



Sending Data into a Function

ELEC1006: ENGINEERING COMPUTING

Sending Data into a Function

- Values can be passed into a function at time of call:

```
c = pow(a, b);
```

(Note: This function needs `#include <cmath>` to work)

- Values passed into a function are arguments.
- Variables in a function that hold the values passed as arguments are parameters.

A Function with a Parameter Variable

```
void displayValue(int num)
{
    cout << "The value is " << num << endl;
}
```

The integer variable `num` is a parameter.
It accepts any integer value passed to the function.



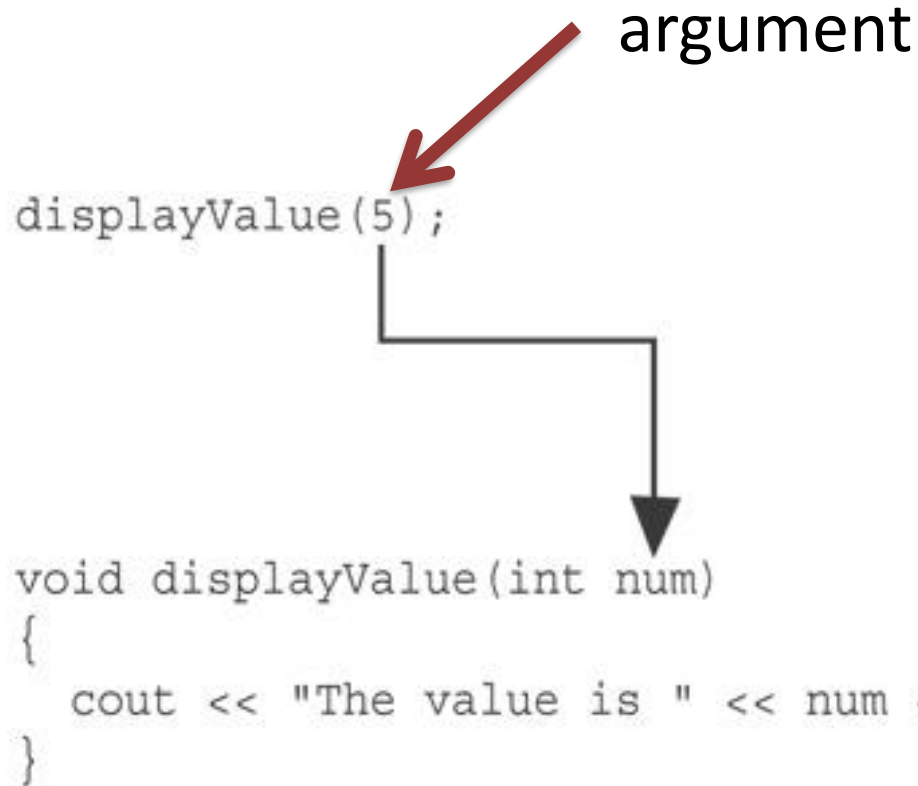
```
1 // This program demonstrates a function with a parameter.
2 #include <iostream>
3 using namespace std;
4
5 // Function Prototype
6 void displayValue(int);
7
8 int main()
9 {
10     cout << "I am passing 5 to displayValue.\n";
11     displayValue(5); // Call displayValue with argument 5
12     cout << "Now I am back in main.\n";
13     return 0;
14 }
15
16 //*****
17 // Definition of function displayValue. *
18 // It uses an integer parameter whose value is displayed. *
19 //*****
20
21 void displayValue(int num)
22 {
23     cout << "The value is " << num << endl;
24 }
```

Only data type

Full declaration

Program Output

```
I am passing 5 to displayValue.
The value is 5
Now I am back in main.
```



The function call in line 11 passes the value 5 as an argument to the function.

Passing Multiple Arguments

When calling a function and passing multiple arguments:

- the **number of arguments** in the call **must match** the prototype and definition
- the first argument will be used to initialize the first parameter, the second argument to initialize the second parameter, etc.

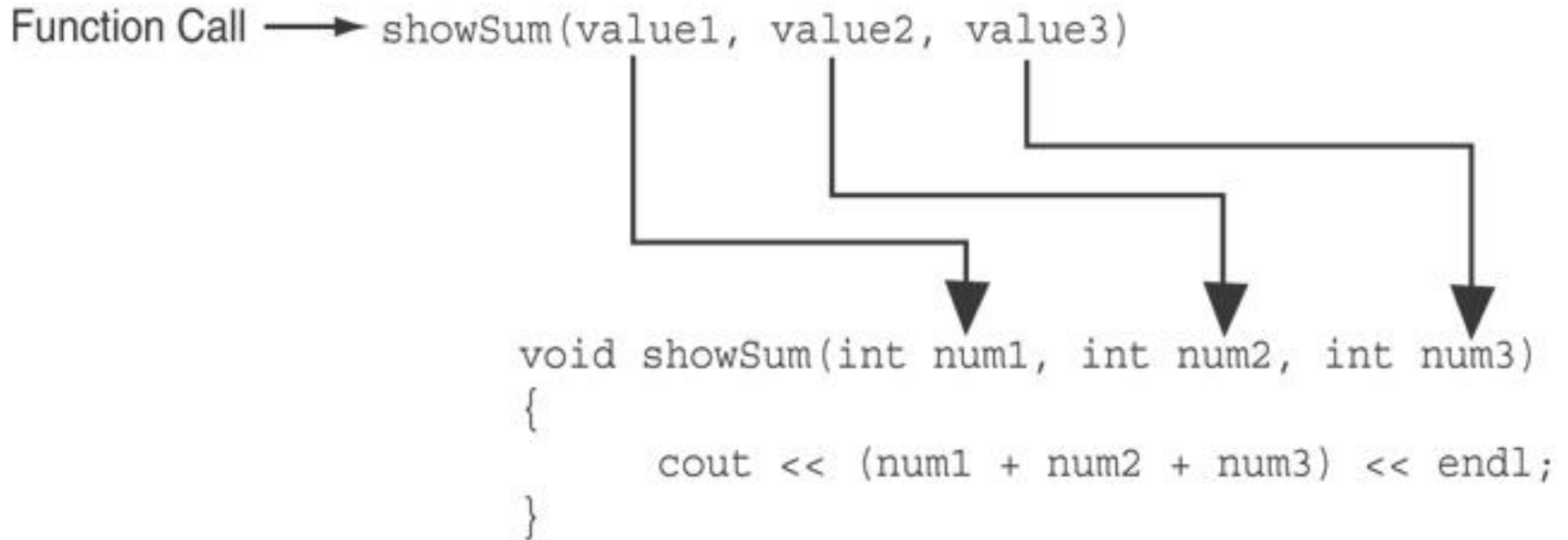
```
1 // This program demonstrates a function with three parameters.
2 #include <iostream>
3 using namespace std;
4
5 // Function Prototype
6 void showSum(int, int, int);
7
8 int main()
9 {
10     int value1, value2, value3;
11
12     // Get three integers.
13     cout << "Enter three integers and I will display ";
14     cout << "their sum: ";
15     cin >> value1 >> value2 >> value3;
16
17     // Call showSum passing three arguments.
18     showSum(value1, value2, value3);
19     return 0;
20 }
21
22 //*****
23 // Definition of function showSum. *
24 // It uses three integer parameters. Their sum is displayed. *
25 //*****
26
27 void showSum(int num1, int num2, int num3)
28 {
29     cout << (num1 + num2 + num3) << endl;
30 }
```

Only data type

Full declaration

Program Output with Example Input Shown in Bold

```
Enter three integers and I will display their sum: 4 8 7 [Enter]
19
```



The function call in line 18 passes value1, value2, and value3 as arguments to the function.

Passing Data by Value

- Pass by value: when an argument is passed to a function, its value is copied into the parameter.
- Changes to the parameter in the function **do not** affect the value of the argument.
- Example:

```
int val=5;  
    evenOrOdd(val);
```



- `evenOrOdd` can change variable `num`, but it will have **no effect** on variable `val`.

More info

- [1] cplusplus.com: Functions
<https://cplusplus.com/doc/tutorial/functions/>
- [2] learncpp.com: 2.3 – Introduction to function parameters and arguments
<https://www.learncpp.com/cpp-tutorial/introduction-to-function-parameters-and-arguments/>