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1 ---
2 title: "R Programming Refresher"
3 author: "R. Burke Squires (adapted from Radina Droumeva)"
4 date: "7/11/2017"
5 output:
6   html_notebook:
7     toc: yes
8   pdf_document:
9     highlights: tango
10    keep_tex: yes
11    number_sections: yes
12    toc: yes
13 ---
14
15 # An Introduction to R Noebooks
16
17 Introductory material about R Notebooks:
18
19 - https://blog.rstudio.com/2016/10/05/r-notebooks/
20 - http://rmarkdown.rstudio.com/r\_notebooks.html
21 - https://rviews.rstudio.com/2017/03/15/why-i-love-r-notebooks
22   /
23
24 ```{r setup, include=FALSE}
25 knitr::opts_chunk$set(echo = FALSE)
26 ```
27
28 ## First, a short refresher to R
29
30 Variable Assignment
31
32 ```{r}
33 x <- 5
34 y <- 10
35 x + y
36 ```
37
38 ## Vectors (one dimensional) and Matrices (two dimensional)
39
40 ```{r}
41 x <- c(1, 4, 5)
42 x
43 y <- seq(from = 1, to = 3, by = 1)
44 y
45 x + y
46 ```

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47
48 ## Get help on how to construct a matrix
49
50 ```{r}
51 ?matrix
52 A <- matrix(c(1, 2, 3, 11, 12, 13), nrow = 2, ncol = 3, byrow
53   = TRUE)
54 A
55 rbind(x, y)
56 A + rbind(x, y)
57 A[1, 3]
58 A[2, ]
59 A[, 1]
60
61 ## Lists and names
62
63 ```{r}
64 mylist <- list(`first` = x, `second` = y)
65 mylist
66 mylist[[1]]
67 mylist[["first"]]
68 # mylist[[3]]
69 length(mylist)
70 length(x)
71 dim(A)
72 ```
73
74 # More advanced functionality: which, intersect, union
75
76 ## Get help for the _rnorm_ function
77
78 ```{r}
79 ?rnorm
80 ```
81
82 ## More advanced functionality: which, intersect, union
83
84 ```{r}
85 a <- rnorm(20)
86 a
87 which(a > 0)
88 a[1]
89 a[which(a > 0)]
90 which(a < -1)
91 intersect(which(a > 0), which(a < -1))
92 combined <- union(which(a > 0), which(a < -1))

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93 combined
94 length(combined)
95 ```
96
97 ## Simple plotting
98
99 ```{r}
100 plot(a, col = "red")
101 plot(density(a))
102 hist(a)
103 plot(density(rnorm(1000)))
104 ```
105
106 ## Render the notebook as html
107
108 ```{r}
109 rmarkdown::render(html_notebook)
110 ```
```