

ภาคผนวก 3

Selected C++ Library Facilities¹

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
abs	Integer absolute	1	int	int	cmath cstdlib
acos	Arc cosin	1	double	double	cmath
asin	Arc sin	1	double	double	cmath
at	Returns character in position i (the argument) in source string object (call using dot notation)	1	size_t ²	char	string
atan	Arc tangent	1	double	double	cmath
atan2	Arc tangent	2	double	double	cmath
atoi	Converts character to an integer	1	char ^{*3}	int	cstdlib
atol	Converts character to a long	1	char [*]	long int	cstdlib
atof	Converts character to a double	1	char [*]	double	cstdlib cmath
bad	Returns nonzero (true) if designated stream is corrupted and recovery is not likely	0	(none)	int	iostream
ceil	Smallest integer not less than less than the argument	1	double or long double	double or long double	cmath
clear	Sets error state of designated stream; argument represents the state to be set	1	int	void	

¹Libraries that begin with the letter C were originally part of the ANSI standard C library . Some functions listed in this table, particularly those in the fixed length library cstring, are not discussed in the text.

²size_t is an unsigned integer type; it is the type of the result returned by the size_of operator.

³Type char* is a pointer to a C-style string.

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
cos	Cosine	1	double	double	cmath
close	closes file and disassociates it from stream; flushes buffer	0 0 on error	(none)	returns	iostream
cosh	Hyperbolic cosine	1	double	double	cmath
C_str	Returns a C-style string with the same characters as the string it is applied to. C-style strings end with the null character '\0'	0	(none)	char*	string
eof	Returns nonzero(true) if end-of-file has been encountered in designated stream	0	(none)	int	iostream
erase	Starting at position start (1st argument) in source string remove the next count (2nd) argument characters (call with dot notation).	2	size_t size_t	pointer to object modified remove	string
exit	Program termination; same as a return statement in function main (closes files, flushes buffers. etc); 0 argument usually means successful termination; nonzero indicates an error	1	int	void	cstdlib
exp	Exponential function (calculates e to the x power, where x is the argument)	1	double	double	cmath
fabs	Double absolute value	1	double	double	cmath
fail	Returns nonzero (true) if an operation on a stream has failed; recovery still possible and stream still usable once fail condition cleared; also true if bad is true	0	(none)	int	iostream

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
find	Returns starting position of string target (the argument) in source string object (call using dot notation)	1	string	size_t	string
floor	Largest integer not greater than the argument	1	double or long double	double or long double	cmath
get	Single character input (extracts single character from stream and stores it in its argument)	1	char	int (zero at eof; else nonzero)	iostream
get	String input (reads from designated stream until n-1 characters are extracted or until delimiter is read or eof encountered; null character is placed at end of string; delimiter not extracted but is left in stream); fails only if no characters extracted	3	char* int n char delim = ' \ n '	int (zero at eof; else nonzero)	iostream
getline	String input (reads from designated stream until n characters extracted or until delimiter is read or end of file encountered; null character is placed at end of string; delimiter removed from stream but is not stored in string)	3	char* int n char delim = ' \ n '	int	iostream
ignore	Causes the number of characters specified (1st argument) in the input stream object to be ignored. If the delimiter (2nd argument) is encountered first, all characters up to and including the delimiter are ignored.	2	size_t	pointer to stream	

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
insert	Inserts new string (2nd argument) at position start (1st argument) in source string (call with dot notation).	2	char	int	ccctype
isalnum	Check for alphabetic or base-10 digit character	1	char	int	ccctype
isalpha	Check for alphabetic character	1	char	int	ccctype
isctrl	Checks for control character (ASCII 0-31 and 127)	1	char	int	ccctype
isdigit	Checks for base-10 digit character ('0','1','2',...,'9')	1	char	int	cctype
islower	Checks for lowercase letter ('a',..., 'z')	1	char	int	cctype
ispunct	Checks for punctuation character (ispunct is true if isctrl or isspace are true)	1	char	int	cctype
isspace	Checks for white space character (space, tab, carriage return, newline, formfeed, or vertical tab)	1	char	int	cctype
isupper	Checks for uppercase letter ('A',..., 'Z')	1	char	int	cctype
length	Returns count of characters in string (call with dot notation)	0	(non)	size_t	string
log	Natural logarithm (ln)	1	double	double	cmath
log10	Base-10 logarithm	1	double	double	cmath
open	Opens a file given as first argument and associates it with designated stream	varies	char*	void	fstream

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
peek	Returns next character in designated stream without extracting it; returns EOF if no character present in stream	0	(none)	int	iostream
pow	Exponentiation; first argument raised to the power of the second	2	double	double	cmath
precision	Sets the number of significant digits to be used when printing floating-point numbers and returns the previous value	1	int n = 6	int	iomanip
put	Inserts a single character to the designated stream	varies	char	int	iostream
random	Pseudo-random number generator; returns an integer between 0 and n-1	1	int n	int	cstdlib
replace	Starting at position start (1 st argument) in source string, replace the next count (2nd argument) characters (call with dot notation).	3	size_t size_t string	pointer to object modified by replace	string
seekg	Moves position of “get” pointer to a file; move is relative either to the beginning, current position, or end of the file	1 or 2	long int	int	iostream
setf	Turns on the format flags and returns the previous flags	1	long long(bitflags)	long long(bitflags)	iomanip
setf	Clears the specified bit field and then turns on the format flags; returns previous flags	2	long long(bitflags) long	long long(bitflags) long(bitflags)	iomanip

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
sepre- cision	Sets the precision to the argument; the default is 6.	1	int long	void	io manip
sewidth	Sets the field width for the next output value to the argument; field width is reset to zero after output.	1	int	void	io manip
sin	Sine	1	double	double	cmath
sinh	Hyperbolic sine	1	double	double	cmath
sqrt	Square root	1	double or long double	double long double	cmath
srand	Random number generator (RNG) seed function; the RNG is reinitialized (to same start point) if the seed is 1; the RNG can be set to a new starting point If any other seed is used	1	unsigned int(the seed)	void	cstdlib
strcat	String concatenation (appends a copy of the string pointed to by from to the end of the string pointed to by to)	2	char* to const char *from	char*	cstring
strchr	Search for first occurrence of character in string (returns pointer to first occurrence if found or the null pointer otherwise); any character may be used as the source character	2	const char*	char* char	cstring
strcmp	Lexical string comparison (returns <0,0,>0 if s1 is less than, equal to, or greater than s2, respectively)	2	const	int char*s1 const char* s2	cstring

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
strcpy	String copy (Copies the string pointed to by from to the string pointed to by to up to and including the null character)	2	char* to	char* const char* from	cstring
strlen	String length (not counting null character ,'\0')	1	const char*	size_t ²	cstring
strncat	String concatenation of up to lim characters (same as strcat except that a maximum of lim characters are concatenated; the to string is always terminated by '\0')	3	char* to	char* const char* from size_t oim	cstring
strncmp	Lexical string comparison of at most lim characters (same as strcmp except at most lim character are compared)	3	const char*s1	int const char* s2 size_t lim	cstring
strncpy	String copy of up to lim characters (see strcpy) padded by '\0' if '\0' is found in from string before lim characters copied	3	char* to	char* const char* from size_t lim	cstring
strpbrk	Searches for first occurrence in s of any character in set; returns pointer to first character in s matched by a character in set	2	const	char* char* s const char* set	cstring
strchr	Reverse search for first occurrence of character in string (otherwise, same as strchr)	2	const char*	char* char	cstring

²size_t is an unsigned integer type; it is the type of the result returned by the size_of operator.

Function		Number	Type(s) of	Return	Header
Name	Description	Argument	Arguments	Type	File
strstr	Searches for first occurrence in s1 of the substring s2; returns pointer to start if s2 not found in s1	1	const	char* char* s1 const char* s2	cstring
system	Calls operating system	1	const char*	int	ccstdlib
tan	Tangent	1	double or long double	double long double	ccmath
tanh	Hyperbolic tangent	1	double or long double	double long double	ccmath
time	Returns time measured in seconds since 00:00:00 Greenwich Mean Time, January 1, 1970	1	long int (time_t) ⁴	long int (time_t*)	ctime
tolower	Converts uppercase letter to lowercase	1	int	int	cctype
toupper	Converts lowercase letter to uppercase	1	int	int	cctype
unsetf	turns off the format flags and return the previous flags	1	long (bitflags)	long (bitflags)	io manip
width	Sets the minimum field width to the given size and returns the previous field width (zero means no minimum); the minimum field width is reset to zero after each insertion or extraction	1	int	int	io manip

⁴time_t is a long int type.