Subject: Problems with JULDAY and CALDAT
Posted by John J. Boia on Wed, 07 Apr 1999 07:00:00 GMT
View Forum Message <> Reply to Message

I've been developing a set of time conversion functions
(primarily using Modified Julian Date) and I have discovered
some problems with the IDL-provided routines CALDAT and JULDAY.

JULDAY seems to return Julian date values with an offset
of 0.5 from the accepted definition, when hours, minutes,
and seconds are passed in as arguments Integer julian
day numbers correspond to 12:00 noon UT.

CALDAT does not correctly return the month/day/year
values for Julian day numbers that correspond to leap days
(Feb 29) in the leap years 1584 through 1604. (It also
mishandles preceding leap years, but those are before the
the Gregorian calendar took effect in 1582 and it becomes
increasingly difficult to make sense of those dates anyway.)
Instead of Feb 29, (Year), it returns Feb 31, (Year+1).

The problems are easy enough to work around, if you know
what the problems are. I have attached a small sample
procedure to demonstrate what I've found. Does anyone
know of other problems, or a better pair of routines,
or a plan to update these two?

John Boia

```
PRO TIMETEST

  FORWARD_FUNCTION JULDAY

  B = julday( 1,1,1970,0,0,0 ) - 0.5D
  PRINT, B, FORMAT="(' Jan 1 1970 0h UT --> JD ',F15.3//)"

  FOR I = 2299160L, 2307639L DO BEGIN
    CALDAT, I, MON, DAY, YR
    JD = JULDAY( MON, DAY, YR )
    IF I NE JD THEN BEGIN
      FOR J = I-2, I+2 DO BEGIN
   CALDAT, J, MON, DAY, YR
   PRINT, J, MON, DAY, YR, FORMAT="(' JD =',I8,6x,'Cal:',3I5)"
      ENDFOR
 PRINT
    ENDIF
  ENDFOR
```

END

--
John J. Boia | Email: jboia@iasdev1.gsfc.nasa.gov
Programmer/Analyst | Web: http://iasdev1.gsfc.nasa.gov/~jboia/
Computer Sciences Corp. | Phone: 301.794.2357