

## Ninth Edition

## Be Prepared



## Computer Science Exam in Java

# Solutions to Sample Multiple-Choice Questions in the 2025 Course and Exam Description

Maria Litvin Phillips Academy, Andover, Massachusetts

Gary Litvin Skylight Publishing, Andover, Massachusetts

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Skylight Publishing 9 Bartlet Street, Suite 70 Andover, MA 01810

web: <u>www.skylit.com</u> e-mail: sales@skylit.com support@skylit.com

These multiple-choice questions are part of the AP Computer Science A Course and Exam Description effective Fall 2025, Page 149.

### Introduction

The College Board has redesigned the AP Computer Science A course and released a new Course and Exam Description (CED), effective Fall 2025. The revised CED provides 20 sample multiple-choice questions. The format of the multiple-choice questions in the AP exams has changed: 42 questions instead of 40, four choices instead of five, no "roman numerals" questions (with options I, II, and III), no multiple questions that refer to the same Java class or code segment. There is no penalty for wrong answers. Multiple-choice questions account for 55% of the total score (free-response questions account for the remaining 45%).

The CED provides an answer key for the sample multiple-choice questions:

1.	В	11.	С
2.	В	12.	С
3.	В	13.	D
4.	Α	14.	А
5.	Α	15.	С
6.	В	16.	С
7.	Α	17.	D
8.	В	18.	С
9.	С	19.	В
10.	С	20.	D

We provide below brief solutions and tips.

- 1. q/r produces a double value equal to 7.5. Truncated to an integer, it is 7. The answer is B.
- 2. Math.random() returns a value from 0 (inclusive) to 1 (exclusive). So  $5 \le x < 15$  and  $10 \le y < 15$ . Only Choice B satisfies both inequalities. The answer is B.
- 3. The only constructor of the Date class takes two parameters, a String and an int. The number and types of arguments in the new Date(...) statement must match these types. The answer is B.
- 4. str2 is first set to the substring of "LMNOP" starting at index 3, which is "OP". Then one character, at index 2 of str1, is appended to it. The answer is A.
- 5. The code in Choice B is missing "else" in the "if" statements, so category is set to "Medieval" for any year >= 400. In Choice C, category is set to "Renaissance" when year >= 1400. In Choice D, "else" is missing in the second "if," so category is set to "Medieval" for any year >= 400. The answer is A.
- 6. && z cannot come from anywhere, which eliminates Choices A and C. According to one of the De Morgan's Laws, ! (x && y) is equivalent to !x || !y. The answer is B.
- 7. To produce output that starts with 0, the inner for loop has to start from 0, which leaves only Choices A and B. To produce four values in the first line of the output, the first iteration of the inner for loop, with j = 4, must run four times, so  $0 \le k < j$  is correct. The answer is A.
- 8. The outer loop runs three times for j equal to 1, 2, and 3. The inner for loop runs five times for any j, so 15 times total. The answer is B.
- 9. All instance variables in the Movie class have to be private (see the "Essential Knowledge" item 3.3.A.5 on Page 83 in the 2025 CED). This eliminates Choices A and B. In Choice D, rating is an int, and getRating returns an int, while the specified range of the "rating" attribute, from 0.0 to 5.0, calls for a double. The answer is C.
- 10. This is a commonsense question. It does not refer to any code in the method or any data used by the method. So Choices A, B and D are easily eliminated. The answer is C.
- 11. The statements in Choices A and B will not compile because neither calculateRent nor getTenant methods are declared static in Apartment. Choice D can be eliminated, because the getTenant method is declared private in Apartment, so it is not callable in the Duplex class. We are left with Choice C, which will compile with no problems. The answer is C.
- 12. Choice A doesn't work because in it xCoor and yCoor are compared to themselves. Choice B doesn't work because x and y are not instance variables in Point. Choice D doesn't work because this Point object and otherP are normally different objects. They reside at different addresses in the computer memory, so references to them have different values. Choice C works. The answer is C.

- 13. Data set 1 offers no information relevant to the task. Data set 2 has limited information because it keeps track only of the most recent download, not all downloads. This eliminates Choice A and makes Choices B and C unlikely. Data sets 3 and 4, in combination, contain the data sufficient for the task. (Data set 4 lets you choose customers who downloaded the app of interest, including their IDs; Data set 3 provides their ages.) The answer is D.
- 14. Choice A works: it is a standard algorithm for finding the maximum value in an array. Choice B would work if instead of Integer.MAX\_VALUE it used Integer.MIN\_VALUE. Choice C would introduce a second bug — looking for the minimum instead of the maximum. In Choice D, the left and right sides of the assignment operator are swapped. The answer is A.
- 15. Choices A and B don't work, because the next method reads the whole line, since there is no white space between the last name and the first name. We have to choose between Choices C and D which differ only in the order of the last name and the first name. Here we need to take the first letter from the first name, which is in temp[1], and append to it the last name, which is temp[0]. The answer is C.
- 16. The method adds 1 to every odd number in list, leaving even numbers unchanged. [1, 2, 3, 3, 2, 1] becomes [2, 2, 4, 4, 2, 2]. The answer is C.
- 17. Recall that in a 2D array, the first index is row and the second index is column. Here, the code sets the value of sum to the sum of all the elements of arr2D in the column with the index 2. The answer is D. (Notice that the 2D array in Choice C is the only one of all four given 2D arrays whose any column has the sum of the elements equal to 3.)
- 18. if (value > 0)... eliminates Choices A and B. There is no run-time error here; it would happen if we were adding or removing elements while scanning an ArrayList with a for-each loop. The answer is C.
- 19. In the outer for loop, the code finds the smallest number among arr[j], arr[j+1], ..., arr[arr.length 1] and swaps it with arr[j]. The first iteration, with j = 0, produces {10, 30, 50, 60, 40, 20}; the second iteration, with j = 1, produces {10, 20, 50, 60, 40, 30}; the third iteration, with j = 2, produces {10, 20, 30, 60, 40, 50}. The answer is B. (In another variation of Selection Sort, the outer for loop first finds the largest number among all the array elements and swaps it with arr[arr.length 1], then finds the largest number in the first arr.length 1 elements and swaps it with arr[arr.length 2], and so on.)
- 20. The last number printed is the value of j, in this case 10. This eliminates Choices A and B. Now the question is: How many numbers will be printed? mystery(10, 0) calls mystery(8, 2); mystery(8, 2) calls mystery(6, 4); mystery(6, 4) calls mystery(4, 6). Each of these calls prints one number, so the count of printed numbers is 4. The answer is D.