* Load the xts package using the library() function.
* Look at the structure of the sample xts called ex\_matrixusing str().
* Given that ex\_matrix is a matrix, extract the 3rd row and 2nd column.
* Now take the matrix core and extract the 3rd row and 2nd column. Notice the difference.

> # View the structure of ex\_matrix

> library("xts")

> str(ex\_matrix)

An 'xts' object on 2016-06-01/2016-06-03 containing:

Data: num [1:3, 1:2] 1 1 1 2 2 2

Indexed by objects of class: [Date] TZ: UTC

xts Attributes:

List of 1

$ createdOn: POSIXct[1:1], format: "2019-02-18 22:47:37"

>

> # Extract the 3rd observation of the 2nd column of ex\_matrix

> ex\_matrix[3, 2]

[,1]

2016-06-03 2

>

> # Extract the 3rd observation of the 2nd column of core

> core[3, 2]

[1] 2

* Create an object called data that contains five random numbers using rnorm().
* Create a Date class index from "2016-01-01" of length five called dates.
* Use the xts constructor to create an object called smithusing data and dates as the index.
* Create an object called bday which contains a POSIXct date object containing the date "1899-05-08".
* Create an xts object called hayek using data, dates, and a new attribute called born, which should contain the birthday object you just created

> # Create the object data using 5 random numbers

> data<- rnorm(5)

>

> # Create dates as a Date class object starting from 2016-01-01

> dates <- seq(as.Date("2016-01-01"), length = 5, by = "days")

>

> # Use xts() to create smith

> smith <- xts(x = data, order.by = dates)

>

> # Create bday (1899-05-08) using a POSIXct date class object

> bday <- as.POSIXct("1899-05-08")

>

> # Create hayek and add a new attribute called born

> hayek <- xts(x = data, order.by = dates, born = bday)

Great job! Now that you know how to create a very simple xts object, you are ready to see what the object looks like inside.

* Extract the core data of hayek using coredata() and call this hayek\_core.
* View the class of hayek\_core using the class() function.
* Extract the date index of hayek using index() and call this hayek\_index.
* View the class of hayek\_index.

> # Extract the core data of hayek

> hayek\_core<- coredata(hayek)

>

> # View the class of hayek\_core

> class(hayek\_core)

[1] "matrix"

>

> # Extract the index of hayek

> hayek\_index<-index(hayek)

>

> # View the class of hayek\_index

> class(hayek\_index)

[1] "Date"

Well done! You're quickly gaining knowledge of xts objects, inside and out.

* Create an object of 5 dates called dates starting at "2016-01-01".
* Create a time series ts\_a using the numbers 1 through 5 as your data, and dates as your order.by index.
* Create a time series ts\_b using the numbers 1 through 5 as your data, and the same dates, but as POSIXct objects.
* Use the index from ts\_b to extract the dates from ts\_a.
* Now do the reverse, indexing ts\_b using the times from ts\_a

> # Create dates

> dates <- as.Date("2016-01-01") + 0:4

>

> # Create ts\_a

> ts\_a <- xts(x = 1:5, order.by = dates)

>

> # Create ts\_b

> ts\_b <- xts(x = 1:5, order.by = as.POSIXct(dates))

>

> # Extract the rows of ts\_a using the index of ts\_b

> ts\_a[index(ts\_b)]

[,1]

2016-01-01 1

2016-01-02 2

2016-01-03 3

2016-01-04 4

2016-01-05 5

>

> # Extract the rows of ts\_b using the index of ts\_a

> ts\_b[index(ts\_a)]

[,1]

2016-01-01 1

2016-01-02 2

2016-01-03 3

2016-01-04 4

2016-01-05 5

>