Computer Science

Cypress Woods

December 13, 2014

General Directions:

1. DO NOT OPEN EXAM UNTIL TOLD TO DO SO.
2. **NO CALCULATORS of any kind may be used.**
3. You have 45 minutes to complete this contest. If you are in the process of actually writing an answer when the signal to stop is given, you may finish writing that answer.
4. Papers may not be turned in until forty-five minutes have elapsed. If you finish the test before the end of the allotted time, remain at your seat and retain your paper until told to do otherwise. You may use this time to check your answers.
5. All answers must be written on the answer sheet/Scantron card provided. Indicate your answers in the appropriate blanks provided on the answer sheet or on the Scantron card. Clean erasures are necessary for accurate Scantron grading.
6. You may place as many notations as you desire anywhere on the test paper except on the answer sheet or Scantron card which is reserved for answers only.
7. You may use additional scratch paper provided by the contest director.
8. All questions have ONE and only ONE correct (BEST) answer. There is a penalty for all incorrect answers. All provided code segments are intended to be syntactically correct, unless otherwise stated (i.e. error is an answer choice). Ignore any typographical errors and assume any undefined variables are defined as used.
9. A reference to commonly used Java classes is provided with the test and you may use this reference during the contest. You may detach the reference sheets from the test booklet but DO NOT DO SO UNTIL THE CONTEST BEGINS.
10. Assume that any necessary import statements for Standard Java 2 Packages and classes (e.g. .lang, .util, System, Math, Double, etc.) are included in any programs or code segments that refer to methods from these classes and/or packages.

Scoring:

1. All questions will receive 6 points if answered correctly; no points will be given or subtracted if unanswered; 2 points will be deducted for each incorrect answer.Cypress Woods Computer Science Contest December 13, 2014 version 12.01

Note: Correct responses are based on Java, J2sdk v 7.0, from Sun Microsystems, Inc. All provided code segments are intended to be syntactically correct, unless otherwise **stated** (i. e. error is an answer choice) and any necessary Java 2 Standard Packages have been imported. Ignore any typographical errors and assume any undefined variables are defined as used.

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| Question 1 xx  Whatis 613 times 913?  A. 917 B. 4213 C. 798 D. 1101112 E. A1316 | | | |
| Question 2xx  What is output by the code to the right?  A. 11 B. 13  C. -741919 D. 0  E. There is no output due to a syntax error. | int a = 7;  int b = 4;  int c = a + b;  System.out.println(c); | | |
| Question 3xx  What is output by the code to the right?  A. oh, kill em B. kill em oh  C. kill em oh, D. oh, em kill  E. There is no output due to a syntax error. | String yoda = "oh, kill em";  System.out.print( yoda.substring(4) + " " );  System.out.println( yoda.substring(0,4) ); | | |
| Question 4xx  What is output by the code to the right?  A. There is no output due to a compile error.  B. -1 C. NaN D. -0.0  D. There is no output due to a runtime error. | System.out.println( 0.0 / 0.0 ); | | |
| Question 5xx  What is output by the code to the right?  A. 10 B. 37 C. 1337 D. 68  E. There is no output due to a syntax error. | int sum = 23;  for(int x = 13; x>-1; x--)  sum++;  System.out.println(sum); | | |
| Question 6x  What is output by the code to the right?  A. 1.5 B. 1.0 C. 1 D. 2  E. There is no output due to a syntax error. | double a = 1.49;  System.out.println(Math.round(a)); | | |
| Question 7x  What is output by the line marked //line 1 in the code to the right?  A. true  B. false  C. There is no output due to a compile error.  D. There is no output due to a runtime error.  E. There is no output. | HashSet<TreeSet> hash=new HashSet<TreeSet>();  TreeSet<HashSet> tree=new TreeSet<HashSet>();  System.out.println(tree.equals(hash)); //line 1 | | |
| Question 8x  What is output by the code to the right?  A. 5 B. 5.0 C. 4.0  D. There is no output due to a compile error.  E. There is no output due to a runtime error. | | Double q = 4.975;  int w = Math.round(q);  System.out.println(w); | | |
| Question 9 x  What is output by the code to the right?  A. [Hello; , his , es, is gonna hur]  B. [Hello, his, es, is, gonna, hur]  C. [Hell; , hi , e, is gonna, hur]  D. There is no output due to a syntax error.  E. There is no output due to a runtime error. | | String p = "Hello; this test is gonna hurt";  out.println( Arrays.toString(p.split("t")) ); | | |
| Question 10xx  What is output by the client code to the right?  A. 4 B. 17.0 C. 13.532  D. none of the above  E. There is no output due to a syntax error. | | int a = (int) Math.random() \* 17 + 4;  System.out.println(a); | | |
| Question 11x  What is output by the code to the right?  A. 2147483647 B. 2147483648  C. -2147483648 D. -2147483647  E. There is no output due to a syntax error. | | int i = Integer.MAX\_VALUE;  i++;  System.out.println(i); | | |
| Question 12 xx  What is output of line //line 1 in the code to the right?  A. true B. false  C. There is no output due to a syntax error.  D. There is no output due to a runtime error.  E. There is no output. | | HashSet hash = new HashSet<TreeSet>();  HashSet hash2= new HashSet<HashSet>();  hash2.add(new HashSet());  hash.add( new TreeSet());  System.out.println(hash==hash2); //line 1  System.out.println(hash2.equals(hash)); //line 2 | | |
| Question 13 xx  What is output of line //line 2 in the code to the right?  A. true B. false  C. There is no output due to a syntax error.  D. There is no output due to a runtime error.  E. There is no output. | |
| Question 14 xx  What is output by the client code below?  out.println(a.getC() + "" + b.getC());  A. 20 B. 1011  C. 1010 D. 1110  E. There is no output due to a syntax error. | | | public class A{  private int c=10;  public int getC()  {  return c;  }  }  public class B extends A{  private int c=11;  }  ///////////////////////////////////////////////  ///////// client code /////////////////////////  A a = new A();  A b = new B(); | |
| Question 15 xx  What is the output of //line 1 from the code to the right?  A. [(this Collection)]  B. ArrayList<ArrayList>  C. There is a runtime error.  D. There is a syntax error.  E. There is no output. | | | ArrayList<ArrayList> inception;  inception = new ArrayList<ArrayList>();  inception.add(inception);  System.out.println(inception); //line 1  inception.remove(inception);  ArrayList<ArrayList> loop;  loop = new ArrayList<ArrayList>();  loop.add(inception);  inception.add(loop);  System.out.println(loop); //line 2 | |
| Question 16 xx  What is the output of //line 2 from the code to the right?  A. [(this Collection),(this Collection)]  B. ArrayList<ArrayList>  C. There is a runtime error.  D. There is a syntax error.  E. There is no output. | | |
| Question 17xx  What is the output of the code to the right?  A. we ag  B. ago ago  C. week ago  D. week week  E. There is no output due to a syntax error. | | | String f = "%2s %2s";  System.out.printf(f, "week", "ago"); | |
| Question 18xx  What is output by the client code below?  A. 10 B. 11  C. 7 D. 3  E. There is no output due to a syntax error. | | | int number = 15;  number ^= 7;  number += 3;  System.out.println(number); | |
| Question 19xx  Which of the lines to the right cause a syntax error?  A. I and II  B. I and III  C. II and III  D. I, II, and III  E. I only | | | new int[-1]; // I  new double[1.0]; // II  new long[1L]; // III | |
| Question 20xx  What is output by the code to the right?  A. 0 B. 1 C. -1  D. There is no output due to a syntax error.  E. There is no output due to a runtime error. | | | Double d = new Double(70.0);  System.out.println( d.compareTo(Double.NaN )); | |
| Question 21xx  What is flawed in the set to the right?  A. repeats B. negative  C. unordered D. unbalanced  E. There is no error. | | | [7,14,9,9,-4,8] | |
| Question 22xx  Which combination of values will output false? (↑is nand)  a b c  A. T T T  B. T F T  C. F T T  D. F F F  E T F F | | | (a↑a) ↑(b↑c); | |
| Question 23xx  What is output by the client code to the right?  A. 19  B. 26  C. 27  D. 3  E. There is no output due to a syntax error. | | | public int mystery(int i)  {  if(i>17)  return i;  return mystery(i+1) + (i%2);  }  //////////////////////////////////////////////  ///////// client code ////////////////////////  System.out.println(mystery(2)); | |
| Question 24xx  What is output by the code to the right?  A. -1 B. 1 C. NaN D. 0  E. There is no output due to a syntax error. | | | Double a = new Double(Double.NaN);  System.out.print(a.compareTo(Double.NaN + 10)); | |
| Question 25xx  What is performance of the method go()?  A. O(n log n)  B. O(n^2)  C. O(32n)  D. O(n)  E. O(n!) | | | public static void go(int[] a)  {  int[] o;  int[] z;  int oi, zi;  for(int i=0; i<32; i++)  {  oi=0;  zi=0;  o=new int[a.length];  z=new int[a.length];  for(int j=0; j<a.length; j++)  {  if((a[j]>>i)%2==0){  z[zi++]=a[j];  }  else{  o[oi++]=a[j];  }  }  // ignore the runtime of this method.  concat(a,z,zi,o,oi);  // This method puts the contents of z  // and o into a respectively.  }  } | |
| Question 26xx  What would be in the final array if go() is called with [3,78,4,2,2,90,6,812,5,86,3]?  A. [3,78,4,2,2,90,6,812,5,86,3]  B. [0,0,0,0,0,0,0,0,0,0,0]  C. [2,2,3,3,4,5,6,78,86,90,812]  D. [-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1]  E. [3,86,5,812,6,90,2,2,4,78,3] | | |
| Question 27xx  What type of sort is method go implementing?  A. MSD Radix Sort  B. Binary Sort  C. LSD Radix Sort  D. Quick Sort  E. Heap Sort | | |
| Question 28xx  What could fill in <\*1> in the code to the right?   1. extends 2. implements 3. super   A. I and II B. III  C. II only D. I only  E. I, II, III | | | public class dog <\*1> Comparable  {  //assume all code is correct  } | |
| Question 29xx  What is output of line //line 1 in the code to the right?  A. true  B. false  C. There is no output due to a runtime error.  D. ints==ints2  E. There is no output due to a syntax error. | | | int[] ints = {};  int[] ints2 = {};  System.out.println(ints == ints2); // line1 | |

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| Question 30x  What is output by the code to the right?  A. 4.9E-324 B. -1.0  1.0 1.0  C. -Infinity D. NaN  -Infinity -NaN  E. -9.223372036854776E18  -9.223372036854776E18 | Double n = Double.MIN\_VALUE;  System.out.println(n);  n++;  System.out.println(n); |
| Question 31xx  What is printed by the code to the right?  A. [4,7,19,9,2,8]  B. [2,8]  C. [4]  D. []  E. There is no output due to a runtime error | LinkedList<Integer> sq;  sq = new LinkedList<Integer>();  sq.push(4);  sq.add(7);  sq.push(19);  sq.push(9);  sq.remove();  sq.add(2);  sq.pop();  sq.pop();  sq.add(8);  sq.remove();  System.out.println(sq); |
| Question 32xx  What is the output of the client code?  A. 200 128 -129  B. -200 128 -129  C. -2147483647 2147483647 -2147483647  D. There is no output due to an infinite loop  E. 200 0 0 | public static int thing(int start, int d)  {  for(int i = start; true; i+=d)  {  Integer x = i;  Integer y = i;  if(x!=y)  return i;  }  }  ///////////////////////////////////////////  ///////// client code /////////////////////  System.out.print(thing(200, -100) + " "));  System.out.print(thing(0,1) + " ");  System.out.print(thing(0,-1) + " "); |
| Question 33xx  What is output by code to the right?  A. 28  B. 8  C. 1123  D. There is no output due to a syntax error  E. There is no output due to a runtime error | System.out.print( 11 ^ 23 ); |

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| Question 34xx  Which of the following would result in false?  a b c d  A. T T T T  B. T F T T  C. F T F T  D. F F T F  E. T F T F |  |
| Question 35xx  What is output by the code to the right?  A. 0  B. <3  C. 4  D. 1  E. 13 | String s = "helloworld1919199qwertyhi";  System.out.println( s.split("4").length ); |
| Question 36xx  What is output by the code to the right?  A. -1  B. -2147483647  C. 2147483647  D. the output cannot be determined until runtime  E. 0 | int x = -1;  for(int i=0; i<(int)(Math.random()\*100);i++)  {  x = x>>1;  }  System.out.println(x); |
| Question 37xx  What is output by the code to the right?  A. -1  B. 15  C. 13  D. There is no output due to a runtime error  E. There is no output due to a compile error | int finally = 8;  int almostdone = 7;  System.out.println(finally+almostdone); |

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| Question 38 xx  What type of data structure does Structure implement?  A. set  B. queue  C. doubly linked list  D. hash table  E. stack | public class Structure  {  private Node t;  private class Node  {  public Object obj;  public Node r;  public Node l;  public Node(Object o){  obj=o;  r=null;  l=null;  }  }  public void add(Object o){  if(t==null){t=new Node(o); return;}  Node c=t;  while(c.r!=null && c.r!=t){  c=c.r;  }  Node n=new Node(o);  c.r=n;  n.l=c;  t.l=n;  n.r=t;  }  public boolean contains(Object o){  boolean out=false;  Node c=t;  do{  if(c.obj==o){  **<\*1>**  }  c=c.r;  } while(c!=t);  return out;  }  // Removes o from the list if o==node  public void remove(Object o){/\*code\*/}  }  /////////////////////////////////////////////  ///////// client code ///////////////////////  Structure s=new Structure();  s.add("Hello");  s.add("goodbye");  s.add(100);  s.remove("Hello");  s.add(true);  s.add("foobar");  s.add('q');  s.remove(new Integer(100));  System.out.println(s.contains(100)); |
| Question 39xx  Which of the following could replace **<\*1>**  so that the contains method will return whether or not the Structure contains o?  A. out++:  B. out=false;  C. c=c.1;  D. t=c;  E. out=true; |
| Question 40 xx  Assuming **<\*1>**  is filled correctly, what would be printed by the client code?  A. false  B. true  C. no  D. 1  E. 0 |