R learning notes

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1 Using dates and time

This comes from Bonnie Dixon. This is an overview of using dates and times.

```
dt1 <- as.Date("2014-02-15")
dt1

## [1] "2014-02-15"

dt2 <- as.Date("04/20/2011", format = "%m/%d/%Y")
dt2

## [1] "2011-04-20"

dt1 - dt2

## Time difference of 1032 days

dt2 + 10

## [1] "2011-04-30"
```

Create a vector of dates and find the difference between them.

```
three.dates <- as.Date(c("2010-07-22", "2011-04-20", "2012-06-10"))
three.dates

## [1] "2010-07-22" "2011-04-20" "2012-06-10"

diff(three.dates)
```

```
## Time differences in days
## [1] 272 417
```

Create a sequence of days

```
six.weeks <- seq(dt1, length = 6, by = "week")
six.weeks

## [1] "2014-02-15" "2014-02-22" "2014-03-01" "2014-03-08" "2014-03-15"
## [6] "2014-03-22"

six.weeks <- seq(dt1, length = 6, by = 14)
six.weeks

## [1] "2014-02-15" "2014-03-01" "2014-03-15" "2014-03-29" "2014-04-12"
## [6] "2014-04-26"

six.weeks <- seq(dt1, length = 6, by = "2 weeks")
six.weeks

## [1] "2014-02-15" "2014-03-01" "2014-03-15" "2014-03-29" "2014-04-12"
## [6] "2014-04-26"
```

```
unclass(dt1)

## [1] 16116

dt1

## [1] "2014-02-15"
```

1.1 POSIXct

This is for the use of times.

```
tm1 <- as.POSIXct("2009-07-24 23:55:26")
tm1

## [1] "2009-07-24 23:55:26 BST"
```

```
tm2 <- as.POSIXct("25072013 08:32:07", format = "%d%m%Y %H:%M:%S")
tm2

## [1] "2013-07-25 08:32:07 BST"
```

Specify the time zone

```
tm3 <- as.POSIXct("2010-12-01 11:42:03", tz = "GMT")
tm3

## [1] "2010-12-01 11:42:03 GMT"
```

Some calculations with times.

```
tm3 > tm2

## [1] FALSE

tm1 + 30

## [1] "2009-07-24 23:55:56 BST"

tm1 - 20

## [1] "2009-07-24 23:55:06 BST"

tm1 - tm2

## Time difference of -1461 days

Sys.time()

## [1] "2014-02-15 21:48:39 GMT"

difftime(tm1, as.POSIXct("1970-01-01 00:00:00", tz = "UTC", units = "secs"))

## Time difference of 14450 days
```

1.2 POSIXlt

The 'ct' stands for *calendar time* while 'lt' stands for *local time*.

```r
tm1.lt <- as.POSIXlt("2013-07-24 23:55:26")
tm1.lt

## [1] "2013-07-24 23:55:26"

unclass(tm1.lt)

## $sec
## [1] 26
##
## $min
## [1] 55
##
## $hour
## [1] 23
##
## $mday
## [1] 24
##
## $mon
## [1] 6
##
## $year
## [1] 113
##
## $wday
## [1] 3
##
## $yday
## [1] 204
##
## $isdst
## [1] 1

unlist(tm1.lt)

##   sec   min  hour  mday   mon  year  wday  yday isdst
##    26    55    23    24     6   113     3   204     1
```

The components of the time object can be extracted.

```
tm1.lt$sec

## [1] 26

tm1.lt$wday

## [1] 3
```

Truncate or round off the time.

```
trunc(tm1.lt, "days")

## [1] "2013-07-24"

trunc(tm1.lt, "mins")

## [1] "2013-07-24 23:55:00"
```

There is information on the lubridate.