

R Introduction

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2018-01-30

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"Using R for Introductory Statistics" John Verzani

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```
> x <-2
> y <- x^2 + 2*x +1
> y
[1] 9
> x
[1] 2
> x <- "hello"
> x
[1] "hello"
>
```

Functions (1)

```
> x <- pi
> sin(x)
[1] 1.224647e-16
> x <- 2
> sqrt(x)
[1] 1.414214
> x <- 0
> log(x)
[1] -Inf
> x <- 100
> log(x, 10)
[1] 2
```

Functions (2)

```
> x <- c(1, 2, 3, 4, 5)
> x
[1] 1 2 3 4 5
> mean(x)
[1] 3
> sum(x)/length(x)
[1] 3
> x + x
[1] 2 4 6 8 10
> sqrt(x)
[1] 1.000000 1.414214 1.732051 2.000000 2.236068
> log(x)
[1] 0.0000000 0.6931472 1.0986123 1.3862944 1.6094379
> x - mean(x)
[1] -2 -1 0 1 2
>
```

Functions (3)

```
> x <- c(11.111, 22.333, 33.444, 44.666, 55.888)
> x
[1] 11.111 22.333 33.444 44.666 55.888
> mean(x)
[1] 33.4884
> mean(x, trim=0.5)
[1] 33.444
> median(x)
[1] 33.444
>
```

Functions (4)

```
> x <- c(11.111, 22.333, 33.444, 44.666, 55.888)
> x
[1] 11.111 22.333 33.444 44.666 55.888
> summary(x)
  Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 11.11  22.33   33.44   33.49   44.67   55.89
> y<-c(T, F, T, T, T)
> y
[1] TRUE FALSE TRUE TRUE TRUE
> summary(y)
  Mode  FALSE  TRUE  NA's
logical    1    4    0
```


Accessing the built-in documentation

<code>apropos("mean")</code>	list objects whose name matches mean
<code>help("mean")</code>	?mean
<code>example("mean")</code>	run examples found in help pages
<code>help.search("mean")</code>	??mean (names, title alias, keywords
<code>help(package="MASS")</code>	information about a particular package
<code>vignette()</code>	list all vignettes, supply topic

```
> ls()
[1] "x" "y"
> x <- c(1, 2, 3, 4)
> str(x)
  num [1:4] 1 2 3 4
> rm(x)
> rm(list=ls())
> ls()
character(0)
>
```

```
install.packages("UsingR")  
require("UsingR")
```

CRAN download mirror
<https://cran.ism.ac.jp>

R Library locations
`/home/young/R/x86_64-pc-linux-gnu-library/3.2`

Data Sets (1)

```
> head(rivers)
[1] 735 320 325 392 524 450
> data(rivers)
> rivers
 [1] 735 320 325 392 524 450 1459 135 465 600 330
[16] 906 202 329 290 1000 600 505 1450 840 1243 890
[31] 525 720 390 250 327 230 265 850 210 630 260
[46] 306 390 420 291 710 340 217 281 352 259 250
[61] 300 560 900 625 332 2348 1171 3710 2315 2533 780
[76] 255 431 350 760 618 338 981 1306 500 696 605
[91] 233 435 490 310 460 383 375 1270 545 445 1885
[106] 425 276 210 800 420 350 360 538 1100 1205 314
[121] 1038 424 310 300 444 301 268 620 215 652 900
[136] 500 720 270 430 671 1770
>
```

Data Sets (2)

```
> require("HistData")
> head(Cavendish)
  density density2 density3
1     5.50     5.50      NA
2     5.61     5.61      NA
3     4.88     5.88      NA
4     5.07     5.07      NA
5     5.26     5.26      NA
6     5.55     5.55      NA
> str(Cavendish)
'data.frame':  29 obs. of  3 variables:
 $ density : num  5.5 5.61 4.88 5.07 5.26 5.55 5.36 5.29 5.58
 $ density2: num  5.5 5.61 5.88 5.07 5.26 5.55 5.36 5.29 5.58
 $ density3: num  NA NA NA NA NA NA 5.36 5.29 5.58 5.65 ...
>
```

Data Sets (3)

```
> str(Cavendish)
'data.frame':  29 obs. of  3 variables:
 $ density : num  5.5 5.61 4.88 5.07 5.26 5.55 5.36 5.29 5.58
 $ density2: num  5.5 5.61 5.88 5.07 5.26 5.55 5.36 5.29 5.58
 $ density3: num  NA NA NA NA NA NA 5.36 5.29 5.58 5.65 ...
> head(Cavendish$density2)
[1] 5.50 5.61 5.88 5.07 5.26 5.55
> summary(Cavendish$density2)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 5.070  5.340   5.470   5.482   5.620   5.880
>
```

