Digital Times

dorumugs

Malware.co.kr

And yet it does move

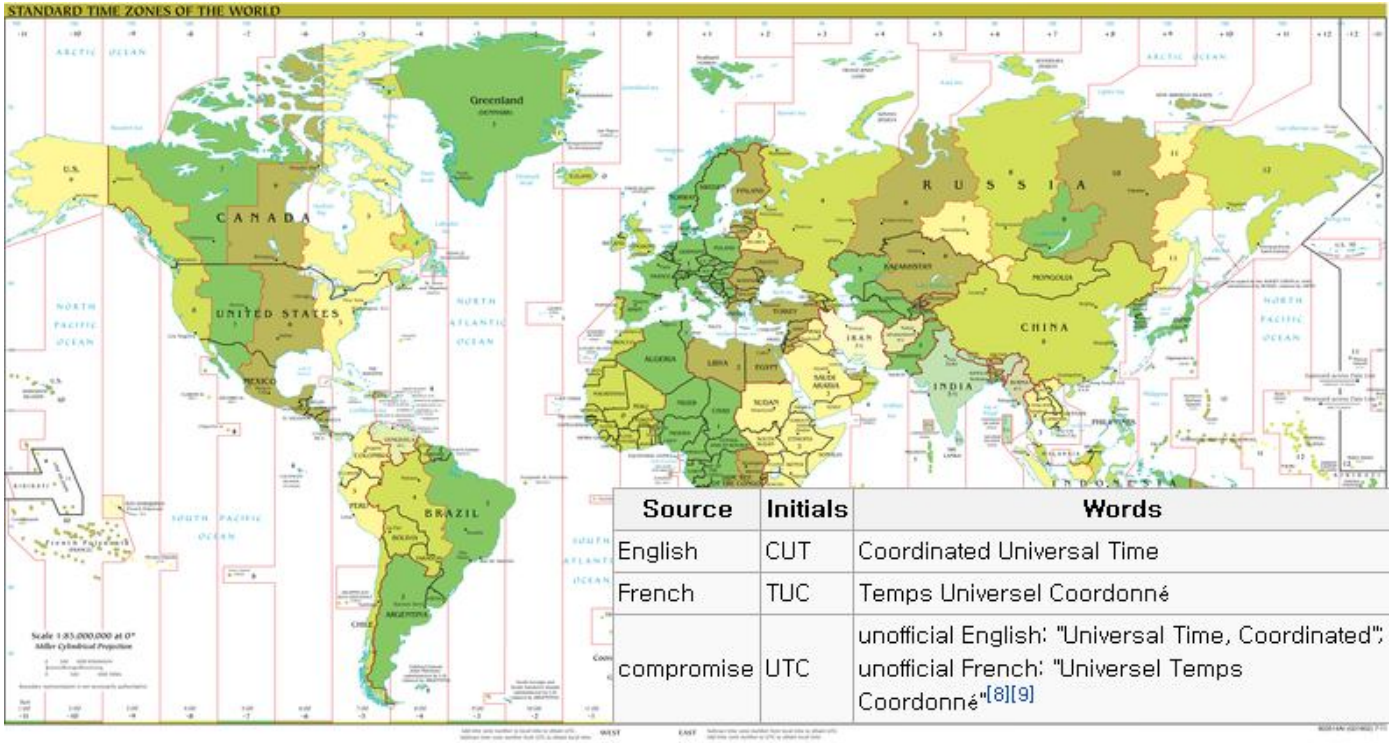
Index

UTC and GMT

UTC(Universal Time Code) and GMT(Greenwich Mean Time)

- **There is a little GAP between UTC and GMT.**
  But we used to handle two times in the same way.

- **UTC : http://en.wikipedia.org/wiki/Coordinated_Universal_Time**
- **GMT : http://en.wikipedia.org/wiki/Greenwich_Mean_Time**



Source	Initials	Words
English	CUT	Coordinated Universal Time
French	TUC	Temps Universel Coordonné
compromise	UTC	unofficial English: "Universal Time, Coordinated"; unofficial French: "Universel Temps Coordonné"[8][9]

Time Unit

Time Unit

- 1 o' clock is 3600 seconds
- 1 day is 86400 seconds
- 1 year is 8760 hours
- 1 year is 31536000 seconds
- 1 second is 1000000000 nanoseconds
- 1 second is 1000000 microseconds
- 1 second is 1000 milliseconds

- URL : http://www.convertworld.com/ko/time/

시간

변환해주세요:

1 | Seconds (s) | 2 소수

Years	$3{,}17\times10^{-8}$
Months	$3{,}8\times10^{-7}$
Weeks	$1{,}65\times10^{-6}$
Days	$1{,}16\times10^{-5}$
Hours	$2{,}78\times10^{-4}$
Minutes	0,02
Seconds	1
Milliseconds	1000
Microseconds	1000000
Nanoseconds	1000000000

Digital Times

Time Format	Detail	Example	Usage
w64	Windows 64bit Big Time	129943698100000000	
w64_big_h	(Hex) Windows 64bit Big Time	01cda71ade0d1500	
w64_lit_h	(Hex) Windows 64bit Little Time	00150dde1aa7cd01	NTFS(MFT), INFO2, Registry, Index.dat, Link File
wfiletime	(Hex) Windows FILETIME Time	de0d1500:01cda71a	
wcookie	Windows Cookie Date Time	3725399296302540000	
chrome	Google Chrome Time	12994369810317300	History (Google Chrome), Cookies (Google Chrome)

Digital Times

Time Format	Detail	Example	Usage
unum	Unix Numeric Time	1349896210	moz_cookies (firefox), global_history.dat (opera)
umilli	Unix Millisecond Time	1349896210000	
umicro	Unix Microsecond Time	1349896210000000	moz_cookies (firefox)
unum_big_h	(Hex) Unix Numeric Big Time	5075c812	
unum_lit_h	(Hex) Unix Numeric Little Time	12c87550	EXT2, EXT3, EXT4

Time Format	Detail	Example	Usage
mac_ab	Mac Absolute Time	371589010	History.plist(safari)
mac_ab_h	(Hex) Mac Absolute Time	1625ff92	
ms32_big_h	(Hex) MS-DOS 32bit Big Time	414a994a	
ms32_lit_h	(Hex) MS-DOS 32bit Little Time	4a994a41	PE Compiled Time
hfs32_big_h	(hex) HFS 32bit Big Time	cc9b7892	sms.db(Iphone), HFS+
hfs32_lit_h	(hex) HFS 32bit Little Time	92789bcc	

Many Kinds of Times

- Windows 64bit Time
- Windows FILETIME Time
- Unix Numeric Time
- Unix Millisecond Time
- Unix Microsecond Time
- Windows Cookie Date Time
- Google Chrome Time
- Mac Absolute Time
- MS-DOS 32bit Time
- HFS 32bit Time

Unix Numeric Time

- Seconds From 1970 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Second
- Not exist From 1970 To 1972. Because UTC is from 1972-01-01
- Example
  - 63072000 => 1972-01-01 00:00:00 (31536000 Seconds is 1 year)

```
C:\Users\dorumugs\Desktop\Time>python time_maker.py -d unum -i 63072000
----------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
----------------------------------------------------------------
               User Input Time -  63072000
         User Input Time Format -  unum
            Decode Inputed Time -  1972-01-01 00:00:00
----------------------------------------------------------------
```

Unix Millisecond Time

- MilliSeconds From 1970 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Second
- Not exist From 1970 To 1972. Because UTC is from 1972-01-01
- Unix Millisecond Time = Unix Numeric Time * 1000
- Example
  - 315532800 * 1000 => 315532800000

```
C:₩Users₩dorumugs₩Desktop₩Time>python time_maker.py -d umilli -i 315532800000
------------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
------------------------------------------------------------------
                User Input Time -  315532800000
         User Input Time Format -  umilli
            Decode Inputed Time -  1980-01-01 00:00:00
------------------------------------------------------------------
```

Windows 64bit Time

- Nano Seconds From 1601 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Nano Second
- 116444736000000000 Nano Seconds is 1970-01-01 00:00:00
- windows_64bit_time = windows 64bit start + (unix numeric time * 10000000)
  - You can calculate windows 64bit time by 10000000 Not 1000000000
- 1 second is 10000000 nano seconds
- Example
  - 119600064000000000 => 1980-01-01 00:00:00

```
C:\Users\dorumugs\Desktop\Time>python time_maker.py -d w64 -i 119600064000000000

------------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
------------------------------------------------------------------
                User Input Time -  119600064000000000
         User Input Time Format -  w64
            Decode Inputed Time -  1980-01-01 00:00:00
------------------------------------------------------------------
```

Windows FILETIME Time

- Windows 64bit Time => Hex => 1212121234343434 => 34343434:12121212
- Example
  - 01cda71ade0d1500 => de0d1500:01cda71a

```
C:₩Users₩dorumugs₩Desktop₩Time>python time_maker.py -d wfiletime -i de0d1500:01c
da71a
----------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
----------------------------------------------------------------
               User Input Time -  de0d1500:01cda71a
         User Input Time Format -  wfiletime
            Decode Inputed Time -  2012-10-10 19:10:10
----------------------------------------------------------------
```

Windows Cookie Date Time

- Windows Filetime => 34343434:12121212 => decimal(34343434),decimal(12121212)
- Exmaple
  - de0d1500:01cda71a => 3725399296,30254874

```
C:₩Users₩dorumugs₩Desktop₩Time>python time_maker.py -d wcookie -i 3725399296,302
54874
----------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
----------------------------------------------------------------
               User Input Time -  3725399296,30254874
         User Input Time Format -  wcookie
            Decode Inputed Time -  2012-10-10 19:10:10
----------------------------------------------------------------
```

Google Chrome Time

- Micro Seconds From 1601 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Nano Second
- 11644473600000000 Micro seconds is 1970 Year 01 Month 01 day 00 Hour 00 Minute 00 Second
- Google Chrome Time = Windows 64bit time / 10
- 1 Second is 1000000 Micro Seconds
- Example
  - 11960006400000000 => 11960006400000000

```
C:₩Users₩dorumugs₩Desktop₩Time>python time_maker.py -d chrome -i 1196000640000000
------------------------------------------------------------------
 1 o' clock is 3600 seconds
 1 day is 86400 seconds
 1 year is 8760 hours
 1 year is 31536000 seconds
 1 second is 1000000000 nano seconds
 1 second is 1000000 micro seconds
 1 second is 1000 milli seconds
------------------------------------------------------------------
               User Input Time -  11960006400000000
        User Input Time Format -  chrome
           Decode Inputed Time -  1980-01-01 00:00:00
------------------------------------------------------------------
```

Mac Absolute Time

- Seconds From 2001 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Second
- MAC Absolute_time = Unix Numeric Time - 978307200
- 978307200 Seconds is Unix Time from 2001-01-01 00:00:00
- Example
  - 0 => 2001-01-01 00:00:00

```
C:₩Users₩dorumugs₩Desktop₩Time>python time_maker.py -d mac_ab -i 0
------------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
------------------------------------------------------------------
                User Input Time -  0
         User Input Time Format -  mac_ab
            Decode Inputed Time -  2001-01-01 00:00:00
------------------------------------------------------------------
```

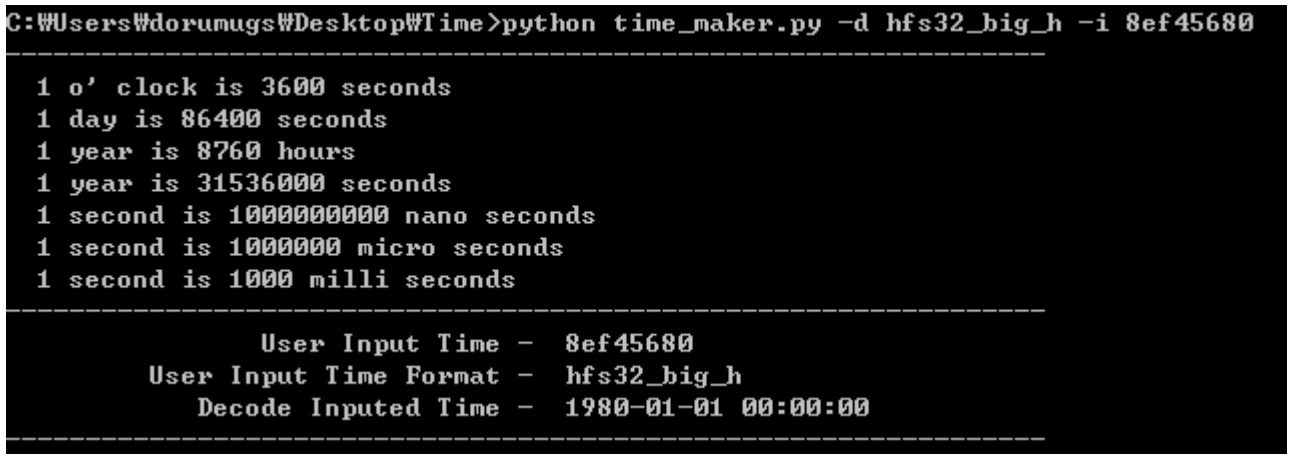
MS-DOS 32bit Time

- 0000000|0000|00000|00000|000000|00000
  Year Month Day Hour Minute Second
- Year = Input Year - 1980
- bin(Month,Day,Hour,Minute,Second) = Input Month,Day,Hour,Minute - 0
- bin(Second) = (Input Second -0) / 2
- Example
  - Decimal(10101000100001000000000000000) => Hex(706805760) => 0x2A210000
- Systems record MS-DOS 32bit Time by little endian.
  You can see just 0x00002100 not 0x2A210000.

```
C:¥Users¥dorumugs¥Desktop¥Time>python time_maker.py -d ms32_big_h -i 2A210000
----------------------------------------------------------------
  1 o' clock is 3600 seconds
  1 day is 86400 seconds
  1 year is 8760 hours
  1 year is 31536000 seconds
  1 second is 1000000000 nano seconds
  1 second is 1000000 micro seconds
  1 second is 1000 milli seconds
----------------------------------------------------------------
                User Input Time -  2A210000
         User Input Time Format -  ms32_big_h
            Decode Inputed Time -  2001-01-01 00:00:00
----------------------------------------------------------------
```

HFS 32bit Time

- Seconds From 1904 Year 01 Month 01 Day / 00 Hour 00 Minute 00 Second
- HFS 32bit Time = 2082844800 + unix_numeric_time
- 2082844800 Seconds is Unix Time from 1904-01-01 00:00:00 to 1970-01-01 00:00:00
- Example
  - 8ef45680 => 1980-01-01 00:00:00



Tool : time_maker

Tool : time_maker.py

```
Usage: python time_maker.py -e YYYY-MM-DD,##:##:##,GMT
       python time_maker.py -e 1980-10-10,10:10:10,9

       python time_maker.py -d list
       python time_maker.py -d Time_Format -i Input_time
       python time_maker.py -d w64 -i 129943698100000000

-- Time Format List --
        w64 - Windows 64bit Big Time                (EX:129943698100000000)
        w64_big_h - (Hex) Windows 64bit Big Time    (EX:01cda71ade0d1500)
        w64_lit_h - (Hex) Windows 64bit Little Time (EX:00150dde1aa7cd01)
        wfiletime - (Hex) Windows FILETIME Time     (EX:de0d1500:01cda71a)
        wcookie -  Windows Cookie Date Time         (EX:3725399296,30254874)
        unum - Unix Numeric Time                    (EX:1349896210)
        umilli - Unix Millisecond Time              (EX:1349896210000)
        umicro - Unix Microsecond Time              (EX:1349896210000)
        unum_big_h - (Hex) Unix Numeric Little Time (EX:5075c812)
        unum_lit_h - (Hex) Unix Numeric Big Time    (EX:12c87550)
        chrome - Google Chrome Time                 (EX:12994369810317375)
        mac_ab - Mac Absolute Time                  (EX:371589010)
        mac_ab_h - (Hex) Mac Absolute Time          (EX:1625ff92)
        ms32_big_h - (Hex) MS-DOS 32bit Big Time    (EX:414a994a)
        ms32_lit_h - (Hex) MS-DOS 32bit Little Time (EX:4a994a41)
        hfs32_big_h - (hex) HFS 32bit Big Time      (EX:cc9b7892)
        hfs32_lit_h - (hex) HFS 32bit Little Time   (EX:92789bcc)

Options:
  -h, --help            show this help message and exit
  -e ENCODER, --encoder=ENCODER
                        python time_maker.py -e YYYY-MM-DD,##:##:##,GMT
                        python time_maker.py -e 1980-10-10,10:10:10,9
  -d DECODER, --decoder=DECODER
                        python time_maker.py -d list
  -i INPUT, --Input_Time=INPUT
                        python time_maker.py -d Time_Format -i Input_Time
                        python time_maker.py -d w64 -i 129943698100000000
```

Q & A

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