44-542 Object Oriented Programming

Exam 3 Version B (2 points each, 100 points total)

* Answer all the questions
* Shade the correct option in the given scantron sheet with pencil
* For some questions you need to refer to the given Java source code
* If there is more than one correct answer, choose the BEST of the answers given.

1. Choose the correct output for the line number 43 in the given source code.
   1. 4
   2. 5
   3. 6
   4. 7
2. Choose the correct output for the line number 45 in the given source code.
   1. 4
   2. 5
   3. 6
   4. A runtime exception will occur in line 44
   5. A runtime exception will occur in line 45
3. Choose the correct output for the line number 83 in the given source code.
   1. {356=[A. Bandi, M. McDonald, N. Li, D. Monismith, M. McDonald], 563=[G. McDonald, G. McDonald, D. Hawley, D. Hawley], 542=[S. Bell], 563=[G. McDonald, G. McDonald, D. Hawley, D. Hawley]}
   2. {356=[A. Bandi, D. Monismith, M. McDonald, M. McDonald, N. Li], 542=[S. Bell], 563=[ D. Hawley, D. Hawley, G. McDonald, G. McDonald], 664=[ A. Bandi, C. Hardy, C. Hardy, G. Ury]}
   3. {356=[A. Bandi, M. McDonald, N.Li, D. Monismith], 542=[S. Bell], 563=[G. McDonald, D. Hawley], 664=[C. Hardy, G. Ury, A. Bandi]}
   4. {356=[A. Bandi, M. McDonald, N. Li, D. Monismith, M. McDonald], 542=[S. Bell], 563=[G. McDonald, G. McDonald, D. Hawley, D. Hawley], 664=[C. Hardy, C. Hardy, G. Ury, A. Bandi]}
4. Choose the best output for the line number 84in the given source code.
   1. [356, 542, 563, 664]
   2. {356, 542, 563, 664}
   3. [356; 542; 563; 664]
   4. {356; 542; 563; 664}
5. Consider the following binary search tree.



How many probes are required to discover that 27 is not in the tree

* 1. 2
  2. 3
  3. 4
  4. 5

1. Choose the correct output for the line number 86 in the given Java source code.
   1. 2
   2. 3
   3. 4
   4. 5
2. Choose the best output for the line number 110 in the given Java source code.
   1. [Kajal, Samantha, Thamanna, Hansika, RashiKhanna, RakulPreet Singh, Hansika]
   2. [Hansika, Hansika, Kajal, RakulPreet Singh, RashiKhanna, Samantha, Thamanna]
   3. [Hansika, Kajal, RakulPreet Singh, RashiKhanna, Samantha, Thamanna]
   4. [Kajal, Samantha, Thamanna, Hansika, RashiKhanna, RakulPreet Singh]
3. Choose the correct output for the line number 111 in the given Java source code.
   1. True
   2. 1
   3. False
   4. 0
4. Consider the following binary search tree.



Suppose we rotate right around 17 using the algorithm from class. After the rotation is completed, which of the following is true?

* 1. The left child of 17 is 10.
  2. The right child of 8 is 10.
  3. The left child of 17 is 9.
  4. The right child of 8 is 9.

1. Create a binary search tree by inserting the following elements into the tree in the order given here: 14, 20, 5, 25, 22. If we now delete 20 from the tree, using the algorithm from class, which of the following is true?
   1. the right child of 14 is 22
   2. the right child of 22 is 25
   3. the right child of 14 is 25
   4. both a and b are correct
2. Choose the best option for the line 135 in the given Java source code. (Note that the order of the values output may vary from that shown here.)
   1. {California=CA, Wyoming=WY, Missouri=MO, Florida=FL, West Virginia=WV}
   2. [California=CA, West Virginia=WV, Wyoming=WY, Missouri=MO, Florida=FL]
   3. [California, West Virginia, Wyoming, Missouri, Florida]
   4. [California, West Virginia, Wyoming, Florida]
   5. None of the above, because arun time exception will occur in line 131
3. Choose the best option for the line 136 in the given Java source code.
   1. 4
   2. 5
   3. 6
   4. A run time exception will occur in line 131
4. Choose the best option for the line 137 in the given Java source code. (Note that the order of the values output may vary from that shown here.)
   1. {California=CA, Wyoming=WY, Missouri=MO, Florida=FL, West Virginia=WV}
   2. [California=CA, West Virginia=WV, Wyoming=WY, Missouri=MS, Florida=FL]
   3. [California, West Virginia, Wyoming, Missouri, Florida]
   4. [California, West Virginia, Wyoming, Florida]
   5. None of the above, because a run time exception will occur in line 131
5. What is the postorder traversal of the below tree?
   1. a c e d b g h j k i f
   2. f b a d c e i h g k j
   3. a b c d e f g h i j k
   4. a b c e d g h i k j f
   5. None of the above options
6. What is the preorder traversal of the below tree?
   1. 7, 13, 16, 20, 18, 23, 15, 5, 3, 12, 10, 6
   2. 15, 5, 3, 20, 18, 23, 12, 10, 6, 7, 13, 16
   3. 15, 5, 3, 12, 10, 6, 7, 13, 16, 20, 18, 2
   4. None of the above options.
7. What is the inorder traversal in the below tree which represents last names?

Luke

Han

Vader

Chewbacca

Leia

Obi

Yoda

Lando

* 1. Chewbacca, Han, Land, Leia, Luke, Obi, Vader, Yoda
  2. Luke, Han, Chewbacca, Leia, Land, Vader, Obi, Yoda
  3. Chewbacca, Land, Leia, Han, Obi, Yoda, Vader, Luke
  4. None of the above options

1. What is the breadth first traversal in the below tree?
   1. D B I G K J E H A C F
   2. I H J G F K D E C B A
   3. D I K J G H E B F C A
   4. I H G F D E C B A J K
   5. None of the above options
2. Is the below tree a binary search tree?
   1. Yes
   2. No
3. A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a program unit that executes independently of other parts of the program.
   1. Process
   2. Thread
   3. Program
4. To run a thread in Java, a class must be defined that implements \_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Run interface
   2. Runnable interface
   3. Comparable interface
   4. Comparator interface
5. Choose the correct output for the line number 158 in the given Java source code.
   1. 8
   2. 2
   3. 90
   4. 14
6. Choose the correct output for the line number 159 in the given Java source code.
   1. 4
   2. 5
   3. 6
   4. 7
   5. 8
7. Choose the correct output for the line number 160 in the given Java source code.
   1. [80, 90, 35, 100, 75, 14, 2, 1, 50]
   2. [14, 80, 90, 2, 35, 100, 75, 50]
   3. [14, 90, 2, 35, 100, 75, 50]
   4. [14, 80, 90, 2, 100, 75, 50]
   5. None of the above options
8. Choose the correct output for the line number 162 in the given Java source code.
   1. [80, 90, 35, 100, 75, 14, 2, 1, 50]
   2. [14, 80, 90, 2, 35, 100, 75, 50]
   3. [14, 90, 2, 35, 100, 75, 50]
   4. [14, 90, 2, 100, 75, 50]
   5. None of the above options
9. Choose the correct output for the line numbers 168 to 173 in the given Java source code.
   1. []
   2. [ ]
   3. [35, 105]
   4. The program will not compile due to exception that occurs in line number 168
   5. The program compiles, but a runtime exception will occur in line number 172
10. An exception that does not have to be advertised is called
    * 1. unverified
      2. unblocked
      3. unchecked
      4. unavailable
11. To advertise an exception, include the **throws Exception** clause in the \_\_\_ header.
12. class
13. method
14. package
15. project
16. Sending a message to a null object is an example of a(n)
    * 1. **IOException**
      2. **RuntimeException**
17. Which of the following interfaces represents a function with one parameter of type P that returns a value of type V?
18. **Function(P, V)**
19. **Function(V, P)**
20. **IntFunction(P)**
21. **IntFunction(V)**
22. Which of the following is true of **try-catch** blocks?
    * 1. A **try** block can be followed by multiple **catch**es
      2. If a **try** block is followed by multiple **catch**es, then more than one **catch** may be executed
      3. If a **try** block is followed by multiple **catch**es, then the order of the **catch**es is always irrelevant
      4. All of the above are true
      5. None of the above is true
23. Find the output of the following code segment:

**IntFunction<Double> function01 = x -> (30 - x \* 2) / 5.0;**

**System.out.println(function01.apply(8));**

* + 1. 2
    2. 2.8
    3. 8
    4. 8.8

1. Find the output of the following program:

**public class LambdaExpressions {**

**public static IntFunction myFunction(int n) {**

**return x -> x \* n - (n + 1);**

**}**

**public static void main(String[] args) {**

**System.out.println(myFunction(10).apply(5));**

**}**

**}**

1. 50
2. 44
3. 39
4. none of the above
5. Attempting to read past end of file is an example of a(n)
   * 1. IllegalArgumentException
     2. FileNotFoundException
     3. EOFException
     4. RuntimeException
6. To provide an ordering for a class different than the natural ordering, use the \_\_\_\_\_\_ interface.
   * 1. Collection
     2. Comparable
     3. Comparator
     4. Sort
7. Choose the correct output for the below Java code.

**public static void main(String[] args)**

**{**

**miracle(12432);**

**System.out.println();**

**miracle(1235);**

**System.out.println();**

**}**

**public static void miracle (long n)**

**{**

**System.out.print(n % 10);**

**if ((n / 10) != 0)**

**{**

**n /= 10;**

**miracle(n / 10);**

**}**

**}**

* 1. 240

521

* 1. 240 521
  2. 241

520

* 1. 241 520
  2. 241

52

1. The \_\_\_\_\_\_ method allows a lock to obtain a condition.
   1. condition
   2. findCondition
   3. getCondition
   4. newCondition
2. A toString method for printing collections is implemented in the
   1. Collection class
   2. AbstractCollection class
   3. ConcreteCollection class
   4. None of the above options
3. A rule of thumb for the size of the hash table is:
   1. The hash table should be one-half the size of the data set (50%)
   2. The hash table should be the same size as the data set (100%)
   3. The hash table should be one and one-half times the size of the data set (150%)
   4. The hash table should be 3 times the size of the data set (300%)
4. Which of the following is/are true of hashing?
   1. Elements are not retrieved in sorted order
   2. Performance may be slowed down if you insert records frequently (resulting in frequent dynamic resizing of the hash table)
   3. Both of the above are true
   4. None of the above
5. A full tree is always balanced.
   1. true
   2. false
6. Consider the following binary search tree.



If we insert 15 into this tree, 15 will be the \_\_\_\_\_\_ child of the node containing \_\_\_\_\_.

* 1. left, 10
  2. right, 10
  3. left, 18
  4. right, 18

1. A full tree has all its leaves on the same level.
   1. true
   2. false
2. Consider the following binary search tree.



If we use the algorithm from class to remove 47 from this tree, the root of the resulting tree will be \_\_\_\_\_\_.

* 1. 40
  2. 45
  3. 49
  4. 50

1. Choose the correct output for the line number 13 in the given source code.

Note: The stack used here is a generic stack and has no designated type. As a result an object of any type can be placed on the stack.

Hint: Remember that the **Stack** class extends the **Vector** class and inherits the **toString** method from the **Vector** class. The **toString** method of the **Vector** class works exactly like the **toString** method of the **ArrayList** class.

* 1. [Ruby bangle, 3, Diamond bangle, 2]
  2. [Ruby bangle, 3, Diamond bangle, 2, Golden bangle]
  3. [2, Diamond bangle, 3, Ruby bangle]
  4. [Golden bangle, 2, Diamond bangle, 3, Ruby bangle]

1. Choose the correct output for the line number 21 in the given source code.

Hint: Here is information from the Java API about the **search** method in the **Stack** class.

*public int search(*[*Object*](../../java/lang/Object.html)*o)*

*Returns the 1-based position where an object is on this stack. This means index starts with 1.*

* 1. 4
  2. 5
  3. 0
  4. 1

1. Choose the correct output for the line number 22 in the given source code.
   1. 3
   2. True
   3. pop() return void and has no output
   4. A runtime exception will occur in line 22
2. Choose the correct output for the line number 23 in the given source code.
   1. [Ruby bangle, 3, Diamond bangle, 2, Golden bangle, Perl bangle, 1]
   2. [Perl bangle, Golden bangle,2, Diamond bangle,3, Ruby bangle]
   3. [Ruby bangle, 3, Diamond bangle, 2, Golden bangle, Perl bangle]
   4. [1, Perl bangle, Golden bangle,2, Diamond bangle,3, Ruby bangle]
   5. A runtime exception will occur in line 22
3. Choose the correct output for the line number 39 in the given source code.
   1. 4
   2. 5
   3. 6
   4. 7
4. Choose the correct output for the line number 40 in the given source code.
   1. True
   2. 1
   3. False
   4. 0
5. Choose the correct output for the line number 41 in the given source code.
   1. True
   2. 1
   3. False
   4. 0