

## More Functions in C

In the previous note we saw how to create very simple functions which did not rely on any data from the main function. Although this type of function can be useful, it is much more typical to have functions which can receive, manipulate and return information to other blocks of code. A **Level Two** function is a function which will be sent data and will perform operations on the data, but will not return any information back to the calling code.

Example: a function which will be sent two integers and will display which integer is the largest.

```
#include <stdio.h>

//Function Prototypes
void biggerNum(int, int);           //A function to determine the larger integer

int main (void)
{
    int num1=5, num2=3;             //Two integers to test

    biggerNum(num1,num2);          //Passing the values to the function

    system("PAUSE");
    return 0;
}

/*****
Function:    biggerNum
Does:       Displays the larger of two integers
Receives:   Two integers
Uses:       Nothing
Returns:    Nothing
*****/
void biggerNum (int x, int y)
{
    if(x == y)
        printf("The numbers are the same");
    else if (x > y)
        printf("The largest number is %i",x);
    else
        printf("The largest number is %i",y);
}
```

Note that within the function the variable names are NOT the same as they are in main(). This is a very important characteristic of data in functions that is referred to as **variable scope**. Scope of a variable determines where the variable can be used within the program. Variables can be **local** to a function, meaning they can be used there, or they can be **global**, meaning they can be used anywhere in the program. Global variable use should not be used at this time.

## Assignment

1. Write a C program which uses Level Two functions to:
  - a) be sent two integers and will display their sum
  - b) be sent three integers and will output them in order from smallest to largest
  - c) be sent three integers and will output all common factors of the numbers  
(For example 6, 12 and 15 have common factor(s) 1 and 3)
2. Write a C program which allows a user to enter three integers as lengths of the sides of a triangle and calls a Level Two function to display the type of triangle the sides form as either Equilateral, Isosceles or Scalene.
3. Write a properly structured C program which allows a user to enter a word and a letter and then calls a level two function called letterCount() which will output the number of occurrences of the letter in the word. For example for the word mississippi and the letter i, the function would display the message “The word mississippi contains the letter i 4 times”. Consider using tolower() to ensure that all letters are checked lowercase only.
4. Write a properly structured C program which allows the user to enter the name of an item to buy, which then generates a random price for the item between \$10.00 and \$25.00 as a float. Have the user then enter a payment amount which must be greater than the price, and if it is will call a level two function called outputChange() which will display the amount of each denomination of change given. For example if the random price is \$17.44 and the payment is \$20.00, the function will output “Your change is 1 toonie, 2 quarters, 1 nickel and 1 penny”.
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