

Chapter. 01

시계열 소개

I 데이터속성 및 시계열오브젝트

FASTCAMPUS

ONLINE

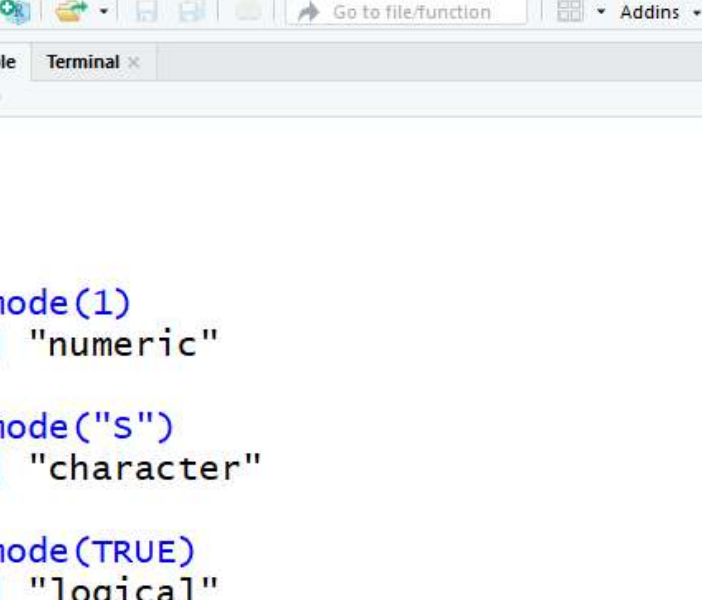
금융공학/퀀트I

강사. 김경륜

I R에서의 데이터: Mode

Mode: 데이터의 속성에 따라 구별
numeric(숫자)/character(문자)/logical

1. numeric: 숫자
2. character: 문자
3. Logical: True(참)/False(거짓)
True = 1, False = 0

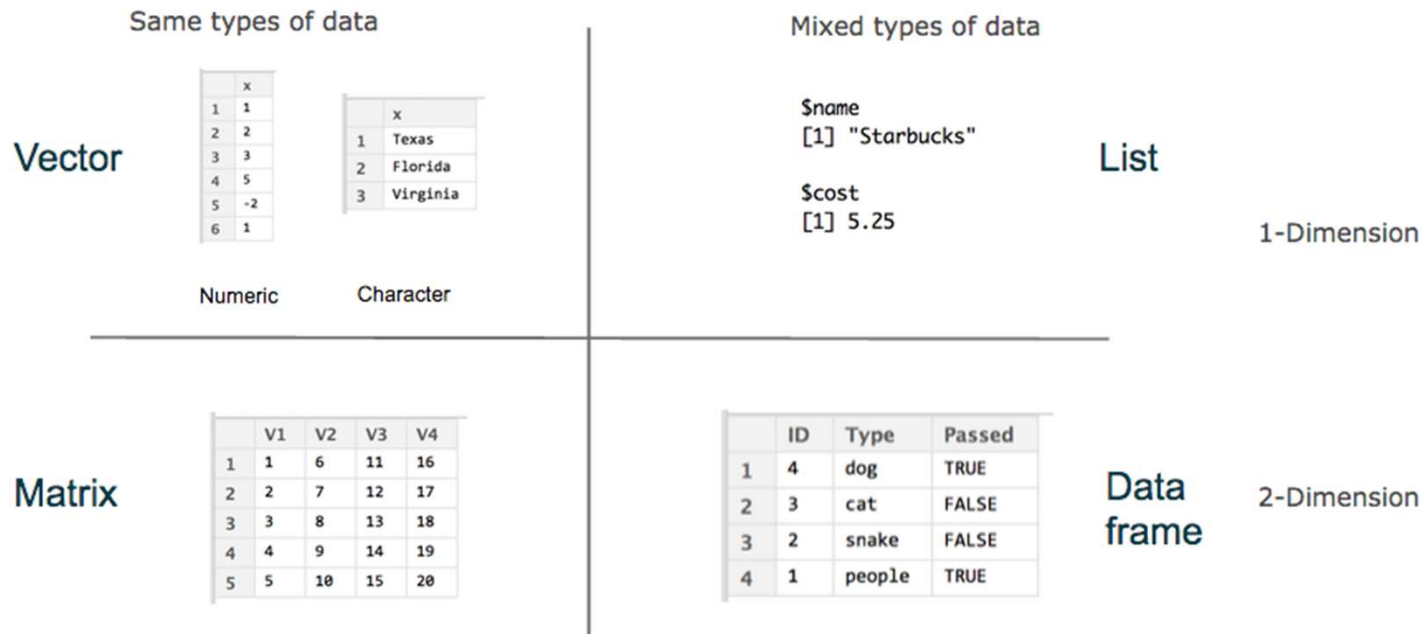


The screenshot shows the RStudio interface with the console window active. The console displays the following R code and its output:

```
>  
>  
>  
>  
> mode(1)  
[1] "numeric"  
>  
> mode("s")  
[1] "character"  
>  
> mode(TRUE)  
[1] "logical"  
>  
>
```

R에서의 데이터: Class

Class: 일반적으로 데이터의 구조에 따른 종류
vector/matrix/data frame/list



R에서의 데이터: Class

Vector: 하나의 dimension을 가지며 내부데이터들의 mode는 모두 동일

Matrix: 두개의 dimension(row & column)을 가지며 내부데이터들의 mode는 모두 동일 (matrix는 array의 한종류)

Data frame: 두개의 dimension(row & column)을 가지며 각각의 column들이 서로 다른 mode를 가질 수 있음 (dataframe은 list의 한종류)

첫번째 column은 숫자, 두번째 column은 문자 등 이런식으로
저장할 수 있기 때문에 일반적인 데이터(엑셀로 저장)를 다루기에 적합

list: 두개이상의 dimension을 가지며 서로 다른 class의 object를 동시에 저장가능하며 각 object의 mode들이 서로 다른경우도 가능

I 시계열데이터 Class

R에서의 (대부분의)시계열함수들은 ts라는 class의 데이터를 요구

R script:

`help(Arima)`



The screenshot shows the R Documentation window for the `Arima` function. The window has a menu bar with 'Files', 'Plots', 'Packages', 'Help', and 'Viewer'. Below the menu bar is a search bar and a dropdown menu showing 'R: Fit ARIMA model to univariate time series'. The main content area is titled 'Fit ARIMA model to univariate time series' and includes sections for 'Description', 'Usage', and 'Arguments'.

Fit ARIMA model to univariate time series

Description

Largely a wrapper for the [arima](#) function in the stats package. The main difference is that this function allows a drift term. It is also possible to take an ARIMA model from a previous call to `Arima` and re-apply it to the data `y`.

Usage

```
Arima(y, order = c(0, 0, 0), seasonal = c(0, 0, 0), xreg = NULL,
      include.mean = TRUE, include.drift = FALSE, include.constant,
      lambda = model$lambda, biasadj = FALSE, method = c("CSS-ML", "ML",
      "CSS"), model = NULL, x = y, ...)
```

Arguments

<code>y</code>	a univariate time series of class <code>ts</code> .
<code>order</code>	A specification of the non-seasonal part of the ARIMA model: the three components (p, d, q) are the AR order, the degree of differencing, and the MA order.

I 시계열분석을 위해서는 데이터를 `ts(time series)` 오브젝트로 변환 필요

R script:

`help(ts)`



The screenshot shows the R help window for 'Time-Series Objects'. The window has a menu bar with 'Files', 'Plots', 'Packages', 'Help', and 'Viewer'. Below the menu bar is a toolbar with icons for back, forward, home, search, and print. The main content area is titled 'R: Time-Series Objects' and includes a 'Find in Topic' search box. The content is organized into sections: 'ts {stats}', 'Time-Series Objects', 'Description', 'Usage', and 'Examples'. The 'Description' section states that the `ts` function is used to create time-series objects, and `as.ts` and `is.ts` coerce an object to a time-series and test whether an object is a time series. The 'Usage' section shows the syntax for `ts`, `as.ts`, and `is.ts`.

```
ts {stats}

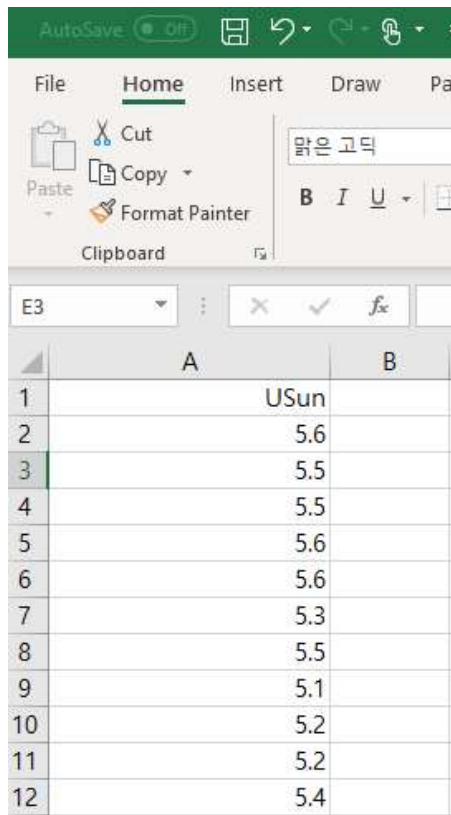
Time-Series Objects

Description
The function ts is used to create time-series objects.
as.ts and is.ts coerce an object to a time-series and test whether an object is a time series.

Usage
ts(data = NA, start = 1, end = numeric(), frequency = 1,
    deltat = 1, ts.eps = getOption("ts.eps"), class = , names = )
as.ts(x, ...)
is.ts(x)
```

CSV파일을 읽어왔다면 ts로 변환필요(data.frame -> ts)

CSV 파일



	A	B
1	USun	
2		5.6
3		5.5
4		5.5
5		5.6
6		5.6
7		5.3
8		5.5
9		5.1
10		5.2
11		5.2
12		5.4

Data frame 데이터를 ts로 변환

```

> USunemp <- read.csv("C:/Users/kykim/Documents/Fast_Campus_Online/TS_Online/Ch_1/USunemp.csv")
> class(USunemp)
[1] "data.frame"
> ts(USunemp)
Time Series:
Start = 1
End = 130
Frequency = 1
      USun
[1,] 5.6
[2,] 5.5
[3,] 5.5
[4,] 5.6
[5,] 5.6
[6,] 5.3
[7,] 5.5
[8,] 5.1
[9,] 5.2
[10,] 5.2
[11,] 5.4

```