



Front-end Advanced

Training Assignment

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RECORD OF CHANGES

No	Effective Date	Change Description	Reason	Reviewer	Approver
1	30/May/2019	Create a new assignment	Create new	DieuNT1	VinhNV
2	07/Jun/2019	Update Fsoft Template	Update	DieuNT1	VinhNV

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CODE:	JS-A.S.A201
TYPE:	Medium
LOC:	300
DURATION:	120

Unit 2-3: Scope, Hoisting and Closure

Objectives:

- Understand Advanced JavaScript concepts such as: Scope, Closure, Hoisting
- Able to recognize variable's scope to determine its value at runtime with ease (including nested scope)
- Able to reason about value of variable in case of Hoisting
- Able to recognize and use closure to solve common problems

Problem 01

What's the result of executing this code and why?

```
1. function test() {  
2.   console.log(a);  
3.   console.log(foo());  
4.  
5.   var a = 1;  
6.   function foo() {  
7.     return 2;  
8.   }  
9. }  
10.  
11. test();
```

Problem 02

What's the result of executing this code and why?

```
1. function someFunction(number) {  
2.   function otherFunction(input) {  
3.     return a;  
4.   }  
5.  
6.   a = 5;  
7.  
8.   return otherFunction;  
9. }  
10.  
11. var firstResult = someFunction(9);  
12. var result = firstResult(2);
```

Problem 03

Evaluate the code below. What's the result and why?

```
1. var a = 1;  
2. function b() {  
3.   a = 10;  
4.   return;  
5.   function a() {}  
6. }  
7. b();  
8. console.log(a);
```

Problem 04

Consider the following JavaScript code (saved in file **main.js**):

```
1. var nodes = document.getElementsByTagName('button');
2. for (var i = 0; i < nodes.length; i++) {
3.     nodes[i].addEventListener('click', function() {
4.         console.log('You clicked element #' + i);
5.     });
6. }
```

And the following HTML code:

```
1. <!DOCTYPE html>
2. <html lang="en">
3. <head>
4.     <meta charset="UTF-8">
5.     <meta name="viewport" content="width=device-width, initial-scale=1.0">
6.     <meta http-equiv="X-UA-Compatible" content="ie=edge">
7.     <title>Closure</title>
8. </head>
9. <body>
10.    <button>Button 1</button>
11.    <button>Button 2</button>
12.    <button>Button 3</button>
13.    <button>Button 4</button>
14.    <script src="main.js"></script>
15. </body>
16. </html>
```

What will be printed on the console if a user clicks the first and the fourth button in the list? Why?
How to fix problem above?