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#include <stdio.h>
#include <stdlib.h>

#include "proto.h"

/* parses a line read from shell into individual args. */
int arg_parse(char *line, char ***argvp)
{
    char *c, *ptr;
    char **it;
    int argc = 0, reading = 0;

    /* determine number of args */
    ptr = line;
    while ( *ptr ) {
        /* eat spaces */
        while (*ptr && *ptr == ' ')
            ptr++;

        /* handle possible trailing spaces */
        if (!*ptr)
            break;

        /* arg starts here */
        argc++;

        while ( *ptr && *ptr != ' ' ) {
            /* now have either quote or other charater */
            if (*ptr == '"') {
                ptr++;
                /* read to end quote */
                while (*ptr && *ptr != '"')
                    ptr++;
                ptr++;
            } else {
                ptr++;
            }
        }
    }

    /* create array for args */
    *argvp = (char **)malloc(argc * sizeof(char *) + 1);
    if (!*argvp)
        perror("malloc");

    /* partition args and store positions of first characters */
    it = *argvp;
    reading = 0;
    c = ptr = line;
    while ( *ptr ) {
        /* eat spaces */
        while (*ptr && *ptr == ' ')
            ptr++;

        /* arg starts here */
        *(it++) = c;

        while ( *ptr && *ptr != ' ' ) {
            /* now have either quote or other charater */
            if (*ptr == '"') {
                ptr++;
                /* read to end quote */
                while (*ptr && *ptr != '"')
                    *(c++) = *(ptr++);
                ptr++;
            }
        }
    }
}
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        } else {
            *(c++) = *(ptr++);
        }
    }

    /* null terminate argument */
    ptr++;
    *(c++) = 0;

}

/* add null pointer to end of array */
*it = (char *)0;

return argc;
}
```