EECS 22L Discussion

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C standard libraries overview

- http://www.cplusplus.com/reference/

<cassert> (assert.h)	C Diagnostics Library (header)
<cctype> (ctype.h)	Character handling functions (header)
<cerrno> (errno.h)	C Errors (header)
<cfenv> (fenv.h)	Floating-point environment (header)
<cfloat> (float.h)	Characteristics of floating-point types (header)
<cinttypes> (inttypes.h)	C integer types (header)
<ciso646> (iso646.h)	ISO 646 Alternative operator spellings (header)
<climits> (limits.h)	Sizes of integral types (header)
<clocale> (locale.h)	C localization library (header)
<cmath> (math.h)	C numerics library (header)
<csetjmp> (setjmp.h)	Non local jumps (header)
<csignal> (signal.h)	C library to handle signals (header)
<cstdarg> (stdarg.h)	Variable arguments handling (header)
<cstdbool> (stdbool.h)	Boolean type (header)
<cstddef> (stddef.h)	C Standard definitions (header)
<cstdint> (stdint.h)	Integer types (header)
<cstdio> (stdio.h)	C library to perform Input/Output operations (header)
<cstdlib> (stdlib.h)	C Standard General Utilities Library (header)
<cstring> (string.h)	C Strings (header)
<ctgmath> (tgmath.h)	Type-generic math (header)
<ctime> (time.h)	C Time Library (header)

Characters Manipulation

ctype.h

Character classification functions

They check whether the character passed as parameter belongs to a certain category:

isalnum	Check if character is alphanumeric (function)
isalpha	Check if character is alphabetic (function)
isblank C++11	Check if character is blank (function)
iscntrl	Check if character is a control character (function)
isdigit	Check if character is decimal digit (function)
isgraph	Check if character has graphical representation (function)
islower	Check if character is lowercase letter (function)
isprint	Check if character is printable (function)
ispunct	Check if character is a punctuation character (function)
isspace	Check if character is a white-space (function)
isupper	Check if character is uppercase letter (function)
isxdigit	Check if character is hexadecimal digit (function)

Character conversion functions

Two functions that convert between letter cases:

tolower	Convert uppercase letter to lowercase (function)
toupper	Convert lowercase letter to uppercase (function)

String Manipulation (1)

<cstring> (string.h)

C Strings

This header file defines several functions to manipulate *C strings* and arrays.

Functions

Copying:

memcpy	Copy block of memory (function)
memmove	Move block of memory (function)
strcpy	Copy string (function)
strncpy	Copy characters from string (function)

Concatenation:

strcat	Concatenate strings (function)
strncat	Append characters from string (function)

Comparison:

memcmp	Compare two blocks of memory (function)
strcmp	Compare two strings (function)
strcoll	Compare two strings using locale (function)
strncmp	Compare characters of two strings (function)
strxfrm	Transform string using locale (function)

String Manipulation (2)

<cstring> (string.h)

C Strings

This header file defines several functions to manipulate *C strings* and arrays.

Searching:

memchr	Locate character in block of memory (function)
strchr	Locate first occurrence of character in string (function)
strcspn	Get span until character in string (function)
strpbrk	Locate characters in string (function)
strrchr	Locate last occurrence of character in string (function)
strspn	Get span of character set in string (function)
strstr	Locate substring (function)
strtok	Split string into tokens (function)

Other:

memset	Fill block of memory (function)
strerror	Get pointer to error message string (function)
strlen	Get string length (function)

File Manipulation

- getline() vs fgets()
- http://crasseux.com/books/ctutorial/getline.html

```
#define _GNU_SOURCE
#include <stdio.h>

ssize_t getline(char **lineptr, size_t *n, FILE *stream);

ssize_t getdelim(char **lineptr, size_t *n, int delim, FILE *stream);
```

function

fgets

```
char * fgets ( char * str, int num, FILE * stream );
```

Get string from stream

- To read a line, suggest getline(), less error-prone.