

**date()** — Date and time manipulation[Description](#)[Syntax](#)[Conformability](#)[Diagnostics](#)[Also see](#)

## Description

These functions mirror Stata's date functions; see [D] [datetime](#).

## Syntax

```
tc = clock(strdatetime, pattern [, year])
```

```
tc = mdyhms(month, day, year, hour, minute, second)
```

```
tc = dhms(td, hour, minute, second)
```

```
tc = hms(hour, minute, second)
```

```
hour = hh(tc)
```

```
minute = mm(tc)
```

```
second = ss(tc)
```

```
td = dofC(tc)
```

```
tC = CofC(tc)
```

```
tC = Clock(strdatetime, pattern [, year])
```

```
tC = Cmdyhms(month, day, year, hour, minute, second)
```

```
tC = Cdhms(td, hour, minute, second)
```

```
tC = Chms(hour, minute, second)
```

```
hour = hhC(tC)
```

```
minute = mmC(tC)
```

```
second = ssC(tC)
```

```
td = dofC(tC)
```

```
tc = cofC(tC)
```

```
td = date(strdate, dpattern [, year])
```

```
td = mdy(month, day, year)
```

```
tw = yw(year, week)
```

```
tm = ym(year, month)
```

```
tq = yq(year, quarter)
```

```
th = yh(year, half)
```

```
tc = cofd(td)
```

```
tC = Cofd(td)
```

```
td = dofb(tb, "calendar")
```

```
tb = bofd("calendar", td)
```

```
month = month(td)
```

```
day = day(td)
```

```
year = year(td)
```

```
dow = dow(td)
```

```
week = week(td)
```

```
quarter = quarter(td)
```

```
half = halfyear(td)
```

```
doy = doy(td)
```

```
ty = yearly(strydate, ypattern [, year])
```

```
ty = yofd(td)
```

```
td = dofy(ty)
```

```
th = halfyearly(strhdate, hpattern [, year])
```

```
th = hofd(td)
```

```
td = dofh(th)
```

```
tq = quarterly(strqdate, qpattern [, year])
```

```
tq = qofd(td)
```

```
td = dofq(tq)
```

```
tm = monthly(strmdate, mpattern [, year])
```

```
tm = mofd(td)
```

```
td = dofM(tm)
```

```
tw = weekly(strwdate, wpattern [, year])
```

```
tw = wofd(td)
```

```
td = dofwtw)
```

```
hours = hours(ms)
```

```
minutes = minutes(ms)
```

```
seconds = seconds(ms)
```

```
ms = msofhours(hours)
```

```
ms = msofminutes(minutes)
```

```
ms = msofseconds(seconds)
```

where

<i>tc</i> :	number of milliseconds from 01jan1960 00:00:00.000, unadjusted for leap seconds
<i>tC</i> :	number of milliseconds from 01jan1960 00:00:00.000, adjusted for leap seconds
<i>strdatetime</i> :	string-format date, time, or date/time, e.g., "15jan1992", "1/15/1992", "15-1-1992", "January 15, 1992", "9:15", "13:42", "1:42 p.m.", "1:42:15.002 pm", "15jan1992 9:15", "1/15/1992 13:42", "15-1-1992 1:42 p.m.", "January 15, 1992 1:42:15.002 pm"
<i>pattern</i> :	order of month, day, year, hour, minute, and seconds in <i>strdatetime</i> , plus optional default century, e.g., "DMYhms" (meaning day, month, year, hour, minute, second), "DMYhm", "MDYhm", "hmMDY", "hms", "hm", "MDY", "MD19Y", "MDY20Yhm"
<i>td</i> :	number of days from 01jan1960
<i>tb</i> :	business date (days)
<i>calendar</i> :	string scalar containing calendar name or %tb format
<i>strdate</i> :	string-format date, e.g., "15jan1992", "1/15/1992", "15-1-1992", "January 15, 1992"
<i>dpattern</i> :	order of month, day, and year in <i>strdate</i> , plus optional default century, e.g., "DMY" (meaning day, month, year), "MDY", "MD19Y"

<i>hour:</i>	hour, 0–23
<i>minute:</i>	minute, 0–59
<i>second:</i>	second, 0.000–59.999 (maximum 60.999 in case of leap second)
<i>month:</i>	month number, 1–12
<i>day:</i>	day-of-month number, 1–31
<i>year:</i>	year, e.g., 1942, 1995, 2008
<i>week:</i>	week within year, 1–52
<i>quarter:</i>	quarter within year, 1–4
<i>half:</i>	half within year, 1–2
<i>dow:</i>	day of week, 0–6, 0 = Sunday
<i>doy:</i>	day within year, 1–366
<i>ty:</i>	calendar year
<i>strydate:</i>	string-format calendar year, e.g., "1980", "80"
<i>ypattern:</i>	pattern of <i>strydate</i> , e.g., "Y", "19Y"
<i>th:</i>	number of halves from 1960h1
<i>strhdate:</i>	string-format <i>hdate</i> , e.g., "1982-1", "1982h2", "2 1982"
<i>hpattern:</i>	pattern of <i>strhdate</i> , e.g., "YH", "19YH", "HY"
<i>tq:</i>	number of quarters from 1960q1
<i>strqdate:</i>	string-format <i>qdate</i> , e.g., "1982-3", "1982q2", "3 1982"
<i>qpattern:</i>	pattern of <i>strqdate</i> , e.g., "YQ", "19YQ", "QY"
<i>tm:</i>	number of months from 1960m1
<i>strmdate:</i>	string-format <i>mdate</i> , e.g., "1982-3", "1982m2", "3/1982"
<i>mpattern:</i>	pattern of <i>strmdate</i> , e.g., "YM", "19YM", "MR"
<i>tw:</i>	number of weeks from 1960w1
<i>strwdate:</i>	string-format <i>wdate</i> , e.g., "1982-3", "1982w2", "1982-15"
<i>wpattern:</i>	pattern of <i>strwdate</i> , e.g., "YW", "19YW", "WY"
<i>hours:</i>	interval of time in hours (positive or negative, real)
<i>minutes:</i>	interval of time in minutes (positive or negative, real)
<i>seconds:</i>	interval of time in seconds (positive or negative, real)
<i>ms:</i>	interval of time in milliseconds (positive or negative, integer)

Functions return an element-by-element result. Functions are usually used with scalars.

All variables are *real matrix* except the *str\** and *\*pattern* variables, which are *string matrix*.

## Conformability

`clock(strdatetime, pattern, year)`, `Clock(strdatetime, pattern, year)`:

*strdatetime*:  $r_1 \times c_1$   
*pattern*:  $r_2 \times c_2$  (c-conformable with *strdatetime*)  
*year*:  $r_3 \times c_3$  (optional, c-conformable)  
*result*:  $\max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3)$

`mdyhms(month, day, year, hour, minute, second)`,  
`Cmdyhms(month, day, year, hour, minute, second)`:

*month*:  $r_1 \times c_1$   
*day*:  $r_2 \times c_2$   
*year*:  $r_3 \times c_3$   
*hour*:  $r_4 \times c_4$   
*minute*:  $r_5 \times c_5$   
*second*:  $r_6 \times c_6$  (all variables c-conformable)  
*result*:  $\max(r_1, r_2, r_3, r_4, r_5, r_6) \times \max(c_1, c_2, c_3, c_4, c_5, c_6)$

`hms(hour, minute, second)`, `Chms(hour, minute, second)`:

*hour*:  $r_1 \times c_1$   
*minute*:  $r_2 \times c_2$   
*second*:  $r_3 \times c_3$   
*result*:  $\max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3)$

`dhms(td, hour, minute, second)`, `Cdhms(td, hour, minute, second)`:

*td*:  $r_1 \times c_1$   
*hour*:  $r_2 \times c_2$   
*minute*:  $r_3 \times c_3$   
*second*:  $r_4 \times c_4$  (all variables c-conformable)  
*result*:  $\max(r_1, r_2, r_3, r_4) \times \max(c_1, c_2, c_3, c_4)$

`hh(x)`, `mm(x)`, `ss(x)`, `hhC(x)`, `mmC(x)`, `ssC(x)`:

*x*:  $r \times c$   
*result*:  $r \times c$

`date(strdate, dpattern, year)`:

*strdate*:  $r_1 \times c_1$   
*dpattern*:  $r_2 \times c_2$  (c-conformable with *strdate*)  
*year*:  $r_3 \times c_3$  (optional, c-conformable)  
*result*:  $\max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3)$

`mdy(month, day, year)`:

*month*:  $r_1 \times c_1$   
*day*:  $r_2 \times c_2$   
*year*:  $r_3 \times c_3$  (all variables c-conformable)  
*result*:  $\max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3)$

`yw(year, detail)`, `ym(year, detail)`, `yq(year, detail)`, `yh(year, detail)`:

*year*:  $r_1 \times c_1$   
*detail*:  $r_2 \times c_2$  (c-conformable with *year*)  
*result*:  $\max(r_1, r_2) \times \max(c_1, c_2)$

`month(td)`, `day(td)`, `year(td)`, `dow(td)`, `week(td)`, `quarter(td)`, `halfyear(td)`, `doy(td)`:

*td*:  $r \times c$   
*result*:  $r \times c$

`yearly(str, pat, year)`, `halfyearly(str, pat, year)`, `quarterly(str, pat, year)`,  
`monthly(str, pat, year)`, `weekly(str, pat, year)`:

*str*:  $r_1 \times c_1$   
*pat*:  $r_2 \times c_2$  (c-conformable with *str*)  
*year*:  $r_3 \times c_3$  (optional, c-conformable)  
*result*:  $\max(r_1, r_2, r_3) \times \max(c_1, c_2, c_3)$

`Cofc(x)`, `cofC(x)`, `dofc(x)`, `dofC(x)`, `cofd(x)`, `Cofd(x)`, `yofd(x)`, `dofy(x)`, `hofd(x)`,  
`dofh(x)`, `qofd(x)`, `dofq(x)`, `mofd(x)`, `dofm(x)`, `wofd(x)`, `dofw(x)`:

*x*:  $r \times c$   
*result*:  $r \times c$

`dofb(tb, "calendar")`:

*tb*:  $r \times c$   
*calendar*:  $1 \times 1$   
*result*:  $r \times c$

`bofd("calendar", td)`:

*calendar*:  $1 \times 1$   
*td*:  $r \times c$   
*result*:  $r \times c$

`hours(x)`, `minutes(x)`, `seconds(x)`, `msofhours(x)`, `msofminutes(x)`, `msofseconds(x)`:

*x*:  $r \times c$   
*result*:  $r \times c$

## Diagnostics

None.

## Also see

[M-4] [scalar](#) — Scalar mathematical functions