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Language : Fortran **Revised:**

Calendar Date Conversion

CALDAT converts any calendar date represention in a set of such representations to all other calendar date representations in the set; in addition a few extra bits of information are produced.

Structure:

SUBROUTINE subprogram
User Entry Names: CALDAT
Internal Entry Names: CDMON, CLEAP, CYDIY, CYEARY
External References: DATIME (Z007)

Usage:

```
CALL CALDAT(IINDEX,CHREP,IBNREP,IERR)
```

IINDEX (INTEGER) Integer specifying which of the possible date representations is being given as the input representation. This input may either be as type CHARACTER within the CHREP string or as type INTEGER within the IBNREP array.

CHREP (CHARACTER*119) A character string containing, as substrings, the possible date representations. One such substring may be filled as the input representation, in which case it should be pointed to by IINDEX.

IBNREP (INTEGER) Array of length 8 containing various binary date representations. One such date representation may be filled as the input representation, in which case it should be pointed to by IINDEX.

IERR (INTEGER) Error flag. IERR $=$ 0 success, IERR $\neq$ 0 failure of the conversion.

The substrings of CHREP can be accessed directly, using CHARACTER substring operations. Alternatively all, or part, of the EQUIVALENCE statements below may be used:

```
      CHARACTER   DMY14*14,DMY11*11,DMY9*9,DMY10*10
      CHARACTER*8 DMY8A,DMY8B,YMD8,MDY8,YDM8
      CHARACTER*6 DMY6,       YMD6,MDY6,YDM6
      CHARACTER   YD5*5,W4*4,W2*2
      EQUIVALENCE
     *   (CHREP(  1: 14), DMY14), (CHREP( 15: 25), DMY11),
     *   (CHREP( 26: 34), DMY9 ), (CHREP( 35: 44), DMY10),
     *   (CHREP( 45: 52), DMY8A), (CHREP( 53: 60), DMY8B),
     *   (CHREP( 61: 66), DMY6 ), (CHREP( 67: 74), YMD8 ),
     *   (CHREP( 75: 80), YMD6 ), (CHREP( 81: 88), MDY8 ),
     *   (CHREP( 89: 94), MDY6 ), (CHREP( 95:102), YDM8 ),
     *   (CHREP(103:108), YDM6 ), (CHREP(109:113), YD5  ),
     *   (CHREP(114:117), W4   ), (CHREP(118:119), W2   )
```

Details of the substrings in argument CHREP and the corresponding IINDEX values:

	EXAMPLE	IINDEX		EXAMPLE	IINDEX
DMY14	16. APRIL 1982	1	YMD6	820416	9
DMY11	16 APR 1982	2	MDY8	04/16/82	10
DMY9	16 APR 82	3	MDY6	041682	11
DMY10	16. 4.1982	4	YDM8	82/16/04	12
DMY8A	16. 4.82	5	YDM6	821604	13
DMY8B	16/04/82	6	YD5	82106	14
DMY6	160482	7	W4	FRI.	
YMD8	82/04/16	8	W2	FR	

Details of the elements in argument IBNREP and the corresponding IINDEX values:

Element	Contents	Type	Example	IINDEX
1,2,3	d, m, y	binary	16, 4, 1982	101
4	day in the year	binary	106	102
5	00YYDDDC	packed dec	0082106C	103
6	Julian date	binary	723651	104
7	weekday, MO=0,...	binary	4	
8	week in the year	binary	15	
3,4	y, day in year	binary	1982, 106	105

Notes: Julian date = days since 1/1/1, without Gregory's pause. Week 1 of the year contains the 1st Thursday in the year (ISO).

Names of the months:

3 characters: 'JAN', 'FEB', 'MAR', 'APR', 'MAY', 'JUN',
'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC'

5 characters: 'JAN. ', 'FEB. ', 'MARCH', 'APRIL', 'MAY ', 'JUNE ',
'JULY ', 'AUG. ', 'SEPT.', 'OCT. ', 'NOV. ', 'DEC. '

Names of the week days:

2 characters: 'MO','TU','WE','TH','FR','SA','SU'.

4 characters: 'MON.','TUE.','WED.','THUR','FRI.','SAT.','SUN.'.

Method:

Two arguments are used for passing the calendar dates: a character string and an array of full words. The various representations are numbered, and an input parameter ('input index') specifies the representation containing the input calendar date.
An extra output parameter receives a return code.

Special cases:

- Input index = 0 designates *today* which CALDAT will find.
- Input year yy rather than yyyy, designates *this century*.
- Input index or input data invalid:
  – output character string with all '*';
  – output numbers all X'81818181' = -2 122 219 135.

Restrictions:

CALDAT will give incorrect dates and weekdays for dates prior to the reformation of the Calendar by pope Gregory (16th century).

Error handling:

IERR	Meaning
0	everything fine
4	IINDEX $<$ 0
8	upper bound for CHREP $<$ IINDEX $<$ lower bound for IBNREP
12	upper bound for IBNREP $<$ IINDEX
16	ddd out of bounds
20	mm | dd out of bounds
24	yyyy out of bounds

Syntax errors:

IERR	in	IINDEX	IERR	in	IINDEX	IERR	in	IINDEX
1001	DMY14	1	1006	DMY8B	6	1011	MDY6	11
1002	DMY11	2	1007	DMY6	7	1012	YDM8	12
1003	DMY9	3	1008	YMD8	8	1013	YDM6	13
1004	DMY10	4	1009	YMD6	9	1014	YD5	14
1005	DMY8A	5	1010	MDY8	10	1103	Julian	103

Notes:

Element 5 of IBNREP is not a Fortran type. Nevertheless this calendar date format may show up in data from the 'real world'. Element 7 of IBNREP is especially well suited for arithmetical calculations with dates.

Examples:

```
C     Initialize substring CHREP(15:25)
      DMY11='16 APR 1982'
C     Define this substring to be the input format
      IINDEX=2
      CALL CALDAT(IINDEX,CHREP,IBNREP,IERR)
```

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