Computer Science Contest #1112 - 01 Key

October 8, 2011

1)	E	21)	D
2)	D	22)	A
3)	D	23)	B
4)	E	24)	C
5)	E	25)	D
6)	A	26)	A
7)	C	27)	B
8)	C	28)	B
9)	B	29)	D
10)	E	30)	A
11)	B	31)	B
12)	D	32)	C
13)	B	33)	B
14)	B	34)	E
15)	C	35)	D
16)	D	36)	B
17)	A	37)	D
18)	A	38)	D
19)	E	39)	D
20)	A	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. 111010 = 58; 100001 = 33;
2. You must divide before you subtract – math is your friend!
3. The only possible answers with %4 is 0,1,2,or 3.
4. III only goes from 1 thru 4, look at the inequality
5. The indexOf will return a -1, substring cannot handle -1.
6. b[b[3]] -> b[2]
7. distribute a -> a&&b || a&&!a -> a&&b || false -> a&&b.
8. this is not an if…else statement, both if statements occur.
9. the possible outputs are the integer values [0,17).
10. Rating isn't a constructor.
11. Math.random()*range of random numbers+smallest desired random value
12. %s means to use a String literal provided after the commas.
13. order of operations from left to right.
14. the default value of an int matrix is 0.
15. increments by 3 -> 16, 19, 22, 25, …
16. We don't want the location of the space but rather the location next to it.
17. 253 = 11111101
    70 = 1000110
    11000100 = 68
18. a must be false, then t's value determines what y's value can be
19. list.add(x,value); means the value will be added at x and push everything over.
20. % is called modulus and it askes "What's the remainder?"
21. This is the value x becomes that cause the while conditional statement to become false.
22. either hits or atBats must be cast to a double to get a real number.
23. The return statement jumps the program out of the method before any value above .250 becomes a "Liability".
24. lung is a private variable in the parent class, the only way to access it is using the call to super.getBreath().
25. the Man private type supersedes the Martians private type in toString
26. same as above, you have to be careful with inheritance. The Martian private type never changes the Man's private type which is what the toString is printing.
27. you are modulating with the index number, so the only value for x%1 is 0
28. same as above [0, [0,1], [0,2], [0,3], …]
29. This get's to the base case on the second try, so you don't have to worry about addition.
30. Addition doesn't occur until the base case is achieved, so you will always add an int to a String to get a String.
31. An int is 4 bytes and a double is 8.
32. in-order does not mean in numerical order. It just means go to the left branch, when you come back print the node's value, then go to the right branch.
33. The data type requires one data type, so it has to be a Set rather than a Map. It is also being used as a Constructor so the only choice available is TreeSet.
34. No matter how many times you try, a Set will not hold multiple copies of an object.
35. If there is not an object to remove in the Set, the Set will just go on about its business.
36. This is a priority queue, so it will remove the smallest comparative Object.
37. The priority queue, is held as min heap binary tree. That means each child off the parent node will be bigger than the parent. The tree is a balanced tree.
38. 293 >> 2 -> $293/2^2$ -> 293/4
39. if the first character is an element to split on, then a null space is placed in the first array element.
40. however, if the last character is an element to split on, a null space does NOT get placed in the last array element.