Fast, consistent URL handling with urltools

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Who?

1. Oliver Keyes. Hi!
2. HCI researcher, R programmer and speed nerd.
3. R Cat Lady

What?

1. URLs are more than just conduits to data - they can be data too!
2. Access logs, web data, clicktracking data
3. Base R doesn't do well with lots of URLs

Use cases

- Web data analysis - access logs have URLs. Lots of them.
- These URLs are sometimes decoded. Or encoded. Or broken. Or argh.

Mo URLs, Mo Problems

```
urls <- c("http://R.url.handlers/",
          "http://are.scalar.what")
URLdecode(urls)

[1] "http://R.url.handlers/"
Warning message:
In charToRaw(URL) : argument should be a character
vector of length 1 all but the first element will
be ignored
```

Encoding. . . doesn't work

```r
urls <- "http://fine.scalar.sigh.whatever/"
URLencode(urls, reserved = TRUE)
```

```
## [1] "http%3A%2F%2Ffine.scalar.sigh.whatever%2F"
```

Decoding...doesn't work

```
urls <- "http://what.about.decoding/test%gIL"
URLdecode(urls)

Error in rawToChar(out) : embedded nul in string:
'http://what.about.decoding/test\0L'
In addition: Warning message:
In URLdecode(urls) : out-of-range values treated
as 0 in coercion to raw
```

Introducing urltools!

1. Vectorised
2. C++-backed
3. Features coming out of its ears

Encoding and decoding

```r
library(urltools)

url <- "http://does%20this%20work/%gIL"
url_decode(url)
```

```
## [1] "http://does this work/"
```

```r
url <- "http://awesome what about this/"
url_encode(url)
```

```
## [1] "http://awesome what about this/"
```

```r
urls <- c("http://thats%20really%20cool/",
          "http://look%20at%20it%20go/")
url_decode(urls)
```

```
## [1] "http://thats really cool/" "http://look at it go/"
```

Parsing and composing

```r
library(magrittr)

url <- "http://user2015.math.aau.dk/invited_talks#francois"

str(url_parse(url))
```

```
## 'data.frame':    1 obs. of  6 variables:
##  $ scheme   : chr "http"
##  $ domain   : chr "user2015.math.aau.dk"
##  $ port     : chr ""
##  $ path     : chr "invited_talks"
##  $ parameter: chr ""
##  $ fragment : chr "francois"
```

```r
url_parse(url) %>% url_compose
```

```
## [1] "http://user2015.math.aau.dk/invited_talks#francois"
```

Getting and setting

```
url <- "http://everythingiknowilearnedfromlubridate.org/pag

scheme(url)
```

```
## [1] "http"
```

```
domain(url)
```

```
## [1] "everythingiknowilearnedfromlubridate.org"
```

```
scheme(url) <- "https"
domain(url) <- "isbetter.org"
url
```

```
## [1] "https://isbetter.org/page"
```

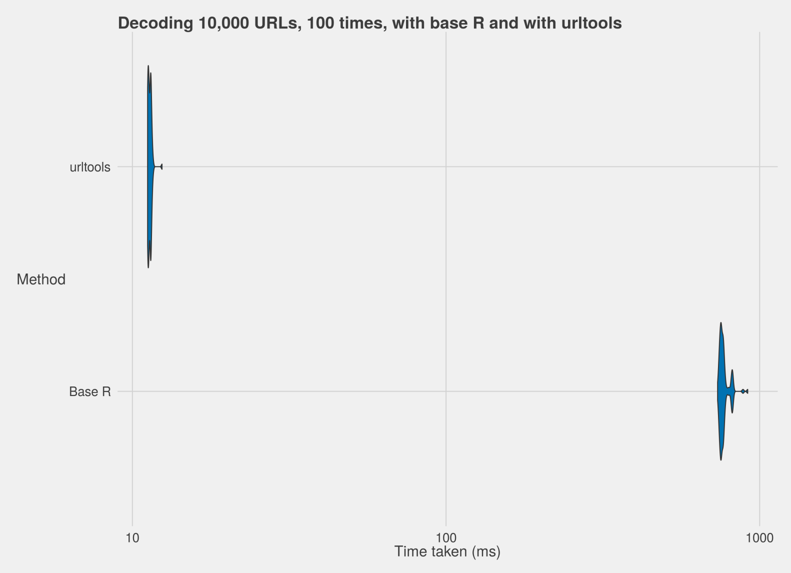
Parameter extraction

```
url <- "http://thisisaurl/withapath/?action=query&date=2015

str(url_parameters(url, c("date", "authorised")))
```

```
## 'data.frame':    1 obs. of  2 variables:
##  $ date      : chr "20150530"
##  $ authorised: chr "true"
```

Benchmarks


Decoding 10,000 URLs, 100 times, with base R and with urltools
urltools
Base R
Method
10
100
1000
Time taken (ms)

Benchmarks

- 70x faster than base R
- 4x faster than Python
- 1m URLs decoded in 0.9 seconds
- 1m URLs parsed in 1.3 seconds

Fin.

install.packages("urltools")

http://github.com/Ironholds/urltools

http://ironholds.org

Questions?