

Programming sprintf() - a Guide

Foundation

What `sprintf()` does is copy characters(bytes) from the format string to the output buffer, with a change in behavior whenever it sees a `%` character.

That means that the most important data items in the function are the two pointers: the current location in the format string, and the current location in the output buffer. Each one deserves to have its own `$s` register.

Also, since `sprintf()`'s job is to copy one string to another, it must look a lot like the C library function `strcpy()`. The Index of the K&R book tells us to look at pages 105 - 106, where we find four C versions of that function. Choose one, and translate to MAL.

Superstructure

When `sprintf()` finds a `%` in the format string, it looks at the next character, and then adds some formatted output at the current position in the output buffer.

What are the kinds of formatted output?

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`%d` convert integer to decimal

Looks like `printf()`, discussed in class, and included in the file `multmain.s`, which is one of the files used in this homework assignment. So maybe it is named `sprintfd()`.

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`%x` convert integer to hexadecimal

Looks like `printfd()`, so perhaps a semi-new function, perhaps called `sprintfx()`.

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`%c` include one character argument in result

Is it a function? Perhaps called `sputc()`, because it puts a char in a string??

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`%s` include string of characters in result

Looks like `strcpy()`, once again.

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`%%` include a percent sign in result

Perhaps it is a call to `sputc()`, with `'%'` as the argument.