Episode 7 : The Scope Chain, Scope & Lexical Environment

- **Scope** in Javascript is directly related to **Lexical Environment**.
- Let's observe the below examples:

```
// CASE 1
function a() {
    console.log(b); // 10
    // Instead of printing undefined it prints 10, So somehow this a
function could access the variable b outside the function scope.
}
var b = 10;
a();
```

```
// CASE 2
function a() {
    c();
    function c() {
        console.log(b); // 10
    }
}
var b = 10;
a();
```

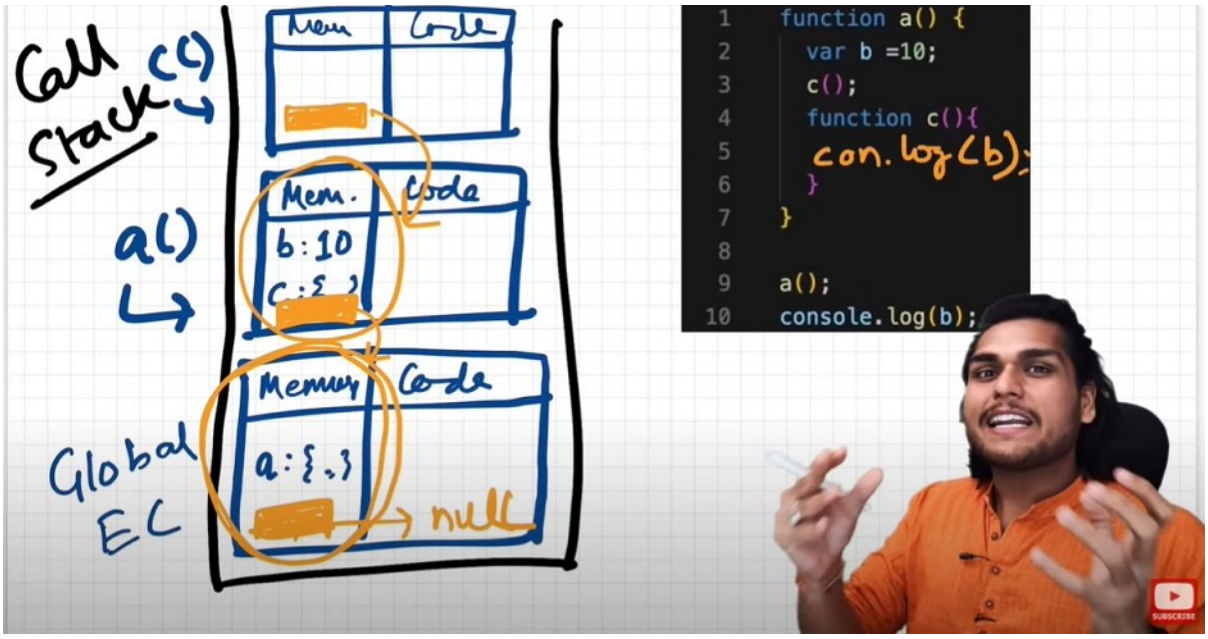
```
// CASE 3
function a() {
    c();
    function c() {
        var b = 100;
        console.log(b); // 100
    }
}
var b = 10;
a();
```

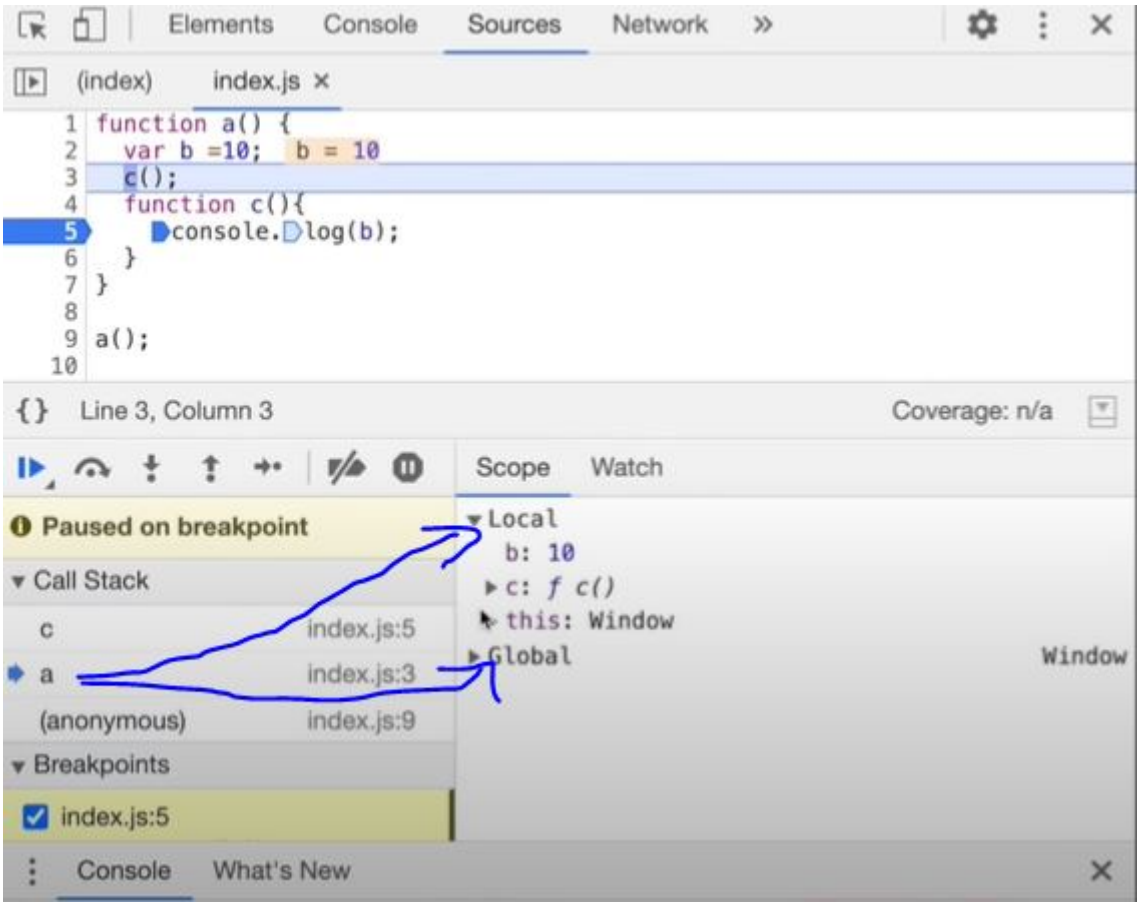
```
// CASE 4
function a() {
    var b = 10;
    c();
    function c() {
        console.log(b); // 10
```

```
    }
}
a();
console.log(b); // Error, Not Defined
```

- Let's try to understand the output in each of the cases above.
  - In **case 1**: function a is able to access variable b from Global scope.
  - In **case 2**: 10 is printed. It means that within nested function too, the global scope variable can be accessed.
  - In **case 3**: 100 is printed meaning local variable of the same name took precedence over a global variable.
  - In **case 4**: A function can access a global variable, but the global execution context can't access any local variable.

```
To summarize the above points in terms of execution context:
call_stack = [GEC, a(), c()]
Now lets also assign the memory sections of each execution
context in call_stack.
c() = [[lexical environment pointer pointing to a()]]
a() = [b:10, c:{}, [lexical environment pointer pointing to GEC]]
GEC =  [a:{},[lexical_environment pointer pointing to null]]
```





- So, **Lexical Environment** = local memory + lexical env of its parent. Hence, Lexical Environement is the local memory along with the lexical environment of its parent
- **Lexical**: In hierarchy, In order
- Whenever an Execution Context is created, a Lexical environment(LE) is also created and is referenced in the local Execution Context(in memory space).
- The process of going one by one to parent and checking for values is called scope chain or Lexcial environment chain.

- ```
  function a() {
      function c() {
          // logic here
      }
      c(); // c is lexically inside a
  } // a is lexically inside global execution
  ```

- Lexical or Static scope refers to the accessibility of variables, functions and object based on phylical location in source code.

  ```
  Global {
      Outer {
          Inner
      }
  }
  // Inner is surrounded by lexical scope of Outer
  ```

- **TLDR**; An inner function can access variables which are in outer functions even if inner function is nested deep. In any other case, a function can't access variables not in its scope.

Watch Live On Youtube below:
  ```


THE
SCOPE
CHAIN
Namaste 🙏 JavaScript Ep.7