1. Determine what this Javascript code will print out (without running it):

```
 x = 1;
 var a = 5;
 var b = 10;
 var c = function(a, b, c) {
                    document.write(x);
                    document.write(a);
                    var f = function(a, b, c) {
                                        b = a;
                                        document.write(b);
                                        b = c;
                                        var x = 5;
                                  }
                    f(a,b,c);
                    document.write(b);
                    var x = 10;
                }
c(8,9,10);
document.write(b);
document.write(x);
}
```

Answer : **Undefined 8 8 9 10 1**

2. Define *Global Scope* and *Local Scope* in Javascript.

Answer : out side of any function definition is know as global scope and inside of a function is defined as local scope

3. Consider the following structure of Javascript code:

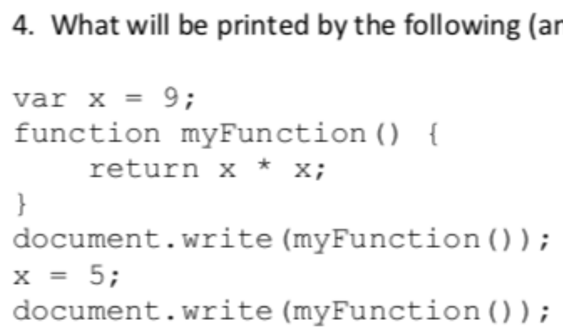
```
// Scope A
function XFunc () {
        // Scope B
        function YFunc () {
                // Scope C
        };
};
```

(a)Do statements in Scope A have access to variables defined in Scope B and C?

(b) Do statements in Scope B have access to variables defined in Scope A?
(c)Do statements in Scope B have access to variables defined in Scope C?
(d)Do statements in Scope C have access to variables defined in Scope A?

(e)Do statements in Scope C have access to variables defined in Scope B?

Answer : (a) No, (b) yes, (c) no , (d) yes (e) yes


4. What will be printed by the following (answer without running it)?

```
var x = 9;
function myFunction() {
    return x * x;
}
document.write(myFunction());
x = 5;
document.write(myFunction());
```

Answer : 81,25

5. What will the *alert* print out? (Answer without running the code. Remember ‘hoisting’.)?

```
var foo = 1;
function bar() {
   if (!foo) {
      var foo = 10;
    }
    alert(foo);

}

bar();
```

Answer : 10

6. Consider the following definition of an *add*( ) function to increment a *counter* variable:

```
var add = (function () {
var counter = 0;
  return function () {
      return counter += 1;

} })();
```

Modify the above module to define a *count* object with two methods: *add*( ) and *reset*( ). The *count*.*add*( ) method adds one to the *counter* (as above). The *count*.*reset*( ) method sets the *counter* to 0.

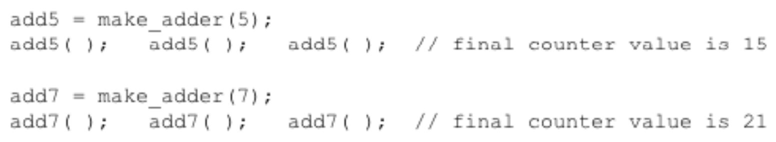
Answer :

```
var count=(function(){
   var counter=0;
  var reset=function(){
     counter=0;
  }
  var add=function(){
   ++counter;
   return counter
  }
  return  {
   reset: reset,
   add:add
  }
  })();
```

7. In the definition of *add*( ) shown in question 6, identify the "free" variable. In the context of a function closure, what is a "free" variable?

Answer : free variable is counter . A free variable is a normal variable which is not declared inside a given function, but it is used inside the function.

8. The *add*( ) function defined in question 6 always adds 1 to the *counter* each time it is called. Write a definition of a function *make_adder*(*inc*), whose return value is an *add* function with increment value *inc* (instead of 1). Here is an example of using this function:



```
add5 = make_adder(5);
add5( );   add5( );   add5( );  // final counter value is 15

add7 = make_adder(7);
add7( );   add7( );   add7( );  // final counter value is 21
```

Answer :

```
var make_adder=function(inc){
   var counter=0;
   function increment(){
      counter+=inc;
      return counter;
   }
   return increment;
}
```

9. Suppose you are given a file of Javascript code containing a list of many function and variable declarations. All of these function and variable names will be added to the Global Javascript namespace. What simple modification to the Javascript file can remove all the names from the Global namespace?

Answer:

```
(function(){
// code will be here

})();
```

10. Using the *Revealing Module Pattern*, write a Javascript definition of a Module that creates an *Employee* Object with the following fields and methods:

Private Field: name Private Field: age Private Field: salary

Public Method: setAge(newAge)
Public Method: setSalary(newSalary)
Public Method: setName(newName)
Private Method: getAge( )
Private Method: getSalary( )
Private Method: getName( )
Public Method: increaseSalary(percentage)
Public Method: incrementAge( ) // uses private getAge( )

Answer :

```
var Employee=(function(){
   "use strict"
   let name;
   let age;
   let salary;
   let setName=function(newName){
      name=newName;
   };
```

```
    let setAge=function(newAge){
        age=newAge;
    };
    let setSalary=function(newSalary){
        salary=newSalary;
    };

    let getName=function(){
        return name;
    };
    let getAge=function(){
        return age;
    };
    let getSalary=function(){
        return salary;
    }

    let increaseSalary=function(percentage){
        (getSalary()*percentage)/100;
    };

    return {
        setName:setName,
        setAge:setAge,
        setSalary:setSalary,
        increaseSalary:increaseSalary
    };

})();
```

11. Rewrite your answer to Question 10 using the Anonymous Object Literal Return Pattern.

Answer:

```
var Employee=(function(){
    "use strict"
    let name;
    let age;
    let salary;
    let getName=function(){
        return name;
    };
    let getAge=function(){
        return age;
    };
    let getSalary=function(){
        return salary;
    }
     return {
        setName:function(newName){
            name=newName;
        },
        setAge:function(newAge){
            age=newAge;
        },
        setSalary:function(newSalary){
            salary=newSalary;
        },

        fullInfo:function(){
            console.log(getName()+"==="+getAge()+"====="+getSalary());
        }

     }

})();
```

12. Rewrite your answer to Question 10 using the Locally Scoped Object Literal Pattern.

Answer :

```
var Employee=(function(){
    "use strict"
    let name;
    let age;
    let salary;
    let returnObject={};

    returnObject.setName=function(newName){
        name=newName;
    };
    returnObject.setAge=function(newAge){
        age=newAge;
    };
    returnObject.setSalary=function(newSalary){
        salary=newSalary;
    };

    let getName=function(){
        return name;
    };
    let getAge=function(){
        return age;
    };
    let getSalary=function(){
        return salary;
    }

    returnObject.increaseSalary=function(percentage){
        (getSalary()*percentage)/100;
    };

    return returnObject;

})();
```

13. Write a few Javascript instructions to extend the Module of Question 10 to have a public *address* field and public methods *setAddress*(*newAddress*) and *getAddress*( ).

Answer :

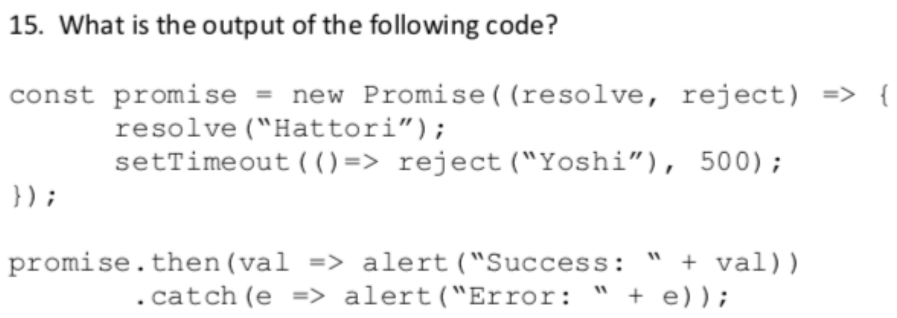
```
emp1=Employee;
emp1.address="";
emp1.setAddress=function(newaddress){
    address=newaddress;
}
emp1.getAddress=function(){
    return address;
}
```

14. What is the output of the following code?

```
const promise = new Promise((resolve, reject) => {

                                reject("Hattori");

});
```

```
promise.then(val => alert(“Success: “ + val))

            .catch(e => alert(“Error: “ + e));
```

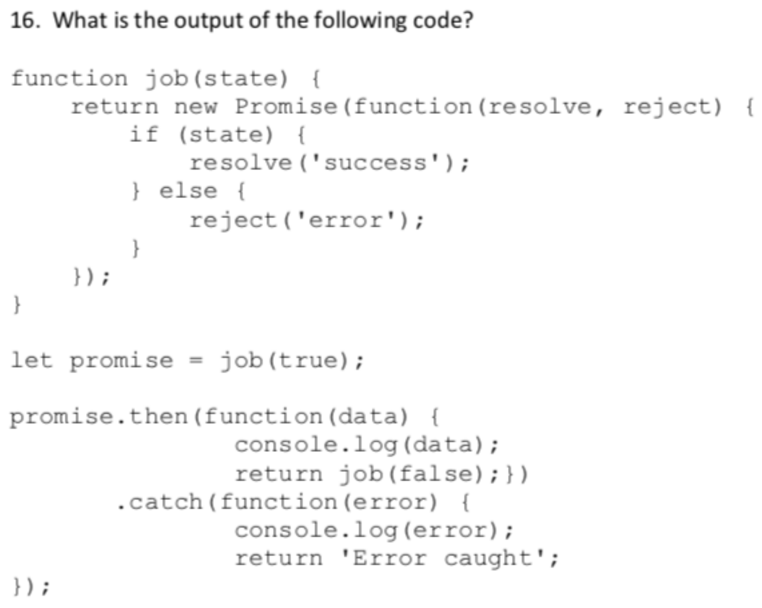
Answer : Error: Hattori



15. What is the output of the following code?

```
const promise = new Promise((resolve, reject) => {
      resolve(“Hattori”);
      setTimeout(()=> reject(“Yoshi”), 500);
});

promise.then(val => alert(“Success: “ + val))
       .catch(e => alert(“Error: “ + e));
```

Answer : Success: Hattaori



16. What is the output of the following code?

```
function job(state) {
    return new Promise(function(resolve, reject) {
        if (state) {
            resolve('success');
        } else {
            reject('error');
        }
    });
}

let promise = job(true);

promise.then(function(data) {
               console.log(data);
               return job(false);})
       .catch(function(error) {
               console.log(error);
               return 'Error caught';
});
```

Answer : success
  error