

Kalendas

Cálculos de Calendario

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Este es el manual de kalendas (versión 1.1.0, 24 December 2014), Cálculos de Calendario.
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1 Resumen

`kalendas` es un perl script para realizar cálculos de calendario. Los cálculos están desarrollados sobre tres sistemas de datación: el calendario Juliano, el calendario Gregoriano y el sistema de numeración de día/fecha Juliana.

`kalendas` es un aplicación informática que permite calcular diferentes conversiones entre calendarios Juliano, Gregoriano y Fecha Juliana, usados comúnmente en cálculos astronómicos y cronológicos.

2 Introducción

Los calendarios Juliano y Gregoriano son sistemas de datación usados por la Cultura Occidental o Cristiana: el calendario Juliano, introducido por el triunviro Julio César en el año 46 a.C., fue usado hasta el año 1582 A.D. (Grafton, 1994), época donde fue corregido a través de la reforma ordenada por el Papa Gregorio XIII y que dio origen al calendario Gregoriano, calendario de uso común en la actualidad (Archivo Secreto Vaticano, 1582). Ambos calendarios consideran los mismos meses y días, pero difieren en el conteo de los años bisiestos. El sistema de numeración de días Julianos consiste en contar los días (incluyendo fracciones de día) desde una fecha de referencia hasta una fecha dada y su uso es común en astronomía y cronología (Portilla, 2009).

Los cálculos tienen por objetivo la conversión de fechas entre los tres sistemas de datación mencionados anteriormente. La mayoría de algoritmos implementados usan la función módulo (el residuo de la división entre dos números enteros) con el propósito de manejar variables enteras a lo largo del cálculo, ya que los calendarios manejan números enteros, con excepción del sistema de numeración de día/fecha Juliana que contiene una parte decimal a causa de la fracción de día.

La aplicación es desarrollada en lenguaje Perl¹ y funciona a través de la interfaz de línea de comandos (CLI)². Puesto que Perl es software libre, él se encuentra disponible en una variedad de sistemas operativos (UNIX, Mac, Woe³) de modo que, para ejecutar la aplicación sólo es requisito tener instalado Perl con una versión igual o superior a la 5. La aplicación ofrece los siguientes cálculos:

- Cálculo de la Fecha Juliana desde una fecha del Calendario Occidental o Calendario Juliano o Calendario Gregoriano.
- Cálculo de la fecha de Calendario Juliano o Calendario Gregoriano desde una Fecha Juliana.
- Cálculo de la Fecha Juliana Modificada desde una fecha del Calendario Occidental o viceversa.
- Conversión de fechas entre los calendarios Juliano y Gregoriano o viceversa.

Para la Fecha Juliana, el resultado numérico en la parte decimal se expresa con 5 dígitos de precisión, que en segundos equivale a 1 segundo. Misma situación para la Fecha Juliana Modificada.

¹ Acrónimo en inglés de Practical Extraction and Report Language.

² Acrónimo en inglés de Command Line Interface.

³ Acrónimo en inglés Windows Operating Environment

3 Usando kalendas

A continuación se explican las opciones de cómputo y ejemplos de uso de la aplicación.

3.1 Invocando kalendas

3.1.1 Argumentos

Nota: escritura de comillas (") es obligatoria para ingreso de argumentos.

era	Es la posición del año en la escala cristiana. Con aC denota <i>ante Christium</i> o antes de Cristo; AD , <i>Anno Domini</i> o después de Cristo.
yy	El año con un número mayor que cero. El año cero o un año negativo no existe en la escala cristiana.
mm	El mes con valor numérico: Ene- >1, Feb- >2, ...
dd	El día del mes.
tt	La hora solar, tiene dos opciones de ingreso: escribiendo el tiempo universal (UT) en formato hh:mm:ss , o md que es la hora a mediodía de Greenwich (12:00:00 UT).
fj	La fecha Juliana. Las partes entera y decimal de fj representan el número de día Juliano y la fracción de día Juliano respectivamente. Con cinco cifras decimales se obtiene la hora solar con una precisión de 1 segundo; fj puede ser un número negativo.
fjm	La fecha Juliana modificada, el cual es el número de días transcurridos desde la 0 horas UT del 17 de Noviembre de 1858. Las partes entera y decimal de fjm representan el número de día Juliano modificado y la fracción de día Juliano modificado respectivamente. Con cinco cifras decimales se obtiene la hora solar con una precisión de 1 segundo; fjm puede ser un número negativo.

3.1.2 Funciones

`--calc2FJ "(era,yy,mm,dd,tt)"`

Cálculo de fecha Juliana a partir de una fecha del calendario usado en la cultura Cristiana o Occidental. Esta función asume los calendarios usados en la cultura Occidental: el calendario Gregoriano, usado actualmente para fines civiles, y su antecesor, el calendario Juliano, usado por el antiguo Imperio Romano con vigencia hasta finales del siglo XVI. Por tanto, para una fecha anterior al 5 de Octubre de 1582 se asume el calendario Juliano, mientras que para una fecha posterior al 14 de Octubre de 1582 se asume el calendario Gregoriano.

`--jul2FJ "(era,yy,mm,dd,tt)"`

Cálculo de fecha Juliana a partir de una fecha del calendario Juliano. La función asume únicamente el calendario Juliano.

`--greg2FJ "(era,yy,mm,dd,tt)"`

Cálculo de fecha Juliana a partir de una fecha del calendario Gregoriano. La función asume únicamente el calendario Gregoriano.

```

--FJ2jul "(fj)"
    Cálculo de una fecha del calendario Juliano, hora y día de la semana a partir
    de una fecha Juliana. Entrega la fecha con formato día de la semana, era, año,
    mes, día y hora UT.

--FJ2greg "(fj)"
    Cálculo de una fecha del calendario Gregoriano, hora y día de la semana a partir
    de una fecha Juliana. Entrega la fecha con formato día de la semana, era, año,
    mes, día y hora UT.

--calc2FJM "(era,yy,mm,dd,tt)"
    Cálculo de la fecha Juliana modificada a partir de una fecha del calendario
    Occidental. La función es valida para cualquier era.

--FJM2calc "(fjm)"
    Cálculo de una fecha del calendario Occidental, hora y día de la semana a partir
    de una fecha Juliana modificada. Entrega la fecha con formato día de la semana,
    era, año, mes, día y hora UT.

--convcal "(era,yy,mm,dd,cal1,cal2)"
    Conversión entre fecha del calendario cal1 a fecha del calendario cal2. La con-
    versión se realiza entre calendarios Juliano jul y Gregoriano greg o viceversa.
    Entrega la fecha con formato era, año, mes y día.

--mas fun Muestra información adicional sobre función fun, donde fun es una de las op-
    ciones
        calc2FJ|jul2FJ|greg2FJ|FJ2jul|FJ2greg|
        calc2FJM|FJM2calc|convcal|mas|arg
    La opción arg muestra información adicional de los argumentos.

-h, --help
    Muestra resumen de funciones y argumentos.

-v, --version
    Muestra versión del programa.

```

Si no hay algún parámetro en la línea de comandos, se evalúa la Fecha Juliana desde el reloj del PC.

3.2 Ejemplos

Para ejecutar el perl script escribir en un terminal

```
kalendas [opción] [argumentos]
```

También puede ejecutarse a partir del interprete perl (opción valida para cualquier plataforma) escribiendo

```
perl kalendas [opción] [argumentos]
```

En los siguientes ejemplos, escribir función y argumentos en la misma forma como se encuentra.

- En diversas aplicaciones astronómicas se hace referencia a la época J2000, entendida como la fecha Juliana del 1 de Enero del 2000 A.D. a mediodía de Greenwich (12:00:00 UT). La fecha Juliana para tal instante es:

```
kalendas --calc2FJ "(AD,2000,1,1,md)"
FJ = 2451545.00000
```

- La fecha Juliana del día 15 de Marzo del 44 a.C. a las 5:45:35 UT es:

```
kalendas --calc2FJ "(aC,44,3,15,5:45:35)"
FJ = 1705425.73999
```

- La fecha Juliana del día 3 de Septiembre de 1752 A.D. (calendario Juliano) a media noche de Greenwich (00:00:00 UT) es:

```
kalendas --jul2FJ "(AD,1752,09,03,00:00:00)"
FJ = 2361221.50000
```

La fecha Juliana del día 14 de Septiembre de 1752 A.D. (calendario Gregoriano) a media noche de Greenwich (00:00:00 UT) es:

```
kalendas --greg2FJ "(AD,1752,09,14,00:00:00)"
FJ = 2361221.50000
```

Se observa que ambos calendarios coinciden con la misma fecha Juliana. De hecho, en esta fecha Gran Bretaña y sus colonias adoptaron el calendario Gregoriano.

- N. Armstrong pisó el suelo lunar en la fecha Juliana 2440421.62278. Las respectivas fechas calendario Juliano y Gregoriano del histórico momento son:

```
kalendas --FJ2jul "(2440421.62278)"
Fecha: Sábado, AD 1969-7-6, 02:56:48 UT
kalendas --FJ2greg "(2440421.62278)"
Fecha: Sábado, AD 1969-7-19, 02:56:48 UT
```

- La fecha Juliana modificada del día 19 de Diciembre del 2014 a las 18:57:27 UT es:

```
kalendas --calc2FJM "(AD,2014,12,19,18:57:27)"
MJD = 57010.78990
```

la operación inversa recupera la fecha inicial

```
kalendas --FJM2calc "(57010.78990)"
Fecha: Viernes, AD 2014-12-19, 18:57:27 UT
```

- Convertir la fecha 1 enero del 1 A.D. calendario Juliano a calendario Gregoriano

```
kalendas --convcal "(AD,1,1,1,jul,greg)"
Fecha: (aC,1,12,30)
```

por supuesto la operación inversa recupera la fecha inicial

```
kalendas --convcal "(aC,1,12,30,greg,jul)"
Fecha: (AD,1,1,1)
```

- Para calcular la fecha Juliana actual desde el reloj del PC

```
kalendas
```

4 Diagnóstico de errores

Durante la ejecución del programa pueden presentarse algunos errores, causando la terminación inmediata de la aplicación. En lo que sigue se explican los mensajes de error de la aplicación, teniendo en cuenta que su origen puede deberse a la redacción de argumentos y/o opciones; la discusión no profundiza en errores de compilación o de ejecución sobre un sistema operativo.

`kalendas` retorna uno de los siguientes mensajes, con interrupción de la aplicación, por ingreso incorrecto de argumentos.

Muchos argumentos!

La opción requerida tiene más de un argumento o las comillas fueron omitidas. Cadenas de caracteres separados por espacios o comas (`--fun arg1 arg2, arg3 ...`) son considerados como argumentos; por tanto, cada opción requiere un argumento entre comillas. Ver Ejemplos.

Ingreso incorrecto de fecha!

Los argumentos ingresados por línea de comandos no se ajustan al formato requerido por la función. Cada argumento debe estar entre paréntesis. Para cálculos de fecha Juliana el argumento `era` admite únicamente las cadenas `aC` o `AD`, `yy,mm,dd` admiten únicamente números enteros positivos, el tiempo `tt` admite la cadena `md` o la hora UT en formato `hh:mm:ss` con números enteros positivos. Para cálculos de fecha de calendario `fj` es un número real positivo o negativo. Ver Ejemplos.

Conversión entre calendarios iguales!!!

La opción `--convcal` realiza conversiones únicamente entre los calendarios Juliano y/o Gregoriano. Obviamente, no hay nada mas que comentar!

No existe información para: `argx`

El argumento `argx` no corresponde a las funciones de `kalendas`. Para recordar las funciones del programa, escribir `--help`.

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Referencias

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Portilla, J. G. (2009). *Elementos de astronomía de posición*. Bogotá, Colombia: Universidad Nacional de Colombia, Facultad de Ciencias, Observatorio Astronómico Nacional.

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