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|---------------------|---|
| Started on | Tuesday, 4 October 2022, 3:48 PM |
| State | Finished |
| Completed on | Tuesday, 4 October 2022, 4:09 PM |
| Time taken | 21 mins 8 secs |
| Marks | 9.37/12.00 |
| Grade | 7.81 out of 10.00 (78%) |

Question **1**

Partially correct

Mark 0.17 out of 1.00

Which of these statements is true?

- a. The hash code of an object is an integer that tells where that object should be stored in a hash table.
- b. A hash table is an array of linked lists. When an object is stored in a hash table, it is added to the linked list at the index of its hash code.
- c. The object's hash code is the index of the position in the array where the object is stored.
- d. All objects with the same hash code go into the same linked list.
- e. In Java, every object `obj` has a method `obj.hashCode()` that is used to compute hash codes for objects.
- f. If the object is to be stored in a hash table of size N , then the hash code that is used for the object is $\text{Math.abs(obj.hashCode()) \% N}$.

Select one or more:

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.
- ☒ e.
- ☐ f.

The correct answers are: a., b., c., d., e., f.

Question **2**

Correct

Mark 1.00 out of 1.00

Which of the data types below does not allow duplicates?

Select one:

- ☐ a. List
- ☐ b. Vector
- ☐ c. Stack
- ☒ d. Set
- ☐ e. LinkedList

The correct answer is: Set

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following data types do not have iterators?

Select one:

- ☐ a. HashSet
- ☐ b. TreeSet
- ☒ c. Map
- ☐ d. ArrayList
- ☐ e. LinkedList

The correct answer is: Map

Question **4**

Correct

Mark 1.00 out of 1.00

Given the following code:

```
public class Test {  
    public static void main(String[] args) {  
        Map map = new HashMap();  
        map.put("123", "John Smith");  
        map.put("111", "George Smith");  
        map.put("123", "Steve Yao");  
        map.put("222", "Steve Yao");  
    }  
}
```

Which statement is correct?

Select one:

- ☐ a. After all the four entries are added to the map, "123" is a key that corresponds to the
- ☒ b. After all the four entries are added to the map, "123" is a key that corresponds to the
- ☐ c. After all the four entries are added to the map, "Steve Yao" is a key that corresponds to the
- ☐ d. After all the four entries are added to the map, "John Smith" is a key that corresponds to the
- ☐ e. A runtime error occurs because two entries with the same key "123" are added to the

The correct answer is: After all the four entries are added to the map, "123" is a key that corre:

Question **5**

Partially correct

Mark 0.20 out of 1.00

You can use the methods in the Collections class to:

Select one or more:

- ☐ a. find the maximum object in a collection based on the compareTo method.
- ☒ b. find the maximum object in a collection using a Comparator object.
- ☐ c. sort a collection.
- ☐ d. shuffle a collection.
- ☐ e. do a binary search on a collection.

The correct answers are: find the maximum object in a collection based on the compareTo method, find the maximum object in a collection using a Comparator object., sort a collection., shuffle a collection., do a binary search on a collection.

Question **6**

Correct

Mark 1.00 out of 1.00

The Collection interface is the base interface for ...

Select one or more:

- ☒ a. Set
- ☒ b. List
- ☒ c. ArrayList
- ☒ d. LinkedList
- ☐ e. Map

The correct answers are: Set, List, ArrayList, LinkedList

Question **7**

Correct

Mark 1.00 out of 1.00

The Map is the base interface for ...

Select one or more:

- ☒ a. TreeMap
- ☒ b. HashMap
- ☒ c. LinkedHashMap
- ☐ d. ArrayList
- ☐ e. LinkedList

The correct answers are: TreeMap, HashMap, LinkedHashMap

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following statements are true?

Select one or more:

- ☒ a. The Collection interface is the root interface for manipulating a collection of objects.
- ☒ b. The Collection interface provides the basic operations for adding and removing elements.
- ☒ c. The AbstractCollection class is a convenience class that provides partial implementation for the Collection interface.
- ☒ d. Some of the methods in the Collection interface cannot be implemented in the concrete subclass. In this case, the method would throw `java.lang.UnsupportedOperationException`, a subclass of `RuntimeException`.
- ☒ e. All interfaces and classes in the Collections framework are declared using generic type.

The correct answers are: The Collection interface is the root interface for manipulating a collection of objects., The Collection interface provides the basic operations for adding and removing elements in a collection., The AbstractCollection class is a convenience class that provides partial implementation for the Collection interface., Some of the methods in the Collection interface cannot be implemented in the concrete subclass. In this case, the method would throw `java.lang.UnsupportedOperationException`, a subclass of `RuntimeException`., All interfaces and classes in the Collections framework are declared using generic type in JDK 1.5.

Question **9**

Correct

Mark 1.00 out of 1.00

To store non-duplicated objects in the order in which they are inserted, use

Select one:

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☐ a. HashSet

Jump to...

☐ c. TreeSet

☐ d. ArrayList

☐ e. LinkedList

The correct answer is: LinkedHashSet

Question **10**

Partially correct

Mark 0.50 out of 1.00

Which of the following statements are true?

Select one or more:

- ☒ a. The Comparable interface contains the compareTo method with the signature "public
- ☐ b. The Comparator interface contains the compare method with the signature "public in
- ☐ c. A Comparable object can compare this object with the other object.
- ☒ d. A Comparator object contains the compare method that compares two objects.

The correct answers are: The Comparable interface contains the compareTo method with the signature "public compareTo(Object)", The Comparator interface contains the compare method with the signature "public int compare(Object, Object)", A Comparable object can compare this object with the other object., A Comparator object contains the compare method that compares two objects.

Question **11**

Correct

Mark 1.00 out of 1.00

Which of the following statements are true?

Select one or more:

- ☒ a. An ArrayList can grow automatically.
- ☐ b. An ArrayList can shrink automatically.
- ☒ c. You can reduce the capacity of an ArrayList by invoking the trimToSize() method on the list.
- ☐ d. You can reduce the capacity of a LinkedList by invoking the trimToSize() method on the list.

The correct answers are: An ArrayList can grow automatically., You can reduce the capacity of trimToSize() method on the list.

Question **12**

Partially correct

Mark 0.50 out of 1.00

Which of the following are correct methods in Map?

Select one or more:

- ☒ a. put(Object key, Object value)
- ☐ b. put(Object value, Object key)
- ☒ c. get(Object key)
- ☒ d. get(int index)

The correct answers are: put(Object key, Object value), get(Object key)