CLOSURE

Setup

```
function f1(){
  console.log("Entering f1");
  var a = 1;
  var b = 2;
  console.log("a =  "+ a);
  console.log("b =  "+ b);
  console.log("Leaving f1");
}

f1();
```

Nested Function

```
function f1(){
  console.log("Entering f1");
  var a = 1;
  var b = 2;
  function f2(){
    console.log("Entering f2");
    var c = 3;
    var d = 4;
    console.log("c = "+c);
    console.log("d = "+d);
    console.log("Leaving f2");
  }
  console.log("a = "+ a);
  console.log("b = "+ b);
  f2();
  console.log("Leaving f1");
}

f1();
```

Local Access

```
function f1(){
  console.log("Entering f1");
  var a = 1;
  var b = 2;
  function f2(){
    console.log("Entering f2");
    var c = 3;
    var d = 4;
    console.log("a = "+a);
    console.log("b = "+b);
    console.log("c = "+c);
    console.log("d = "+d);
    a++;
    b++;
    console.log("Leaving f2");
  }
  f2();
  console.log("a = "+ a);
  console.log("b = "+ b);
  console.log("Leaving f1");
}

f1();
```

Captured Variables

```
function f1(){
  console.log("Entering f1");
  var a = 1;
  var b = 2;
  function f2(){
    console.log("Entering f2");
    var c = 3;
    var d = 4;
    a++;
    b++;
    c++;
    d++;
    console.log("a = "+a);
    console.log("b = "+b);
    console.log("c = "+c);
    console.log("d = "+d);
    console.log("Leaving f2");
  }
  console.log("a = "+ a);
  console.log("b = "+ b);
  console.log("Leaving f1");
  return f2;
}

var f = f1();
f();
f();
```

Closure

```
var v1, v2;
function f1(){
    console.log("Entering f1");
    var a = 1;
    var b = 2;
    var f2 = function(){
        console.log("Entering f2");
        var c = 3;
        var d = 4;
        a++;
        b++;
        c++;
```

```
        d++;
        console.log("a = "+a);
        console.log("b = "+b);
        console.log("c = "+c);
        console.log("d = "+d);
        console.log("Leaving f2");
    }
    v1 = f2;
    var f3 = function(){
        console.log("Entering f3");
        var e = 3;
        var f = 4;
        a++;
        b++;
        e++;
        f++;
        console.log("a = "+a);
        console.log("b = "+b);
        console.log("e = "+e);
        console.log("f = "+f);
        console.log("Leaving f3");
    }
    v2 = f3;
    console.log("a = "+ a);
    console.log("b = "+ b);
    console.log("Leaving f1");
}

f1();
v1();
v2();
v1();
v2();
```

Multiple Closure

```
var v = [];
var counter = 0;
function f1(a,b){
    console.log("Entering f1");
    var f2 = function(){
        console.log("Entering f2");
        var c = 3;
```

```
        var d = 4;
        a++;
        b++;
        c++;
        d++;
        console.log("a = "+a);
        console.log("b = "+b);
        console.log("c = "+c);
        console.log("d = "+d);
        console.log("Leaving f2");
    }
    v[counter++] = f2;
    var f3 = function(){
        console.log("Entering f3");
        var e = 3;
        var f = 4;
        a++;
        b++;
        e++;
        f++;
        console.log("a = "+a);
        console.log("b = "+b);
        console.log("e = "+e);
        console.log("f = "+f);
        console.log("Leaving f3");
    }
    v[counter++] = f3;
    console.log("a = "+ a);
    console.log("b = "+ b);
    console.log("Leaving f1");
}

f1(1,2);
f1(10,20);
v[0]();
v[1]();
v[2]();
v[3]();
for(var x in v){
    v[x]();
}
```

Currying

```
function sum(a){return function(b){return a+b;}}

let v1 = sum(10)(20);

console.log("The value of v1 is -->",v1);
```

PiggyBank - private Idiom

```
function Piggybank()
{
    var balance = 0;
    var lt = 0;

    function deposit(v)
    {
        balance = balance + v;
        lt = v;
    }
    function withdraw(v)
    {
        if (balance >= v)
        {
            balance = balance - v;
            lt = -v;
        }
    }
    function statement()
    {
        console.log("Balance = " + balance);
        console.log("Last Transaction = " + lt);
    }
    var obj = {
      deposit:deposit,
      withdraw:withdraw,
      statement:statement
    };
    return obj;
}
```

```
var pg1 = Piggybank();

pg1.deposit(100);
pg1.statement();
pg1.withdraw(50);
pg1.statement();
pg1.withdraw(10);
pg1.statement();

var pg2 = Piggybank();

pg2.deposit(200);
pg2.statement();
pg2.withdraw(100);
pg2.statement();
pg2.withdraw(50);
pg2.statement();


var pg3 = Piggybank();

pg3.deposit(300);
pg3.statement();
pg3.withdraw(200);
pg3.statement();
pg3.withdraw(100);
pg3.statement();
```

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