

The Stack

- At run time, the parameters and other variables that belong to a function are placed on the stack.
- When a function is executing it only has access to its own stack frame.

Names / Scope

- Your function cannot access variables in another frame (names are out of scope)
- A variable in your frame can have the same name as a variable in another frame
 - There is no conflict because they are in different scopes

Example

- The main function can have a variable called sum
- At the same time myAdd() function can have a variable called sum
- Because they are in different stack frames they are different variables / do not conflict

Example “what does the stack look like”

▼ W2D1 Stack Example 2020

```
function funA(a, b) {  
    var sum; // number  
    var subtr; // number  
    sum = a + b;  
    subtr = funB(sum);  
    console.log("What is the stack here?");  
    return a - subtr;  
}  
  
function funB(x) {  
    console.log("What is the stack here?");  
    return x - 1;  
}  
  
function main() {  
    var x; // number  
    var y; // number  
    var z; // number  
    x = 5;  
    y = 8;  
    console.log("What is the stack here?");  
    z = funA(x, y + 3);  
    console.log("What is the stack here?");  
    return 0;  
}  
  
main(); // start executing main
```

Exercise “What does the stack look like”

▼ W2D1 Stack Exercise 2020

```
function funX(a, b) {  
  var c; // number  
  var d; // number  
  c = a * 3;  
  d = funY(c);  
  console.log("What is the stack here?");  
  return (a - b) + (c - d);  
}  
  
function funY(a) {  
  return a + 1;  
}  
  
function main() {  
  var a; // number  
  var b; // number  
  var c; // number  
  a = 4;  
  b = 6;  
  c = funX(a,b);  
  return 0;  
}  
  
main(); // start executing main
```

Main Point 3

- Each function has its own variables. When a function is called, the space for its variables is reserved on the stack (a stack frame).
- The scope of a variable is where it can be seen – a variable can only be seen inside its own function, inside its own stack frame.
- Life is found in layers!