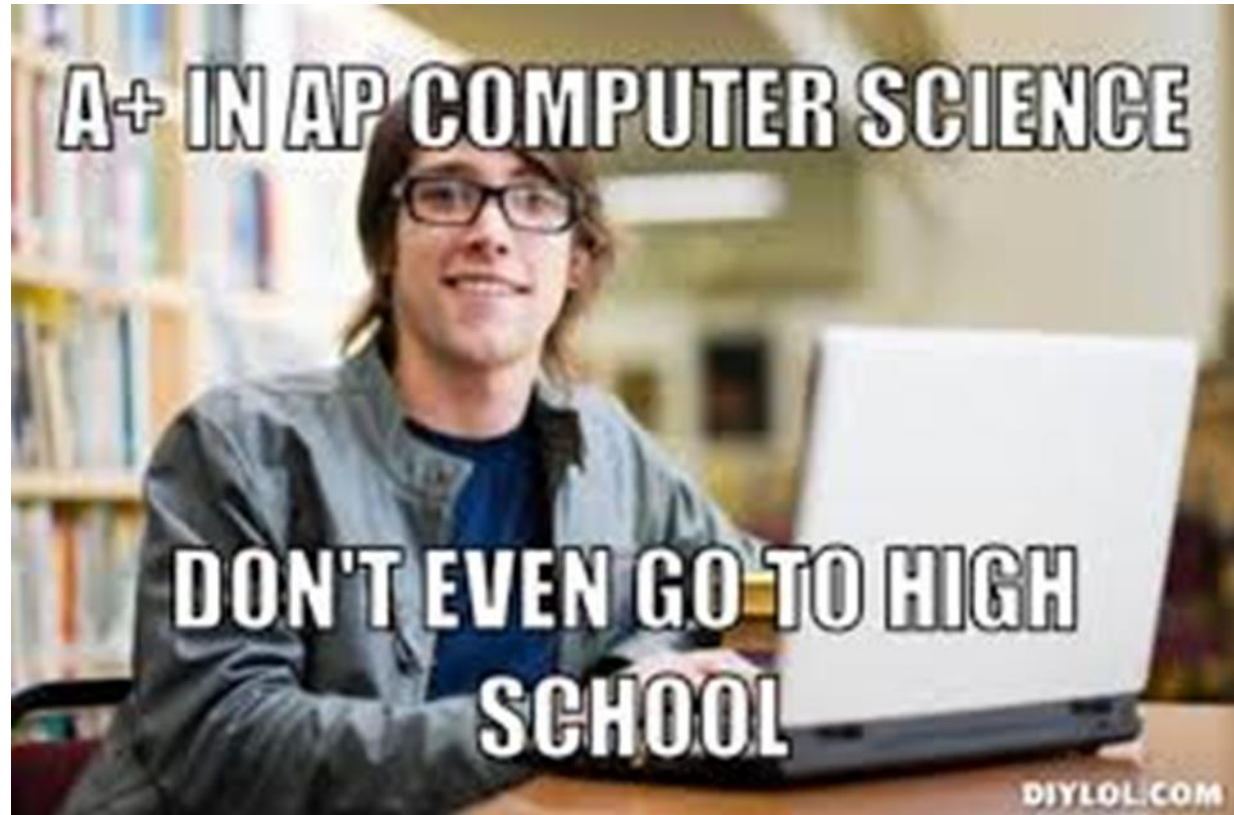
(a) Write a static method `arraySum` that calculates and returns the sum of the entries in a specified one-dimensional array. The following example shows an array `arr1` and the value returned by a call to `arraySum`.

	<u>arr1</u>					<u>Value returned by arraySum(arr1)</u>
	0	1	2	3	4	
	1	3	2	7	3	16





```
while (youHaveTime == true) {  
    language.study();  
    program.trace();  
    programming.perform();  
    sideProject.research();  
    score++;  
}
```



Computer Science A	24.4%	24.6%	15.3%	7.1%	28.6%	June 25	<p>Wow – massive gains in AP Computer Science participation (25% growth) AND scores this year; big increase in % of students earning 4s & 5s!</p> <p>Count them: a whopping 66 AP Computer Science students out of 50,000 worldwide earned all 80 pts possible on this year's exam. Remember that AP exam standards are equated from year to year, so when scores go up, it's a direct indication of increased student mastery.</p> <p>Many AP Computer Science students did very well on Q1 (2D array processing–diverse array); >20% earned all 9/9 pts: spr.ly/6013BB5bz</p> <p>The major gap in this year's AP Computer Sci classrooms seems to be array list processing; Q3 (sparse array): 47% of students got 0/9 pts.</p>
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Since 2011, AP Computer Science has taken off, **50k in 2015**

