

Project 8: JavaScript Core Concepts (Up to 100 Points)

Task: Answer the following questions relating to the JavaScript language or write code to perform the following tasks using base JavaScript.

Questions:

1. What is the relationship between the Java and JavaScript languages? (Up to 5 Points)
2. Explain the difference between local scope and global scope. More specifically, explain the difference between global, function, and block scope. (Up to 5 Points)
3. Explain what strict mode in JavaScript is and its purpose. (Up to 5 Points)
4. Explain the difference between the `==` and `===` comparison operators. (Up to 5 Points)
5. Explain the concept of type casting. (Up to 5 Points)
6. Explain the concept of truthy and falsy in JavaScript. Provide examples of each. (Up to 5 Points)
7. Explain the difference between a method and a function in JavaScript. (Up to 5 Points)
8. Explain the use of the `"this"` keyword when building a method inside of a JavaScript object. (Up to 5 Points)
9. Explain the concept of an infinite loop. Provide an example of some logic that would result in an infinite loop. (Up to 5 Points)
10. Explain the differences and uses of `continue` and `break` within a `for` loop. (Up to 5 Points)

Tasks:

1. Write a JavaScript function to convert between temperature in degrees Fahrenheit and degrees Celsius. The function should accept two parameters: the temperature value to be converted and the current units. It should return the new value. (Up to 10 points)
2. Write a JavaScript function that will determine if a value is divisible by 3. It should accept the value being tested as a single argument and return a print statement to the console that states whether the value is or is not divisible by 3. (Up to 10 points)
3. Write a JavaScript function that will return the volume of a cylinder if given the radius and height of the cylinder. (Up to 10 points)
4. Write a JavaScript function that will return a single random name from an array of names. (Up to 10 points)
5. Create a JavaScript function that will return a random and valid BINGO value when executed. It should require no arguments. In BINGO, the letters `"B"`, `"I"`, `"N"`, `"G"`, and `"O"` represent the columns. The `"B"` column can only reference numbers between 1 and 15, `"I"` between 16 and 30, `"N"` between 31 and 45, `"G"` between 46 through 60, and `"O"` between 61 and 75. The function should return the value in the following form: `"B8"`. It is okay if the function is able to produce the same random combination more than once. However, all combinations must be valid relative to the BINGO rules. (Up to 10 points)

Deliverables:

- ❖ Text file with answers to the questions and the JavaScript code to implement your functions.