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- Extra Credit -

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☆ Properties of Data Structures

We perform the following sequence of actions:

1. Insert the following elements into a *set*: *1*, *2*, *9*, *1*, *2*, *3*, *1*, *4*, *1*, *5*, *7*.
2. Convert the set into a *list* and sort it in *ascending* order.

Select the option below that denotes the sorted list:

Pick one of the choices

- (●) **{1, 2, 3, 4, 5, 7, 9}**
- ( ) **{9, 7, 5, 4, 3, 2, 1}**
- ( ) **{1, 1, 1, 1, 2, 2, 3, 4, 5, 7, 9}**
- ( ) **None of the above.**

Clear selection

☆ Lookup operations

There are several factors that affect the efficiency of lookup operations in a hash table. Which of the following is **NOT** one of those factors?

Pick one of the choices

- ( ) **Number of elements stored in the hash table**
- (●) **Size of elements stored in the hash table**
- ( ) **Number of buckets in the hash table**
- ( ) **Quality of the hash function**

Clear selection

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Consider the following code snippet:

```
int a = 1;

while (a < n) {
    a = a * 2;
}
```

What is the complexity of the above code snippet?

Pick one of the choices

- (•) O(n)
- ( ) O(1)
- ( ) $O(\log_2(n))$
- ( ) $O(2^n)$

Clear selection

☆ Worst-case Running Time

Which of the following sorting algorithms does not have a worst case running time of $O(n^2)$

Pick one of the choices

- (•) **insertion sort**
- ( ) **merge sort**
- ( ) **quick sort**
- ( ) **bubble sort**

Clear selection

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Which of the following is true about abstract classes?

Pick the correct choices

- [x] abstract classes can be used as just any other class
- [ ] abstract classes need to be declared with `abstract` keyword.
- [ ] abstract classes cannot be instantiated
- [x] a class containing at least one abstract method will be an abstract class

Clear selection

☆ Java: Find the Output

Consider the following Java code snippet:

```
public int divide(int a, int b) {
    int c = -1;

    try {
        c = a / b;
    }
    catch (Exception e) {
        System.err.print("Exception ");
    }
    finally {
        System.err.println("Finally ");
    }

    return c;
}
```

What will our code *print* when we call *divide(4, 0)*?

Pick one of the choices

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- Exception
- Finally
- No output
- -1

Clear selection

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☆ REST Securely

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Identify any and all rule(s) to follow when securing a web application based on REST architecture:

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Pick the correct choices

6

- [x] Sensitive data such as usernames and passwords must always be passed to a web service using the POST method

7

- [ ] A web service must not use any HTTP error messages

8

- [x] All input validations must be done on the server

9

- [ ] Validate malformed XML/JSON
- [ ] PUT operations must be read-only

Clear selection

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☆ First Five Alerts

12

- Extra Credit -

Select the option that has the correct sequence of first five alert messages, when the following javascript code snippet is run:

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```
function func(x){
   var z = 8;

   return function(y){
      alert(x + y + z);
```

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```
var n1 = new Number(32);
var a1 = func(n1);
var n2 = new Number(16);
var a2 = func(n2);
var n3 = new Number(8);
var a3 = func(n3);
var n4 = new Number(4);
var a4 = func(n4);
var n5 = new Number(2);
var a5 = func(n5);
a1(2);
a2(4);
a3(8);
a4(16);
a5(32);
```

Pick one of the choices

- 34, 36, 40, 48, 64
- 2, 4, 8, 16, 32
- 24, 24, 28, 28, 42
- 42, 28, 24, 28, 42

Clear selection

☆ Multiple Choice

- Extra Credit -

Consider the following code. What would the line console.log(x) display below?

```
var x = 100;

function test() {
    if(false) {
        var x = 199;
    }
    console.log(x); //what does this log?
}
```

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Pick one of the choices

- 100
- 199
- undefined
- null

Clear selection

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☆ Java : Design Patterns

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The following code snippet is a demonstration of a particular design pattern. Which design pattern is it?

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```
public class Mystery {
   private static Mystery instance = null;
   protected Mystery() {
      // Exists only to defeat instantiation.
   }
   public static Mystery getInstance() {
      if(instance == null) {
         instance = new Mystery();
      }
      return instance;
   }
}
```

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Pick one of the choices

- Factory Design Pattern
- Strategy Pattern
- Singleton
- Facade Design Pattern

Clear selection

- Extra Credit -

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