Test timings for the `lme4` package

November 30, 2012

1 Preliminaries

```
library(lme4)
library(XML)
library(ggplot2)
library(RColorBrewer)
library(reshape2)
theme_set(theme_bw())
library(grid)
zmargin <- theme(panel.margin = unit(0, "lines"))
```

This document is intended to be run in `knitr`, from the `misc` directory of the `lme4` package. It uses `knitr`'s caching options to avoid re-running lengthy tests: if you want to force these to re-run, delete the `cache` directory (or files within the `cache` directory corresponding to specific chunks).

2 Information gathering

2.1 local version of `lme4`

Gather the names of test files:

```
testfiles <- list.files("../tests", pattern = "*\\.[Rr]$")
```

Run individual test files, record elapsed times:

```
tmpf <- function(x, testdir = "../tests/") {
    ## cat('*** ',x,'\n') ## for debugging
    system.time(local(source(paste0(testdir, x), echo = FALSE)))["elapsed"]
}
```

```
time1 <- proc.time()
indiv_test_times <- sapply(testfiles, tmpf)
time2 <- proc.time()
## total time: could also use sum(times) ...
time_tot <- time2 - time1
```

Time the full check process and the install process:

```
system("cd ../..; R CMD build lme4")
```

FIXME: don't hard code version number.
`R CMD CHECK`:

```
pkg_check_time <- system.time(system("cd ../..; R CMD check lme4_0.99999911-0.tar.gz"))
```

`R CMD INSTALL` (in temp directory):

```
pkg_install_time <- system.time(system("cd ../..; R CMD INSTALL -l /tmp lme4_0.99999911-0.ta
```

2.2 CRAN information

Get list of CRAN timings:

```
## FIXME: use options('repos') instead if possible ...
timeurl <- "http://probability.ca/cran/web/checks/check_timings_r-release-linux-ix86.html"
```

Use functionality from the `XML` package:

```
timetab <- readHTMLTable(timeurl)[[1]]
```

Fix up the results a bit:

```
names(timetab) <- gsub(" *T*", "", names(timetab))
timetab[, 2:4] <- sapply(timetab[, 2:4], function(x) as.numeric(as.character(x)))
levels(timetab$Status) <- gsub("^ *$", "No check", levels(timetab$Status))
## find --no-tests Flags?
timetab$Status <- factor(timetab$Status, levels = c("OK", "WARN", "NOTE", "ERROR",
    "No check"))
```

Calibrate CRAN building times to local building times by finding the median-time package, downloading and checking it: (FIXME: don't hardcode so much)

```
medpos <- which.min(abs(timetab$total - median(timetab$total)))
(medpkg <- as.character(timetab[medpos, "Package"]))

## [1] "GPArotation"
```

```
download.file("http://probability.ca/cran/src/contrib/GPArotation_2012.3-1.tar.gz",
    destfile = "GPArotation.tar.gz")
```

```
medpkgtime <- system.time(s1 <- system("R CMD check GPArotation.tar.gz", intern = TRUE))
```

```
timecal <- timetab$total[medpos]/medpkgtime["elapsed"]
```

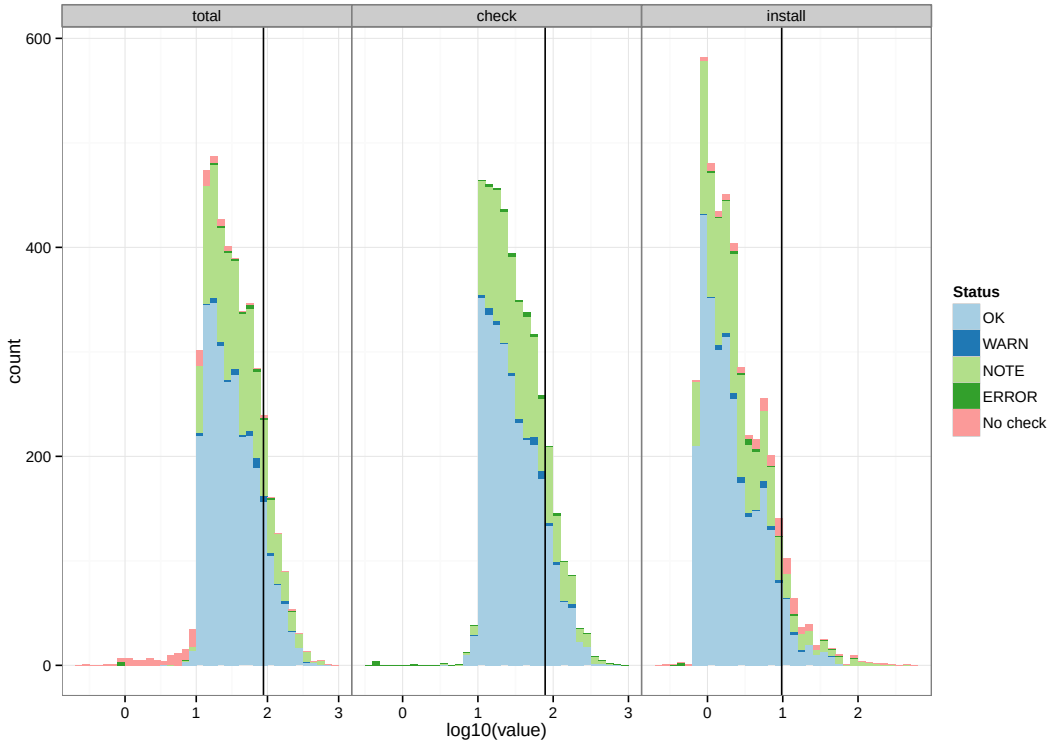
Clean up:

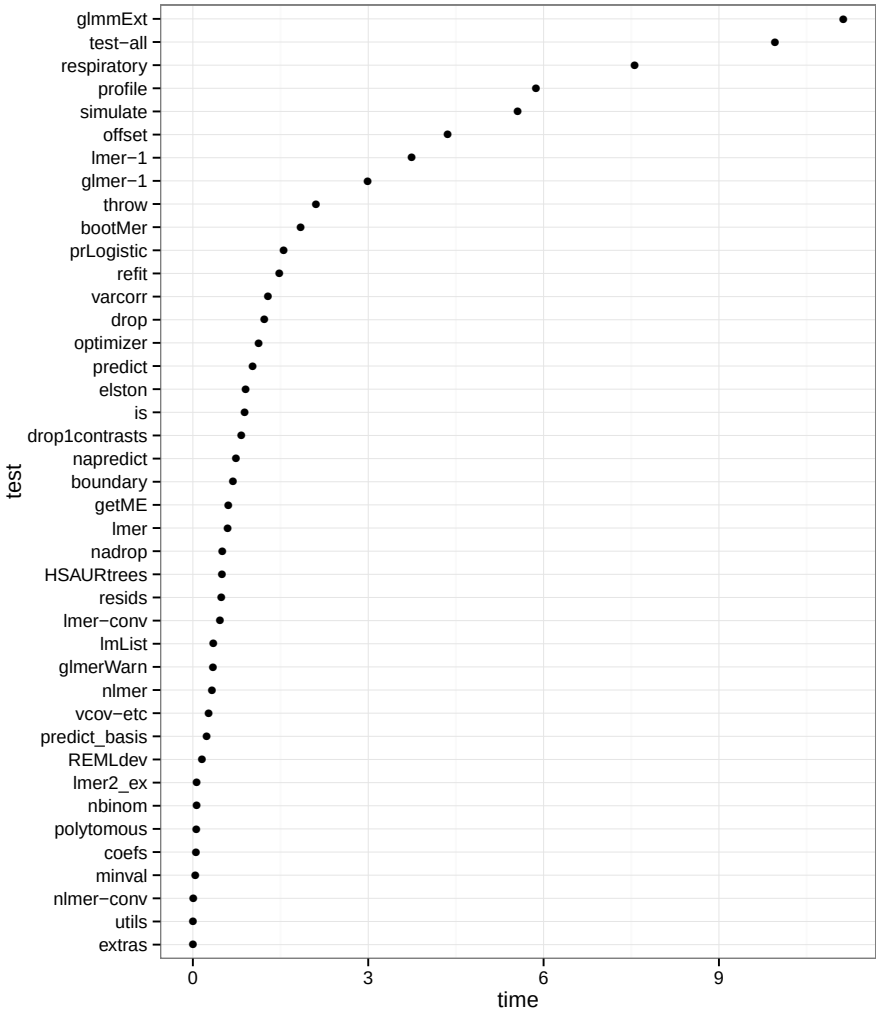
```
unlink("GPArotation.tar.gz")
unlink("GPArotation.Rcheck")
```

3 Results

Running the median package takes 220 sec on the current system vs. 30 on the CRAN check machine — i.e. my machine is 7.2 times slower.

With this calibration (`timecal`=0.14) taken into account, there are 616 packages on CRAN that are slower to check (14% of the total) and 3670 faster packages (86%).


total
check
install
600
400
200
0
count
0
1
2
3
log10(value)
Status
OK
WARN
NOTE
ERROR
No check



4 Session info

```
sessionInfo()

## R Under development (unstable) (2012-11-20 r61133)
## Platform: i686-pc-linux-gnu (32-bit)
##
## locale:
##  [1] LC_CTYPE=en_CA.utf8       LC_NUMERIC=C
```

```
##  [3] LC_TIME=en_CA.utf8        LC_COLLATE=en_CA.utf8
##  [5] LC_MONETARY=en_CA.utf8    LC_MESSAGES=en_CA.utf8
##  [7] LC_PAPER=C                LC_NAME=C
##  [9] LC_ADDRESS=C              LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_CA.utf8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] grid      methods   stats     graphics  grDevices utils     datasets
## [8] base
##
## other attached packages:
##  [1] reshape2_1.2.1     RColorBrewer_1.0-5 ggplot2_0.9.2.1
##  [4] XML_3.95-0.1       lme4_0.99999911-0  RcppEigen_0.3.1.2
##  [7] Rcpp_0.10.1        Matrix_1.0-10      lattice_0.20-10
## [10] knitr_0.8
##
## loaded via a namespace (and not attached):
##  [1] colorspace_1.2-0 dichromat_1.2-4  digest_0.5.2     evaluate_0.4.2
##  [5] formatR_0.6      gtable_0.1.1     labeling_0.2     MASS_7.3-22
##  [9] memoise_0.1      minqa_1.2.1      munsell_0.4      nlme_3.1-105
## [13] plyr_1.7.1       proto_0.3-9.2    scales_0.2.2     splines_2.16.0
## [17] stringr_0.6.1    tools_2.16.0
```