1. What is JavaScript?

JavaScript is a client-side as well as server side scripting language that can be inserted into HTML pages and is understood by web browsers. JavaScript is also an Object based Programming language

**3. What are JavaScript Data Types?**

Following are the JavaScript Data types:

Number

String

Boolean

Object

Undefined

**4. What is the use of isNaN function?**

isNan function returns true if the argument is not a number otherwise it is false.

**6. What is negative infinity?**

Negative Infinity is a number in JavaScript which can be derived by dividing negative number by zero.

**7. Is it possible to break JavaScript Code into several lines?**

Breaking within a string statement can be done by the use of a backslash, '\', at the end of the first line

Example:

document.write("This is \a program");

And if you change to a new line when not within a string statement, then javaScript ignores break in line.

Example:

var x=1, y=2,

z=

x+y;

The above code is perfectly fine, though not advisable as it hampers debugging.

**9. What are undeclared and undefined variables?**

Undeclared variables are those that do not exist in a program and are not declared. If the program tries to read the value of an undeclared variable, then a runtime error is encountered.

Undefined variables are those that are declared in the program but have not been given any value. If the program tries to read the value of an undefined variable, an undefined value is returned.

**10. Write the code for adding new elements dynamically?**

<head>

<script type="text/javascript">

function addNode() { var newP = document.createElement("p");

var textNode = document.createTextNode(" This is a new text node");

newP.appendChild(textNode);

document.getElementById("firstP").appendChild(newP); }

</script></head>

<body><p id="firstP">firstP<p></body>

**11. What are global variables? How are these variable declared and what are the problems associated with using them?**

Global variables are those that are available throughout the length of the code, that is, these have no scope. The var keyword is used to declare a local variable or object. If the var keyword is omitted, a global variable is declared.

Example:

// Declare a global globalVariable = "Test";

The problems that are faced by using global variables are the clash of variable names of local and global scope. Also, it is difficult to debug and test the code that relies on global variables.

**12. What is a prompt box?**

A prompt box is a box which allows the user to enter input by providing a text box. Label and box will be provided to enter the text or number.

**13. What is 'this' keyword in JavaScript?**

'This' keyword refers to the object from where it was called.

**14. Explain the working of timers in JavaScript? Also elucidate the drawbacks of using the timer, if any?**

Timers are used to execute a piece of code at a set time or also to repeat the code in a given interval of time. This is done by using the functions **setTimeout, setInterval**and**clearInterval**.

The **setTimeout(function, delay)** function is used to start a timer that calls a particular function after the mentioned delay. The **setInterval(function, delay)** function is used to repeatedly execute the given function in the mentioned delay and only halts when cancelled. The **clearInterval(id)**function instructs the timer to stop.

Timers are operated within a single thread, and thus events might queue up, waiting to be executed.

**15. Which symbol is used for comments in Javascript?**

// for Single line comments and

/\*

Multi Line Comment

\*/

**16. What is the difference between ViewState and SessionState?**

'ViewState' is specific to a page in a session.

'SessionState' is specific to user specific data that can be accessed across all pages in the web application.

**18. Explain how can you submit a form using JavaScript?**

To submit a form using JavaScript use document.form[0].submit();

**19. Does JavaScript support automatic type conversion?**

Yes JavaScript does support automatic type conversion, it is the common way of type conversion used by JavaScript developers

**20. How can the style/class of an element be changed?**

It can be done in the following way:

document.getElementById("myText").style.fontSize = "20?;

or

document.getElementById("myText").className = "anyclass";

**22. What are all the looping structures in JavaScript?**

Following are looping structures in Javascript:

For

While

do-while loops

**23. What is called Variable typing in Javascript?**

Variable typing is used to assign a number to a variable and the same variable can be assigned to a string.

Example

i = 10;

i = "string";

This is called variable typing.

**24. How can you convert the string of any base to integer in JavaScript?**

The parseInt() function is used to convert numbers between different bases. parseInt() takes the string to be converted as its first parameter, and the second parameter is the base of the given string.

In order to convert 4F (of base 16) to integer, the code used will be -

parseInt ("4F", 16);

**25. Explain the difference between "==" and "==="?**

"==" checks only for equality in value whereas "===" is a stricter equality test and returns false if either the value or the type of the two variables are different.

**26. What would be the result of 3+2+"7"?**

Since 3 and 2 are integers, they will be added numerically. And since 7 is a string, its concatenation will be done. So the result would be 57.

**27. Explain how to detect the operating system on the client machine?**

In order to detect the operating system on the client machine, the navigator.platform string (property) should be used.

navigator.platform: this will print only “win32”

navigator.appVersion: this will print complete details including chrome and all like below

5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/74.0.3729.169 Safari/537.36

**28. What do mean by NULL in Javascript?**

The NULL value is used to represent no value or no object. It implies no object or null string, no valid boolean value, no number and no array object.

**29. What is the function of delete operator?**

The delete keyword is used to delete the property as well as its value.

Example

var student= {age:20, batch:"ABC"};

delete student.age;

alert(JSON.stringify(student)); //to print the object in alert pop up)

**30. What is an undefined value in JavaScript?**

Undefined value means the Variable used in the code doesn't exist, Variable is not assigned to any value, Property doesn't exist.

**31. What are all the types of Pop up boxes available in JavaScript?**

Alert

Pop up contains only “ok” button

Confirm

Pop up contains “ok” and “cancel” button

Prompt

Pop up contains a text box followed by “ok” and “cancel” button.

**32. What is the use of Void(0)?**

Void(0) is used to prevent the page from refreshing and parameter "zero" is passed while calling.

Void(0) is used to call another method without refreshing the page.

**33. How can a page be forced to load another page in JavaScript?**

The following code has to be inserted to achieve the desired effect:

<script language="JavaScript" type="text/javascript" >

<!-- location.href="http://newhost/newpath/newfile.html"; //--></script>

**34. What is the data type of variables of in JavaScript?**

All variables in the JavaScript are object data types.

**36. What are escape characters?**

Escape characters (Backslash) is used when working with special characters like single quotes, double quotes, apostrophes and ampersands. Place backslash before the characters to make it display.

Example:

document.write "I m a "good" boy"

document.write "I m a \"good\" boy"

**37. What are JavaScript Cookies?**

Cookies are the small test files stored in a computer and it gets created when the user visits the websites to store information that they need. Example could be User Name details and shopping cart information from the previous visits.

**38. Explain what is pop()method in JavaScript?**

The pop() method is similar as the shift() method but the difference is that the Shift method works at the start of the array. Also the pop() method take the last element off of the given array and returns it. The array on which is called is then altered.

Example:

var cloths = ["Shirt", "Pant", "TShirt"];

cloths.pop();

//Now cloth becomes Shirt,Pant

**39. Whether JavaScript has concept level scope?**

No. JavaScript does not have concept level scope. The variable declared inside the function has scope inside the function.

**40. Mention what is the disadvantage of using innerHTML in JavaScript?**

If you use innerHTML in JavaScript the disadvantage is

Content is replaced everywhere

We cannot use like "appending to innerHTML"

Even if you use +=like "innerHTML = innerHTML + 'html'" still the old content is replaced by html

The entire innerHTML content is re-parsed and build into elements, therefore its much slower

The innerHTML does not provide validation and therefore we can potentially insert valid and broken HTML in the document and break it

**41. What is break and continue statements?**

Break statement exits from the current loop.

Continue statement continues with next statement of the loop.

**42. What are the two basic groups of dataypes in JavaScript?**

They are as –

Primitive

Reference types.

Primitive types are number and Boolean data types. Reference types are more complex types like strings and dates.

**43. How generic objects can be created?**

Generic objects can be created as:

var I = new object();

**44. What is the use of type of operator?**

'Typeof' is an operator which is used to return a string description of the type of a variable.

alert(typeof “name”); // will give string as result

**45. Which keywords are used to handle exceptions?**

Try… Catch---finally is used to handle exceptions in the JavaScript

Try{

Code

}

Catch(exp){

Code to throw an exception

}

Finally{

Code runs either it finishes successfully or after catch

}

**46. Which keyword is used to print the text in the screen?**

document.write("Welcome") is used to print the text – Welcome in the screen.

**47. What is the use of blur function?**

Blur function is used to remove the focus from the specified object.

**50. What are the different types of errors in JavaScript?**

There are three types of errors:

**Load time errors**: Errors which come up when loading a web page like improper syntax errors are known as Load time errors and it generates the errors dynamically.

**Run time errors**: Errors that come due to misuse of the command inside the HTML language.

**Logical Errors**: These are the errors that occur due to the bad logic performed on a function which is having different operation.

**51. What is the use of Push method in JavaScript?**

The push method is used to add or append one or more elements to the end of an Array. Using this method, we can append multiple elements by passing multiple arguments

**52. What is unshift method in JavaScript?**

Unshift method is like push method which works at the beginning of the array. This method is used to prepend one or more elements to the beginning of the array.

**54. How are object properties assigned?**

Properties are assigned to objects in the following way -

obj["class"] = 12;

or

obj.class = 12;

**55. What is the 'Strict' mode in JavaScript and how can it be enabled?**

Strict Mode adds certain compulsions to JavaScript. Under the strict mode, JavaScript shows errors for a piece of codes, which did not show an error before, but might be problematic and potentially unsafe. Strict mode also solves some mistakes that hamper the JavaScript engines to work efficiently.

Strict mode can be enabled by adding the string literal "use strict" above the file. This can be illustrated by the given example:

function myfunction() {

"use strict";

var v = "This is a strict mode function";

}

**56. What is the way to get the status of a CheckBox?**

The status can be acquired as follows -

alert(document.getElementById('checkbox1').checked);

If the CheckBox will be checked, this alert will return TRUE.

**58. Explain window.onload and onDocumentReady?**

The onload function is not run until all the information on the page is loaded. This leads to a substantial delay before any code is executed.

onDocumentReady loads the code just after the DOM is loaded. This allows early manipulation of the code.

# closures

**59. How will you explain closures in JavaScript? When are they used?**

Closure is a locally declared variable related to a function which stays in memory when the function has returned.

For example:

function greet(message) {

console.log(message);

}

function greeter(name, age) {

return name + " says howdy!! He is " + age + " years old";

}

// Generate the message

var message = greeter("James", 23);

// Pass it explicitly to greet

greet(message);

This function can be better represented by using closures

function greeter(name, age) {

var message = name + " says howdy!! He is " + age + " years old";

return function greet() {

console.log(message);

};

}

// Generate the closure

VarJamesGreeter = greeter("James", 23);

// Use the closure

JamesGreeter();

To get the counter incrementally:

<button type="button" onclick="myFunction()">Count!</button>

<p id="demo">0</p>

<script>

var add = (function () {

var counter = 0;

return function () {counter += 1; return counter;}

})();

function myFunction(){

document.getElementById("demo").innerHTML = add();

}

</script>

For every button click the counter will increase but won’t set to 0(zero) every time.

# Promises

**Promises** are used to handle asynchronous operations in JavaScript. They are easy to manage when dealing with multiple asynchronous operations where callbacks can create callback hell leading to unmanageable code.

Prior to promises events and callback functions were used but they had limited functionalities and created unmanageable code.  
Multiple callback functions would create callback hell that leads to unmanageable code.  
Events were not good at handling asynchronous operations.

Promises are the ideal choice for handling asynchronous operations in the simplest manner. They can handle multiple asynchronous operations easily and provide better error handling than callbacks and events.

* **Benefits of Promises**
  1. Improves Code Readability
  2. Better handling of asynchronous operations
  3. Better flow of control definition in asynchronous logic
  4. Better Error Handling
* **A Promise has four states:**
  1. **fulfilled**: Action related to the promise succeeded
  2. **rejected**: Action related to the promise failed
  3. **pending**: Promise is still pending i.e not fulfilled or rejected yet
  4. **settled**: Promise has fulfilled or rejected
* **A promise can be created using Promise constructor.**

**Parameters**

* 1. Promise constructor takes only one argument,a callback function.
  2. Callback function takes two arguments, resolve and reject
  3. Perform operations inside the callback function and if everything went well then call resolve.
  4. If desired operations do not go well then call reject.

**Example**

|  |
| --- |
| var promise = new Promise(function(resolve, reject) {  const x = "geeksforgeeks";  const y = "geeksforgeeks";  if(x === y) {  resolve("equal");  } else{  reject("not equal");  }  });    promise.  then(function(result) {  document.write(result); // this will print “equal” if both are same    },function(error) {    document.write(error); ////this will print “not equal” if both are not same  }).  catch(function() {  document.write("excption"); // this will print if any exception occurred.  }); |

**Output:**

Success, You are a GEEK

* **Promise Consumers**

Promises can be consumed by registering functions using *.then* and *.catch* methods.

* 1. **then()**  
     *then()* is invoked when a promise is either resolved or rejected.  
     **Parameters:**  
     *then()* method takes two functions as parameters.
     1. First function is executed if promise is resolved and a result is received.
     2. Second function is executed if promise is rejected and an error is received. (It is optional and there is a better way to hanlde error using *.catch() method*
  2. **catch()**  
     *catch()* is invoked when a promise is either rejected or some error has occured in execution.  
     **Parameters:**  
     *catch()* method takes one function as parameter.
     1. Function to handle errors or promise rejections.(.catch() method internally calls .then(null, errorHandler), i.e. .catch() is just a shorthand for .then(null, errorHandler) )
* **Applications**
  1. Promises are used for asynchronous handling of events.
  2. Promises are used to handle asynchronous http requests.

# Callbacks

Callbacks are a great way to handle something after something else has been completed. By something here we mean a function execution. If we want to execute a function right after the return of some other function, then callbacks can be used.

JavaScript functions have the type of Objects. So, much like any other objects (String, Arrays etc.), They can be passed as an argument to any other function while calling.

**Code #1:**

|  |
| --- |
| <script>  function add(a, b , callback){  document.write(`The sum of ${a} and ${b} is ${a+b}.` +"<br>");  callback();  }  function disp(){  document.write('This must be printed after addition');  }  // Calling add() function  add(5,6,disp);  </script> |

**Output:**

The sum of 5 and 6 is 11.

This must be printed after addition

**60. How can a value be appended to an array?**

A value can be appended to an array in the given manner -

arr[arr.length] = value;

**61. Explain the for-in loop?**

The for-in loop is used to loop through the properties of an object.

<script>

var person = {fname:"John", lname:"Doe", age:25};

var text = "";

var x;

for (x in person) {

text += person[x] + " ";

}

document.write(text);

</script>

Output: John Doe 25

In each repetition, one property from the object is associated to the variable name, and the loop is continued till all the properties of the object are depleted.

**62. Describe the properties of an anonymous function in JavaScript?**

A function that is declared without any named identifier is known as an anonymous function. In general, an anonymous function is inaccessible after its declaration.

Anonymous function declaration -

var anon = function() {

alert('I am anonymous');

};

anon();

**63. What is the difference between .call() and .apply()?**

The call() method takes arguments **separately**.

The apply() method takes arguments as an **array**.

**CALL:**

<script>

var person = {

fullName: function(city, country) {

return this.firstName + " " + this.lastName+ "," + city + "," + country;

}

}

var person1 = {

firstName:"John",

lastName: "Doe"

}

var x = person.fullName.call(person1, "Oslo", "Norway");

document.getElementById("demo").innerHTML = x; // will print “John Doe”

</script>

**APPLY:**

<script>

var person = {

fullName: function(city, country) {

return this.firstName + " " + this.lastName + "," + city + "," + country;

}

}

var person1 = {

firstName:"John",

lastName: "Doe"

}

var x = person.fullName.apply(person1, ["Oslo", "Norway"]);

document.getElementById("demo").innerHTML = x;

</script>

**64. Define event bubbling?**

JavaScript allows DOM elements to be nested inside each other. In such a case, if the handler of the child is clicked, the handler of parent will also work as if it were clicked too.

**65. Is JavaScript case sensitive? Give an example?**

Yes, JavaScript is case sensitive. For example, a function parseInt is not same as the function Parseint.

**66. What boolean operators can be used in JavaScript?**

The 'And' Operator (&&), 'Or' Operator (||) and the 'Not' Operator (!) can be used in JavaScript.

**67. How can a particular frame be targeted, from a hyperlink, in JavaScript?**

This can be done by including the name of the required frame in the hyperlink using the 'target' attribute.

<a href="/newpage.htm" target="newframe">>New Page</a>

**70. How are object properties assigned?**

Assigning properties to objects is done in the same way as a value is assigned to a variable. For example,

person.name="sudeep"

**71. What is the method for reading and writing a file in JavaScript?**

This can be done by Using JavaScript extensions (runs from JavaScript Editor), example for opening of a file -

fh = fopen(getScriptPath(), 0);

**72. How are DOM utilized in JavaScript?**

DOM stands for Document Object Model and is responsible for how various objects in a document interact with each other. DOM is required for developing web pages, which includes objects like paragraph, links, etc. These objects can be operated to include actions like add or delete. DOM is also required to add extra capabilities to a web page. On top of that, the use of API gives an advantage over other existing models.

**73. How are event handlers utilized in JavaScript?**

|  |  |
| --- | --- |
| **Event** | **Description** |
| onchange | An HTML element has been changed |
| onclick | The user clicks an HTML element |
| onmouseover | The user moves the mouse over an HTML element |
| onmouseout | The user moves the mouse away from an HTML element |
| onkeydown | The user pushes a keyboard key |
| onload | The browser has finished loading the page |

**75. What are the various functional components in JavaScript?**

The different functional components in JavaScript are-

**First-class functions:** Functions in JavaScript are utilized as first class objects. This usually means that these functions can be passed as arguments to other functions, returned as values from other functions, assigned to variables or can also be stored in data structures.

**Nested functions:** The functions, which are defined inside other functions, are called Nested functions. They are called 'everytime' the main function is invoked.

**77. What are Screen objects?**

Screen objects are used to read the information from the client's screen. The properties of screen objects are -

AvailHeight: Gives the height of client's screen

AvailWidth: Gives the width of client's screen.

ColorDepth: Gives the bit depth of images on the client's screen

Height: Gives the total height of the client's screen, including the taskbar

Width: Gives the total width of the client's screen, including the taskbar

**79. Define unescape() and escape() functions?**

The escape () function is responsible for coding a string so as to make the transfer of the information from one computer to the other, across a network.

For Example:

<script>

document.write(escape("Hello? How are you!"));

</script>

Output: Hello%3F%20How%20are%20you%21

The unescape() function is very important as it decodes the coded string.

It works in the following way. For example:

<script>

document.write(unescape("Hello%3F%20How%20are%20you%21"));

</script>

Output: Hello? How are you!

**80. What are the decodeURI() and encodeURI()?**

EncodeURl() is used to convert URL into their hex coding. And DecodeURI() is used to convert the encoded URL back to normal.

<script>

varuri="my test.asp?name=ståle&car=saab";

document.write(encodeURI(uri)+ "<br>");

document.write(decodeURI(uri));

</script>

Output -

my%20test.asp?name=st%C3%A5le&car=saab

my test.asp?name=ståle&car=saab

**81. Why it is not advised to use innerHTML in JavaScript?**

innerHTML content is refreshed every time and thus is slower. There is no scope for validation in innerHTML and, therefore, it is easier to insert rouge code in the document and, thus, make the web page unstable.

**82. What does the following statement declares?**

VarmyArray = [[[]]];

It declares a three dimensional array.

**83. How are JavaScript and ECMA Script related?**

ECMA Script are like rules and guideline while Javascript is a scripting language used for web development.

**84. What is namespacing in JavaScript and how is it used?**

Namespacing is used for grouping the desired functions, variables etc. under a unique name. It is a name that has been attached to the desired functions, objects and properties. This improves modularity in the coding and enables code reuse.

# Design Patterns

The design patterns in question include the following:

* Module
* Prototype
* Observer
* Singleton

## [Module Design Pattern](https://scotch.io/bar-talk/4-javascript-design-patterns-you-should-know#undefined)

JavaScript modules are the most prevalently used design patterns for keeping particular pieces of code independent of other components. This provides loose coupling to support well-structured code.

For those that are familiar with object-oriented languages, modules are JavaScript "classes". One of the many advantages of classes is encapsulation - protecting states and behaviors from being accessed from other classes. The module pattern allows for public and private (plus the lesser-know protected and privileged) access levels.

## [Prototype Design Pattern](https://scotch.io/bar-talk/4-javascript-design-patterns-you-should-know#undefined)

Any JavaScript developer has either seen the keyword **prototype**, confused by the prototypical inheritance, or implemented prototypes in their code. The Prototype design pattern relies on the [JavaScript prototypical inheritance](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Inheritance_and_the_prototype_chain). The prototype model is used mainly for creating objects in performance-intensive situations.

## [Observer Design Pattern](https://scotch.io/bar-talk/4-javascript-design-patterns-you-should-know#undefined)

There are many times when one part of the application changes, other parts needs to be updated. In AngularJS, if the $scope object updates, an event can be triggered to notify another component. The observer pattern incorporates just that - if an object is modified it **broadcasts** to dependent objects that a change has occurred.

Ex: onChange()

## [Singleton](https://scotch.io/bar-talk/4-javascript-design-patterns-you-should-know#undefined)

A Singleton only allows for a single instantiation, but many instances of the same object. The Singleton restricts clients from creating multiple objects, after the first object created, it will return instances of itself.