Computer Science Contest #1718-14 Key

February 24, 2018

1) E

2) B

3) A

4) D

5) A

6) C

7) D

8) E

9) A

10) B

11) C

12) D

13) A

14) E

15) D

16) B

17) B

18) A

19) D

20) C

21) E

22) B

23) C

24) E

25) D

26) B

27) A

28) D

29) C

30) E

31) C

32) D

33) A

34) B

35) D

36) B

37) D

38) C

39) S\*A+I/L\*O-R

40) -27

**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.

1. AC16 + 4128 = 172 + 140 = 312 = 13816
2. 6+53/2%3 = 6+((53/2)%3) = 6+(26%3) = 6+2 = 8
3. 3 spaces for the integer, only 1 place after the decimal and round it
4. "ELIZABETH BENNET".substring(5) = "BETH BENNET", "BETH BENNET".replace('E', 'K') = "BKTH BKNNKT"
5. !(!c && b) = true, true || a = true
6. Math.ceil(-3.6)+Math.abs(-6.8) = -3 + 6.8 = 3.8
7. 65.34+(int)9.89 = 65.34+9 = 74.34
8. x=25 is too far left, x=75, y=26 is in the box, x=80 is too far right, x=65, y=30 is in the box
9. Starts at the back of "WEBSITE" and doubles every letter except the first and last letter
10. arr[3] = 2, arr[2] = 6, arr[6] = 8, arr[8] = 9
11. The loops stops if there is not an int surrounded by spaces
12. When i is 1,4,7,or 10 it adds 3 instead of 1 to the variable t
13. 6+2\*14 = 34, 34 = 1000102, 125 = 11111012, 01000102 & 11111012 = 01000002 = 32
14. 67-45=22, ~22 = -23
15. 0 2 4 6 8 is added at the front since i is 0 through 4
16. 123^51 = 11110112^01100112 = 10010002, 10010002>>2 = 100102 = 18
17. Only a = true and b = false results in false
18. 'u'-'e'=16, 16\*3=48
19. 10 is the largest i where i%5==0, 8 is the largest j where j%5==3
20. let decreases before printing so the first character printed is 'n'. ASCII value 105 is 'i' – it compares to 105 before let decreases
21. 13%6 = 2, 13/3 =4
22. 15%6 = 3, 15/3=5, 4%6=4, 4\*3=12, 12+5=7
23. It is using getAgeInfo() so it uses Toy’s getAgeInfo() instead of Game’s getInfo()
24. t is stored in a Toy variable and cannot use getInfo even though it is a Game
25. s is split on letters from F through N. After everystring printed a 5 is added
26. The lowest number **a** can be is 6
27. taldorei(20) = 20/3+taldorei(18) = 6+18/3+taldorei(16) = 12+16/3+taldorei(14) = 17+14/3+taldorei(12) = 21+12/3+taldorei(10) = 25+10/3+taldorei(8) = 28+8/3+taldorei(6) = 30+6 = 36
28. 83/8=10, 83%8=3, 10/8=1, 10%8=2, 1%8=1
29. 50!=35 r=1, 25!=35 r=2, 37!=35 r=3, 31!=35 r=4, 34!=35 r=5
30. The method is searching by halving the range of numbers it uses
31. Preorder – Root, Left, Right
32. i must be a multiple of 3, 12+1=13, 12\*3=36
33. Before removes - l = {34, 30, 26, 22, 18, 14, 10, 6, 2}, 26 and 6 are removed
34. 107 = 011010112, 100101002 + 1 = 100101012
35. 67 = 10000112, >>1 = 1000012 = 33, 33+6=39
36. The true values happen when A and B are true, or when A or C are true but not both.
37. 8 is popped, 7 is popped, 5 is popped, and 4 is popped
38. C does not have a path to D
39. -+\*SA\*/ILOR, (-(+(\*SA)(\*(/IL)O))R), (((S\*A)+((I/L)\*O))-R), S\*A+I/L\*O-R
40. 111001012 using two’s complement is 000110112. 000110112=27, so it’s -27