Almog String Manipulation

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Chapter 1

File Index

1.1 File List

Here is a list of all files with brief descriptions:

Chapter 2

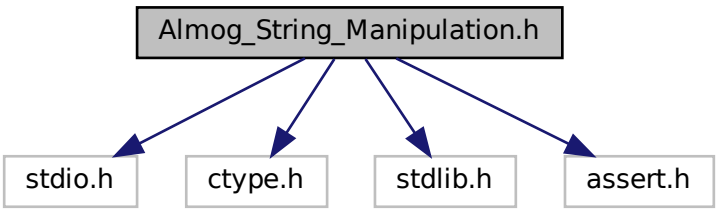
File Documentation

2.1 Almog_String_Manipulation.h File Reference

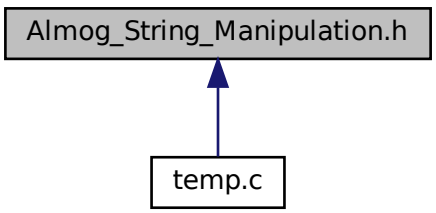
Lightweight string and line manipulation helpers.

```
#include <stdio.h>
#include <ctype.h>
#include <stdlib.h>
#include <assert.h>
```

Include dependency graph for Almog_String_Manipulation.h:



This graph shows which files directly or indirectly include this file:



Macros

- #define ASM_MAXDIR 100

  Generic maximum directory length constant (not used by the functions in this header but available to callers).
- #define ASM_MAX_LEN_LINE (int)1e3

  Maximum number of characters read by asm_get_line (excluding the terminating null).
- #define asm_dprintSTRING(expr) printf(#expr " = %s\n", expr)

  Debug print a C string expression as "expr = value\n".
- #define asm_dprintCHAR(expr) printf(#expr " = %c\n", expr)

  Debug print a character expression as "expr = c\n".
- #define asm_dprintINT(expr) printf(#expr " = %d\n", expr)

  Debug print an integer expression as "expr = n\n".
- #define asm_dprintSIZE_T(expr) printf(#expr " = %zu\n", expr)

  Debug print a size_t expression as "expr = n\n".

Functions

- int asm_get_line (FILE ∗fp, char ∗dst)

  Read a single line from a stream into a buffer.
- int asm_length (char ∗str)

  Compute the length of a null-terminated C string.
- int asm_get_next_word_from_line (char ∗dst, char ∗src, char seperator)

  Extract the next word from a line without modifying the source.
- void asm_copy_array_by_indesies (char ∗target, int start, int end, char ∗src)

  Copy a substring [start, end) from src into target and null-terminate.
- int asm_get_word_and_cut (char ∗dst, char ∗src, char seperator)

  Get the next word and cut the source string at that point.
- int asm_str_in_str (char ∗src, char ∗word2search)

  Count occurrences of a substring within a string.
- int asm_strncmp (const char ∗s1, const char ∗s2, const int N)

  Compare up to N characters for equality (boolean result).

2.1.1 Detailed Description

Lightweight string and line manipulation helpers.

This single-header module provides small utilities for working with C strings:

- Reading a single line from a FILE stream
- Measuring string length
- Extracting the next "word" (token) from a line using a separator
- Cutting the extracted word from the source buffer
- Copying a substring by indices
- Counting occurrences of a substring
- A boolean-style strncmp (returns 1 on equality, 0 otherwise)

Usage

- In exactly one translation unit, define ALMOG_STRING_MANIPULATION_IMPLEMENTATION before including this header to compile the implementation.
- In all other files, include the header without the macro to get declarations only.

Notes and limitations

- All destination buffers must be large enough; functions do not grow or allocate buffers.
- asm_get_line enforces MAX_LEN_LINE characters (not counting the terminating '\0'). Longer lines cause a fatal error via exit(1).
- asm_strncmp differs from the standard C strncmp: this version returns 1 if equal and 0 otherwise.
- These functions are not locale-aware unless otherwise noted (isspace is used for whitespace handling).

Definition in file Almog_String_Manipulation.h.

2.1.2 Macro Definition Documentation

2.1.2.1 asm_dprintCHAR

```
#define asm_dprintCHAR(
              expr ) printf(#expr " = %c\n", expr)
```

Debug print a character expression as "expr = c\n".

Parameters

expr	An expression that yields a character promoted to int.

Definition at line 72 of file Almog_String_Manipulation.h.

2.1.2.2 asm_dprintINT

```
#define asm_dprintINT(
              expr ) printf(#expr " = %d\n", expr)
```

Debug print an integer expression as "expr = n\n".

Parameters

expr	An expression that yields an int.

Definition at line 79 of file Almog_String_Manipulation.h.

2.1.2.3 asm_dprintSIZE_T

```
#define asm_dprintSIZE_T(
              expr ) printf(#expr " = %zu\n", expr)
```

Debug print a size_t expression as "expr = n\n".

Parameters

expr	An expression that yields a size_t.

Definition at line 86 of file Almog_String_Manipulation.h.

2.1.2.4 asm_dprintSTRING

```
#define asm_dprintSTRING(
              expr ) printf(#expr " = %s\n", expr)
```

Debug print a C string expression as "expr = value\n".

Parameters

expr	An expression that yields a pointer to char (const or non-const).

Definition at line 65 of file Almog_String_Manipulation.h.

2.1.2.5 ASM_MAX_LEN_LINE

```
#define ASM_MAX_LEN_LINE (int)1e3
```

Maximum number of characters read by asm_get_line (excluding the terminating null).

If an input line exceeds this value before encountering '
' or EOF, asm_get_line prints an error to stderr and terminates the process with exit(1).

Definition at line 58 of file Almog_String_Manipulation.h.

2.1.2.6 ASM_MAXDIR

```
#define ASM_MAXDIR 100
```

Generic maximum directory length constant (not used by the functions in this header but available to callers).

Definition at line 47 of file Almog_String_Manipulation.h.

2.1.3 Function Documentation

2.1.3.1 asm_copy_array_by_indesies()

```
void asm_copy_array_by_indesies (
            char * target,
            int start,
            int end,
            char * src )
```

Copy a substring [start, end) from src into target and null-terminate.

Copies characters with indices i = start, start+1, ..., end-1 from src into target, then writes a terminating '\0'.

Parameters

target	Destination buffer. Must be large enough to hold (end - start) characters plus the null terminator.
start	Inclusive start index within src (0-based).
end	Exclusive end index within src (must satisfy end >= start).
src	Source string buffer.

Warning

No bounds checking is performed. The caller must ensure valid indices and sufficient target capacity.

Note

This routine supports in-place "left-shift" usage where target == src and start > 0 (used by asm_get_word_↩ and_cut).

Definition at line 232 of file Almog_String_Manipulation.h.

Referenced by asm_get_word_and_cut().

2.1.3.2 asm_get_line()

```
int asm_get_line (
            FILE * fp,
            char * dst )
```

Read a single line from a stream into a buffer.

Reads characters from the FILE stream until a newline ('
') or EOF is encountered. The newline, if present, is not copied. The result is always null-terminated.

Parameters

fp	Input stream (must be non-NULL).
dst	Destination buffer. Must have capacity of at least MAX_LEN_LINE + 1 bytes.

Returns

Number of characters stored in dst (excluding the terminating null).

Return values

-1	EOF was encountered before any character was read.

Note

If the line exceeds MAX_LEN_LINE characters before a newline or EOF, the function prints an error and calls exit(1).

An empty line returns 0 (not -1).

Definition at line 119 of file Almog_String_Manipulation.h.

References ASM_MAX_LEN_LINE.

2.1.3.3 asm_get_next_word_from_line()

```
int asm_get_next_word_from_line (
            char * dst,
            char * src,
            char seperator )
```

Extract the next word from a line without modifying the source.

Skips leading whitespace in src (as determined by isspace), then copies characters into dst until one of the following is seen: the separator, a newline ('
'), or the string terminator ('\0'). The copied word in dst is null-terminated and is never empty on success.

Special case:

- If the very first character in src (at index 0, without leading whitespace) is the separator, '
', or '\0', that single character is returned as a one-character "word".

Parameters

dst	Destination buffer for the extracted word. Must be large enough to hold the token plus the null terminator.
src	Source C string to parse (not modified by this function).
seperator	Separator character to stop at (spelling as in the API).

Returns

The number of characters consumed from src (i.e., the index of the first unconsumed character).

Return values

-1	No word was found (e.g., only whitespace before a delimiter or end-of-string).

Note

The source buffer is not altered. To both extract and advance/cut the source, see asm_get_word_and_cut.

Definition at line 182 of file Almog_String_Manipulation.h.

Referenced by asm_get_word_and_cut().

2.1.3.4 asm_get_word_and_cut()

```
int asm_get_word_and_cut (
            char * dst,
            char * src,
            char seperator )
```

Get the next word and cut the source string at that point.

Extracts the next word from src (per asm_get_next_word_from_line semantics) into dst. On success, src is modified in-place to remove the consumed prefix. The new src begins at the stopping character (the separator, newline, or terminator).

Example: For src = "abc,def", separator = ','

- dst becomes "abc"
- src becomes ",def" (note the leading separator remains)

Parameters

dst	Destination buffer for the extracted word (large enough for the token and terminating null).
src	Source buffer. Modified in-place if a word is found.
seperator	Separator character to stop at (spelling as in the API).

Returns

1 if a word was extracted and src adjusted, 0 otherwise.

Definition at line 260 of file Almog_String_Manipulation.h.

References asm_copy_array_by_indesies(), asm_get_next_word_from_line(), and asm_length().

Referenced by main().

2.1.3.5 asm_length()

```
int asm_length (
            char * str )
```

Compute the length of a null-terminated C string.

Parameters

str	Null-terminated string (must be non-NULL).

Returns

The number of characters before the terminating null byte.

Definition at line 146 of file Almog_String_Manipulation.h.

Referenced by asm_get_word_and_cut(), and asm_str_in_str().

2.1.3.6 asm_str_in_str()

```
int asm_str_in_str (
            char * src,
            char * word2search )
```

Count occurrences of a substring within a string.

Counts how many times word2search appears in src. Occurrences may overlap.

Parameters

src	The string to search in (must be null-terminated).
word2search	The substring to find (must be null-terminated).

Returns

The number of (possibly overlapping) occurrences found.

Definition at line 285 of file Almog_String_Manipulation.h.

References asm_length(), and asm_strncmp().

2.1.3.7 asm_strncmp()

```
int asm_strncmp (
            const char * s1,
            const char * s2,
            const int N )
```

Compare up to N characters for equality (boolean result).

Returns 1 if the first N characters of s1 and s2 are all equal; otherwise returns 0. Unlike the standard C strncmp, which returns 0 on equality and a non-zero value on inequality/order, this function returns a boolean-like result (1 == equal, 0 == different).

Parameters

s1	First string (may be shorter than N).
s2	Second string (may be shorter than N).
N	Number of characters to compare.

Returns

1 if equal for the first N characters, 0 otherwise.

Definition at line 310 of file Almog_String_Manipulation.h.

Referenced by asm_str_in_str().

2.2 Almog_String_Manipulation.h

```
00001
00034 #ifndef ALMOG_STRING_MANIPULATION_H_
00035 #define ALMOG_STRING_MANIPULATION_H_
00036
00037 #include <stdio.h>
00038 #include <ctype.h>
00039 #include <stdlib.h>
00040 #include <assert.h>
00041
00047 #define ASM_MAXDIR 100
00048
00058 #define ASM_MAX_LEN_LINE (int)1e3
00059
00065 #define asm_dprintSTRING(expr) printf(#expr " = %s\n", expr)
00066
00072 #define asm_dprintCHAR(expr) printf(#expr " = %c\n", expr)
00073
00079 #define asm_dprintINT(expr) printf(#expr " = %d\n", expr)
00080
```

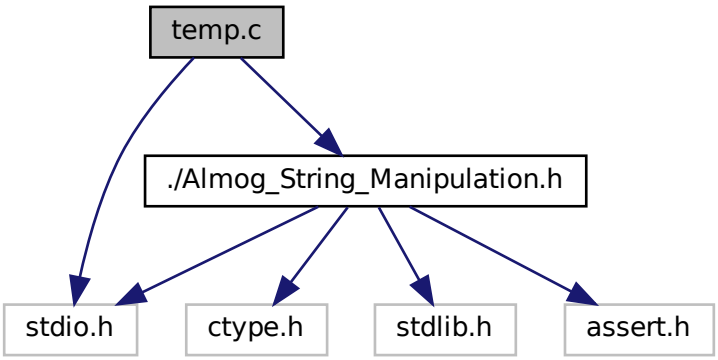
```
00086 #define asm_dprintSIZE_T(expr) printf(#expr " = %zu\n", expr)
00087
00088 int asm_get_line(FILE *fp, char *dst);
00089 int asm_length(char *str);
00090 int asm_get_next_word_from_line(char *dst, char *src, char seperator);
00091 void asm_copy_array_by_indesies(char *target, int start, int end, char *src);
00092 int asm_get_word_and_cut(char *dst, char *src, char seperator);
00093 int asm_str_in_str(char *src, char *word2search);
00094 int asm_strncmp(const char *s1, const char *s2, const int N);
00095
00096 #endif /*ALMOG_STRING_MANIPULATION_H_*/
00097
00098 #ifdef ALMOG_STRING_MANIPULATION_IMPLEMENTATION
00099 #undef ALMOG_STRING_MANIPULATION_IMPLEMENTATION
00100
00101
00119 int asm_get_line(FILE *fp, char *dst)
00120 {
00121     int i = 0;
00122     char c;
00123
00124     while ((c = fgetc(fp)) != '\n' && c != EOF) {
00125         dst[i] = c;
00126         i++;
00127         if (i >= ASM_MAX_LEN_LINE) {
00128             fprintf(stderr, "ERROR: line too long\n");
00129             exit(1);
00130         }
00131     }
00132     dst[i] = '\0';
00133     if (c == EOF && i == 0) {
00134         return -1;
00135     }
00136     return i;
00137 }
00138
00146 int asm_length(char *str)
00147 {
00148     char c;
00149     int i = 0;
00150
00151     while ((c = str[i]) != '\0') {
00152         i++;
00153     }
00154     return i++;
00155 }
00156
00182 int asm_get_next_word_from_line(char *dst, char *src, char seperator)
00183 {
00184     int i = 0, j = 0;
00185     char c;
00186
00187     while (isspace((c = src[i]))) {
00188         i++;
00189     }
00190
00191     while ((c = src[i]) != seperator &&
00192                       c != '\n'&&
00193                       c != '\0') {
00194                         dst[j] = src[i];
00195                         i++;
00196                         j++;
00197     }
00198
00199     if ((c == seperator ||
00200          c == '\n'||
00201          c == '\0') && i == 0) {
00202             dst[j++] = c;
00203             i++;
00204     }
00205
00206     dst[j] = '\0';
00207
00208     if (j == 0) {
00209         return -1;
00210     }
00211     return i;
00212
00213 }
00214
00232 void asm_copy_array_by_indesies(char *target, int start, int end, char *src)
00233 {
00234     int j = 0;
00235     for (int i = start; i < end; i++) {
00236         target[j] = src[i];
00237         j++;
00238     }
```

```
00239     target[j] = '\0';
00240 }
00241
00260 int asm_get_word_and_cut(char *dst, char *src, char seperator)
00261 {
00262     int last_pos;
00263
00264     if (src[0] == '\0') {
00265         return 0;
00266     }
00267     last_pos = asm_get_next_word_from_line(dst, src, seperator);
00268     if (last_pos == -1) {
00269         return 0;
00270     }
00271     asm_copy_array_by_indesies(src, last_pos, asm_length(src), src);
00272     return 1;
00273 }
00274
00285 int asm_str_in_str(char *src, char *word2search)
00286 {
00287     int i = 0, num_of_accur = 0;
00288     while (src[i] != '\0') {
00289         if (asm_strncmp(src+i, word2search, asm_length(word2search))) {
00290             num_of_accur++;
00291         }
00292         i++;
00293     }
00294     return num_of_accur;
00295 }
00296
00310 int asm_strncmp(const char *s1, const char *s2, const int N)
00311 {
00312     int i = 0;
00313     while (i < N) {
00314         if (s1[i] == '\0' && s2[i] == '\0') {
00315             break;
00316         }
00317         if (s1[i] != s2[i] || (s1[i] == '\0') || (s2[i] == '\0')) {
00318             return 0;
00319         }
00320         i++;
00321     }
00322     return 1;
00323 }
00324
00325
00326 #endif /*ALMOG_STRING_MANIPULATION_IMPLEMENTATION*/
00327
```

2.3 temp.c File Reference

```
#include <stdio.h>
#include "./Almog_String_Manipulation.h"
```

Include dependency graph for temp.c:



Macros

- #define ALMOG_STRING_MANIPULATION_IMPLEMENTATION

Functions

- int main (void)

2.3.1 Macro Definition Documentation

2.3.1.1 ALMOG_STRING_MANIPULATION_IMPLEMENTATION

```
#define ALMOG_STRING_MANIPULATION_IMPLEMENTATION
```

Definition at line 2 of file temp.c.

2.3.2 Function Documentation

2.3.2.1 main()

```
int main (
            void  )
```

Definition at line 5 of file temp.c.

References asm_get_word_and_cut().

2.4 temp.c

```
00001 #include <stdio.h>
00002 #define ALMOG_STRING_MANIPULATION_IMPLEMENTATION
00003 #include "./Almog_String_Manipulation.h"
00004
00005 int main(void)
00006 {
00007     char str[] = "almog dobrescu";
00008     char word[256];
00009
00010     asm_get_word_and_cut(word, str, ' ');
00011
00012     printf("str:  %s\n", str);
00013
00014     printf("word: %s\n", word);
00015
00016
00017     return 0;
00018 }
```

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