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C++ Return by Reference

In this article, you'll learn how to return a value by reference in a function and use it efficiently in your program.

In C++ Programming, not only can you pass values by reference to a [function](#) but you can also return a value by reference.

To understand this feature, you should have the knowledge of:

- [Global variables](#)

Example: Return by Reference

```
#include <iostream>
using namespace std;

// global variable
int num;

// function declaration
int& test();

int main() {

    // assign 5 to num variable
    // equivalent to num = 5;
    test() = 5;

    cout << num;

    return 0;
}

// function definition
// returns the address of num variable
int& test() {
    return num;
}
```

Output

```
5
```

In program above, the return type of function `test()` is `int&`. Hence, this function returns a reference of the variable `num`.

The return statement is `return num;`. Unlike return by value, this statement doesn't return value of `num`, instead it returns the variable itself (address).

So, when the **variable** is returned, it can be assigned a value as done in `test() = 5;`

This stores **5** to the variable `num`, which is displayed onto the screen.

Important Things to Remember When Returning by Reference.

- Ordinary function returns value but this function doesn't. Hence, you cannot return a constant from the function.

```
int& test() {
    return 2;
}
```

- You cannot return a local variable from this function.

```
int& test() {
    int n = 2;
    return n;
}
```

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C++ Recursion

Next Tutorial:
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