

# CSI 333 – Programming at the Hardware-Software Interface

## Handout 6.2

The following program counts the number of lines, words and characters in its input. It implements a bare bones version of the Unix command `wc`.

The program reads from `stdin` and writes to `stdout`. A *line* is assumed to be terminated by a newline character; a *word* is any sequence of characters that does not contain a blank, a tab or a newline character.

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```
#include <stdio.h>
#define YES 1
#define NO 0

int main(void)
{
    int c;          /* To read chars from stdin. */
    int nl, nw, nc; /* To count number of lines, words and chars. */
    int inword;    /* To remember whether we are within a word. */

    inword = NO; nl = nw = nc = 0;

    while ((c = getchar()) != EOF) {
        ++nc; /* One more new character read in. */
        if (c == '\n')
            ++nl; /* One more line of input. */

        if ((c == ' ') || (c == '\n') || (c == '\t')) {
            /* White space characters terminate a word. */
            inword = NO;
        }
        else {
            /* A non-whitespace char seen. A new word begins if */
            /* we are not already within a word. */
            if (inword == NO) {
                inword = YES; ++nw;
            }
        }
    } /* End of while. */

    printf("%d %d %d \n", nl, nw, nc);
    return 0;
} /* End of main. */
```