

System-level Programming

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Contents

1 C Primitive Variable Types

1. All C primitives are numeric, divided purely based on variable size, and integer or floating point
 - (a) C variables have sizes based on the platform they were compiled by and for, such that `sizeof(type)` can be used to determine the size in bytes
 - (b) On a standard computer, `int` = 4, `short` = 2, `long` = 8, `float` = 4, `double` = 8, and `char` = 1 bytes (8 bits to a byte)
 - (c) Types can also be specified as unsigned, such that it is not able to be given a negative value
2. Boolean values are numbers, such that 0 is false, and all nonzero numbers are considered true
3. Character literals can be represented inside single quotes rather than use a number, and Strings, though not an object, can use a double quotes literal
 - (a) Strings are created by character arrays, using a null character (value 0), to show the end of the array, allowing it to be modified easier
4. Variables are able to be initialized within a for loop, but are not able to be declared, such that it must be before the loop

2 C Programming

1. All C programs are made up of a series of functions, run within the main function, which returns an integer (typically 0, or other values for errors)
 - (a) They are compiled through “`gcc file.c -o program_name`”, then run through “`./program_name`”