Computer Science Contest #1314-12 Key

February 8, 2014

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

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.

Explanations

1       $101_2 = 5_{dec}$, $11_2 = 3_{dec}$, $5_{dec} * 3_{dec} = 15_{dec}$

2

3   It's the same as x + 3 + 5 which is 11

4   `0 + 2 + 4 + 6 + 8 + 10 == 30`

5   `Loops backwards through Chicken and concatenates characters to o`

6   `2 * 5 * 7 == 70`

7   true or false is true, true or (true and false) is true, (true and false) or not true is false

8   Only condition that doesn't output is the else if because the if above it was true

9   5 * 2.5 is done first due to order of operations, and then 3 is added

10   m is a Vampire, so talk outputs Mmm, blood!

11   hypot(a, b) returns the hypotenuse of right triangle a, b, c (Pythagorean Theorum). B is incorrect because hypot() returns a double and B is an int.

12   %x formats the number as hex, 25 in dec == 19 in hex

13   \b removes the previous character, but does not cause an error if there isn't a previous. All that's left is lo

14   Loops go through and subtract each element of the matrix from 100

15   Loop continues for i=0 through i=9, j increases by 2 each loop, x increases by j each loop and ends at 90

16   c and C are 32 apart on the ASCII table

17   252 shifted 4 bits to the left is 15

18   ++i > 3 is the only comparison done because it is true and the || short circuit

19   a.remove(2) removes element in position 2

20   32 %13 == 6, 6 % 4 == 2

21   A do while has to happen once, but since the condition is false it only loops once

22   All 4 increments will occur, and both conditions are true

23   Parameters need to be an int, then a double, then a String; only D does that

24   Odd spacing, same as (x = !x) or (x = (!x)); !x (false) is stored in x and println outputs the newly stored value of x

25

26   Cannot define a new Rattler as a Cottonmouth since Cottonmouth doesn't extend Rattler

27   i increments twice each loop, and pre-increments so the output starts with the second element and skips

28

29

30   34 is the first multiple of 17 reached

31   The addItMaybe method adds to the ArrayList if it doesn't already exist

32   A set is a data structure that does not allow duplicates

33      $111_2 * 10_{dec} = 70_{dec}$; D is incorrect because the output is in base 10

34   what method returns true for odd numbers, false for even

35   (i & 1) == 1 is true for odd numbers, so is (i % 2) != 0

36   peek allows to look at first element, but does not remove. Poll returns first and removes it, so the 1 goes away

37   element and pop both return the first element, but only pop removes it

38   \\s* will match any number of white spaces including 0, the others match exactly one or will not match zero

39   Split is on any lower case vowel, but only if it's in the first spot

40   \\p{XDigit} splits on hex characters [0-9a-fA-F] so it splits on F, a, c, e, and b ending up with an array of length 6