

Computer Science Contest #1213-04 Key

November 03, 2012

- |       |       |
|-------|-------|
| 1) E  | 21) A |
| 2) D  | 22) B |
| 3) A  | 23) E |
| 4) B  | 24) C |
| 5) E  | 25) E |
| 6) C  | 26) B |
| 7) D  | 27) A |
| 8) C  | 28) E |
| 9) E  | 29) D |
| 10) B | 30) D |
| ■     | ■     |
| 11) D | 31) D |
| 12) E | 32) C |
| 13) C | 33) A |
| 14) A | 34) C |
| 15) B | 35) A |
| 16) B | 36) D |
| 17) D | 37) A |
| 18) C | 38) C |
| 19) E | 39) E |
| 20) D | 40) D |
| ■     | ■     |

**Note to Graders:**

- All provided code segments are intended to be syntactically correct, unless otherwise stated (e.g. error is an answer). **Ignore any typographical errors.**
- Any necessary Standard Java 2 Packages are assumed to have been imported as needed.
- Assume any undefined (undeclared) variables have been defined as used.

## Brief Explanations:

1.  $1111_2$  is 15 in base 10  $10100_2$  is 20 in base 10  $100011_2$  is 35 in base 10
2. To print `1 \` you must use `2 \\` as `\` is part of several escape sequences
3. 7 cannot evenly divide 5 so you are left with a remainder of 5
4.  $3 * 5$  is 15
5. `'0'` has an ascii value of 48  $48 + 3$  is 51
6.  $3 + 7 \% 5 * 2 = 7$  `%`, `*`, and `/` all have the same precedence
7. `"A+ComputerScience"` is the String so `charAt(1)` returns `+`
8. `"electioneve"` is the String so `lastIndexOf('e')` returns 10
9. `'A'` has an ascii value of 65 `(double)65 / 2 = 32.5`
10. `"halloweenisover:("` has a length  $< 31$  so `yeahover` is printed
11.  $4 * 3$  is 12 which is the value returned by the method
12. Switch case requires a break for each check unless you want to execute a group of statements once a check is true.
13.  $9 * 8$  is 72
14. short circuit check of `b` as `false` fails before checking the `==`
15. The `%2` causes every index to get visited twice
16. The answer is 1 because the first condition of the `if else` is true
17. The loop terminates when the value of 1 is 11
18. The answer is 140 and the key is pay attention to the `if` statement
19. The loop iterates 5 times before it fails.
20. 45.0 is the answer as `round` returns 5 and  $9.0 * 5$  is 45.0
21. `Extends` is the reserved used when making a sub class
22. `<<` is the same as `* 2`
23. Boolean and Byte are the only 2 that work
24.  $5 * 4$  is 20 and  $20 / 3 = 6$  as both 20 and 3 are integers
25. 7 factorial is 5040  $1 * 2 * 3 * 4 * 5 * 6 * 7$
26. The `$` is an end of line anchor in regex
27. New items are placed on the top of the stack and items removed from the top of the stack.
28. When printed, the stack is printed left to right from the bottom to the top. The top most item is on the far right in the list.
29. When 4096 is divided by 2 five times, the answer is 128
30. C does not work as you cannot add a new `Integer()` to a list of `Double`
31. This question is using an iterator to manipulate a list. You must know that `next` returns a reference to the current item and moves the iterator forward in front of the next item.
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33. This question is manipulating a matrix in a very weird way. This question requires some serious patience and accurate code tracing.
34. The search is a linear search as the code goes through the entire list one spot at a time
35. The runtime is  $O(N)$  as the code runs through the entire list
36. This question is using recursion and you have to trace out the code using a stack and method calls
37. This an inheritance questions that is testing basic knowledge
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39. This problem requires that you draw the tree and examine the levels
40. `^` means either can be true, but not both