

CS 240 Programming in C

Functions

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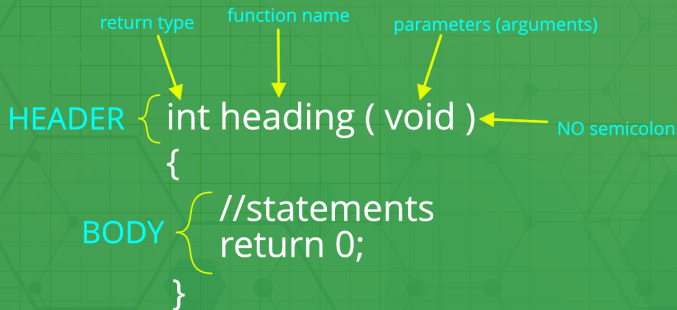
Functions

- Functions provide a convenient way to encapsulate some computation, which can then be used without worrying about its implementation
- A function prototype is simply the declaration of a function that specifies function's name, parameters and return type. It doesn't contain function body. A function prototype gives information to the compiler that the function may later be used in the program.

Function Prototype

return type function name parameters (arguments)

```
HEADER { int heading ( void ) ← NO semicolon  
      {  
BODY  { //statements  
      { return 0;  
      }
```



Link: <https://www.geeksforgeeks.org/c-function-argument-return-values/>

Function Declaration and Definition

- Function declaration

```
int power(int m, int n);
```

- Function declaration says that power is a function that expects two int arguments and returns an int

- Function definition

```
returnType funcName(parameter declarations, if any) {  
    declarations
```

```
    statements
```

```
}
```

Parameters vs Arguments

- Formal parameter
 - The names given to the arguments in the function definition
 - Often referred to as parameters
- Actual parameter
 - The names supplied in a function call
 - Often referred to as arguments

Call by Value vs Call by Reference

- In C all function arguments are passed "by value"
- The called function is given the values of its arguments in temporary variables, distinct from the originals
- This means that anything you do to a variable inside a function has no effect on that variable outside of the function
- When call by reference is used, we can alter an argument outside of the function with actions inside the function

Called by Value

Write a function to swap two integers.
Try it now.

Called by Value

When an array variable being passed into a function as argument, what has been passed?
and what this means for manipulation of the array in local function to the array in the called scope?