Question 1 : Answer The Following Questions (10 points)

1- What is an Event Loop
2- How do you add an element at the begining of an array? How do you add one at the end? Hint[2 ways]

An event loop is a mechanism in JavaScript that handles asynchronous operations. It ensures that tasks are executed in a non-blocking manner, allowing the program to continue running while waiting for certain operations to complete. The event loop continuously checks for any pending tasks and executes them in the order they were added to the queue.

To add an element at the beginning of an array in JavaScript, you can use the unshift() method. Here's an example:

To add an element at the end of an array, you can use the push() method. Here's an example:

Question2 : What is The Output ? (5 points)

Output : 3

```
var b = 1;
function outer(){
    var b = 2
    function inner(){
        b++;
        var b = 3;
        console.log(b)
    }
    inner();
}
outer();
```

Output
0
1
2
3
4

```
for (let i = 0; i < 5; i++) {
  setTimeout(function() { console.log(i); }, i * 1000 );
}
```

Output

[' baz']

```
let arr = ['foo' , 'bar'];
arr.length = 0;
arr.push('baz');
console.log(arr);
```

```
function func(){
    for(let key in arguments){
        console.log(arguments[key]);
    }
}
func(1, "Hello", true);
```

Output

1
Hello
true

```
let car = {
    carName : "Bmw" ,
    carPrice : 1000000
}
console.log(car instanceof Object);
console.log(Object.entries(car));
```

Output

```
true
[
 ['carName', 'Bmw'],
 ['carPrice', 1000000]
]
```

Question 3 : (85 points)

1- Create Function sumObjectValues() that will sum all values of the fields that contain numbers . ensure that iteration is done only over own property of the object (15 points)

2- Show the execution of 3 asynchronous block of code, one after the other in sequence (10 points)

3- Get the maximum value from a numbers array along with its index (5 points)

4- Write a function which accepts two valid dates and returns the difference between them as number of days (10 points)

5- Design a Calulator interface for 2 number inputs which can perform sum, difference, product and dividend whenever invoked on the same interface. (15 points)

6- Write a function which can return multiple values from a function (10 points)

Therefore, to return all the values from a function there are two ways: -

- By using an array
- By using an object

7- Write a function to reverse an array. For Example :

reverse([1, 2, 3, 4]) ⟶[4, 3, 2, 1] (10 points)

```
let numbers_array = [1, 2, 3, 4];

  console.log("Original Array: ");
  console.log(numbers_array);

  numbers_array.reverse();

  console.log("Reversed Array: ");
  console.log(numbers_array);
```

8- Write a function that converts an object into an array, where each element represents a key-value pair in the form of an array. For Example :

({ a: 1, b: 2 }) ⟶[["a", 1], ["b", 2]] (10 points)

- using Object.keys() and JavaScript map()
- using Object.entries() method

Bonus ++

1- Write a function which can convert the time input given in 12 hours format to 24 hours format [10 points]

2- Make this syntax possible: var a = add(2)(3); //5 [5 points]

```
var add = function(x) {
  return function(y) { return x + y; };
}
```

3- Check if the user with the name "John" exists in the array of objects [5 points]

```
const people = [
 {id: 1, name: 'John'},
 {id: 2, name: 'Adam'},
];

const isFound = people.some(element => {
 if (element.id === 1) {
  return true;
```

```
  }

  return false;
});

console.log(isFound);

if (isFound) {
  // object is contained in the array
}
```

Good Luck

Best Wishes

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