

C Library - <time.h>

The **time.h** header defines four variable types, two macro and various functions for manipulating date and time.

Library Variables

Following are the variable types defined in the header time.h –

Sr.No.	Variable & Description
1	size_t This is the unsigned integral type and is the result of the sizeof keyword.
2	clock_t This is a type suitable for storing the processor time.
3	time_t is This is a type suitable for storing the calendar time.
4	struct tm This is a structure used to hold the time and date.

The tm structure has the following definition –

```
struct tm {  
    int tm_sec;           /* seconds, range 0 to 59 */  
    int tm_min;           /* minutes, range 0 to 59 */  
    int tm_hour;          /* hours, range 0 to 23 */  
    int tm_mday;          /* day of the month, range 1 to 31 */  
    int tm_mon;           /* month, range 0 to 11 */  
    int tm_year;          /* The number of years since 1900 */  
    int tm_wday;          /* day of the week, range 0 to 6 */  
    int tm_yday;          /* day in the year, range 0 to 365 */  
    int tm_isdst;         /* daylight saving time */  
};
```

Library Macros

Following are the macros defined in the header time.h –

Sr.No.	Macro & Description
1	NULL This macro is the value of a null pointer constant.
2	CLOCKS_PER_SEC This macro represents the number of processor clocks per second.

Library Functions

Following are the functions defined in the header time.h –

Sr.No.	Function & Description
1	<p><code>char *asctime(const struct tm *timeptr) ↗</code></p> <p>Returns a pointer to a string which represents the day and time of the structure timeptr.</p>
2	<p><code>clock_t clock(void) ↗</code></p> <p>Returns the processor clock time used since the beginning of an implementation defined era (normally the beginning of the program).</p>
3	<p><code>char *ctime(const time_t *timer) ↗</code></p> <p>Returns a string representing the localtime based on the argument timer.</p>
4	<p><code>double difftime(time_t time1, time_t time2) ↗</code></p> <p>Returns the difference of seconds between time1 and time2 (time1-time2).</p>
5	<p><code>struct tm *gmtime(const time_t *timer) ↗</code></p> <p>The value of timer is broken up into the structure tm and expressed in Coordinated Universal Time (UTC) also known as Greenwich Mean Time (GMT).</p>
6	<p><code>struct tm *localtime(const time_t *timer) ↗</code></p> <p>The value of timer is broken up into the structure tm and expressed in the local time zone.</p>
7	<p><code>time_t mktime(struct tm *timeptr) ↗</code></p> <p>Converts the structure pointed to by timeptr into a time_t value according to the local time zone.</p>
8	<p><code>size_t strftime(char *str, size_t maxsize, const char *format, const struct tm *timeptr) ↗</code></p> <p>Formats the time represented in the structure timeptr according to the formatting rules defined in format and stored into str.</p>
9	<p><code>time_t time(time_t *timer) ↗</code></p> <p>Calculates the current calendar time and encodes it into time_t format.</p>