JavaScript mistakes interview Q&A

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Q1. What are the common JavaScript errors or bad practices that you have noticed?
A1.

1) Not having proper namespaces and not using AMD (i.e. Asynchronous Model Definition) API to modularize the Java code for improved maintainability.

2) Not using the var to declare your variables. If you don't use "var", your variable will become global. Your code will work with global variables, but it can create strange errors that are harder to debug and fix. It is also imperative to define proper namespaces and declare variables within the scope of that namespace.

3) Not understanding the difference between "==" operator and "===" operator.

== operator compare the values but it doesn't compare the data type of operands.
=== operator in JavaScript compare not only the value of operands, but also the data type. If the data type of operands is different, it will always return false.

4) Not de-referencing a variable once it has been used. Setting a variable to null once it has been used will allow the garbage collector of the js engine to reclaim that object.

5) Not understanding the difference between **innerText** and **innerHTML**. The innerHTML gets the html code inside the element and innerText gets the text inside the element. So, if you had

```
1 <p> Some text </p>
```

the **innerText** will only return "Some text" without the element "p", and **innerHTML** will return

```
1 <p> Some text </p>
```

6) Not understanding what the implicit scope "**this**" refers to. For example,

```
1  function  Account(balance) {
2   this.balance = balance;
3   this.getTenPercentOfbalance = function() {
4        return balance * 0.10;
5   };
6  }
7
8  var mortgageAccount = new Account(10000.00);
9  mortgageAccount.getTenPercentOfbalance(); // ret
10
11
```

Now, if you try

```
1 var tenPercentMethod = mortgageAccount.getTenPerc
2 tenPercentMethod();  // throws an error
3
```


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Why did it throw an error?

The implicit "**this**" points to the global **Window** object, and the Window object does not have the function getTenPercentOfbalance( ).

The above two lines can be written with the JavaScript head object 'window' as shown below.

```
1 var window.tenPercentMethod = window.mortgageAcco
2 window.tenPercentMethod();  // throws an error
3
```

Important: The value of this, passed to all functions, is based on the context in which the function is called at runtime.

You can fix this by:

```
1 tenPercentMethod.apply(mortgageAccount); // now i
```

7) Not understanding getting the function back versus invoking the function, especially when used in callback functions. The callback functions are not invoked directly. They are either invoked asynchronously after a certain event like button click or after a certain timeout.

```
1 function sayHello(){
2     return "Hello caller";
3 }
4
```

Now, if you do the following, you only get the function back.

```
1 var  varFunction = sayHello;   // stores the funct
2 setTimeout(sayHello, 1000)     // can also pass it
3                                // This is a callba
4                                // Will call sayHel
5
6 window.load = sayHello;        // Can attach to ob
7                                // This is a callba
8
```

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But if you add '( )' to it as shown below, you will be actually invoking the function.

```
1 sayHello();    //invoke the function
```

So, the addition of paranthese to the right invokes the function. So, incorrectly assigning like shown below will callback the function immediately.

```
1 setTimeout(sayHello(), 1000); // won't wait for a
2 //invokes it straight a way without waiting for o
3 <input id="mybutton" onclick="sayHello();return f
4
```

jQuery to the rescue with callbacks

```
1 setTimeout(sayHello, 1000); // waits for a second
2 //jQuery to the rescue
3 $('#mybutton').click(function(){
4     return  "Hello caller";
5 })
```

So, it is a best practice to favor using proven JavaScript frameworks to avoid potential pitfalls.

8) Not understanding JavaScript scopes. Javascript only has **global and function scopes**, and does not have block scopes as in other languages like Java. In JavaScript, functions are values that can be assigned to a variable, including arrays.

9 Not testing the JavaScript code for cross browser compatibility. Trying to reinvent the wheel by writing substandard functions as opposed to reusing functions from proven frameworks and libraries.

Q2. What tools would you use to avoid above mentioned pitfalls?
A2. If you are writing Java Script code, it is worth using code quality tools like **JSLint** and **JSHint** to avoid any pitfalls.

It is also essential to use JavaScript testing frameworks like **Jasmine**, **Selenium + WebDriver**, **QUnit**, and **TestSwarm**. QUnit is an easy-to-use, JavaScript test suite that was developed by the jQuery project to test its code and plugins, but is capable of testing any generic JavaScript code. One of the challenges of JavaScript rich application is testing it for cross browser compatibility. The primary goal of TestSwarm is to simplify the complicated, and time-consuming process of running JavaScript test suites in multiple browsers. It provides all the tools necessary for creating a continuous integration work-flow for your JavaScript rich application. Debugging JavaScripts can be a painful part of web development. There are handy browser plugins, built-ins and external tools to make your life easier. Here are a few such tools.

— **Cross-browser** (Firebug Lite, JS Shell, Fiddler, Blackbird Javascript Debug helper, NitobiBug, DOM Inspector (aka DOMi), Wireshark / Ethereal)

— **Firefox** (JavaScript Console, Firebug, Venkman, DOM Inspector, Web Developer Extension, Tamper Data, Fasterfox, etc)

— **Internet Explorer** (JavaScript Console, Microsoft Windows Script Debugger, Microsoft Script Editor, Visual Web Developer, Developer Toolbar, JScript Profiler, JavaScript Memory Leak Detector)

— **Opera** (JavaScript Console, Developer Console, DOM Snapshot, etc)

— **Safari** ("Debug" menu, JavaScript Console, Drosera – Webkit, etc)

— **Google Chrome** (JavaScript Console and Developer Tools)

Q3. What tips would you give to someone requiring to perform computation intensive task using JavaScript?
A3. Computation intensive JavaScript tasks, for example, in a

loop can make a browser unresponsive. Here are some tips to consider.

1. Redesign the functionality by offloading the processing to a back end server.

2. The HTML 5 supports Web Worker and it brings multithreading to JavaScript. Prior to Web Worker, developers were creating asynchronous processing by using techniques like setTimeout(), setInterval(), XMLHttpRequest, and event handlers. The Web Workers specification defines an API for spawning background scripts in your web application. Web Workers allow you to do things like fire up long-running scripts to handle computationally intensive tasks, but without blocking the UI or other scripts to handle user interactions.

3. If you are not on HTML 5 yet, put a wait inside the body of the loop so as to let the browser breath. Don't use sleep(5); Instead use setTimeout(..) function, which uses the non-blocking I/O paradigm.

```
1  for (var i = 0, len = items.length; i < len; i++
2     setTimeout(function(){
3         processItem(items[i])
4     }, 5)
5  }
```

Note: The above code can be further improved with a queue, dynamic batch sizes, and eliminating the need for a for loop.

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