

# C++ Return by Reference

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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

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## Example: Return by Reference

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

// Global variable
int num;

// Function declaration
int& test();

int main()
{
    test() = 5;

    cout << num;

    return 0;
}

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.

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## Important Things to Remember When Returning by Reference.

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- 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;  
}
```