

Examples

Example 1:

We have the number of phone calls recorded for 2 weeks.

```
> phone.calls1 = c(10, 4, 1, 13, 7, 14, 8); phone.calls1
```

```
[1] 10 4 1 13 7 14 8
```

```
> phone.calls2 = c(8, 2, 4, 15, 3, 7, 15); phone.calls2
```

```
[1] 8 2 4 15 3 7 15
```

You can show the number of phone calls in the first 5 days of the second week using the **slicing** technique

```
> phone.calls2[c(1, 2, 3, 4, 5)]
```

```
[1] 8 2 4 15 3
```

```
> phone.calls2[1:5]
```

```
[1] 8 2 4 15 3
```

```
> phone.calls2[seq(1, 5, by = 1)]
```

```
[1] 8 2 4 15 3
```

But we have mistaken the number of calls in the first day of the second week and the real number was 9. Change the number.

```
> phone.calls2[1] = 9; phone.calls2
```

```
[1] 9 2 4 15 3 7 15
```

Print the number of phone calls in the fourth day of the second week.

```
> phone.calls2[4]
```

```
[1] 15
```

Print the number of phone calls in all the days, except the fourth day of the second week.

```
> phone.calls2[-4]
```

```
[1] 9 2 4 3 7 15
```

Print maximum number of phone calls for the second week

```
> max(phone.calls2)
```

```
[1] 15
```

In which day of the second week the number of phone calls were 15

```
> phone.calls2 == 15
```

```
[1] FALSE FALSE FALSE TRUE FALSE FALSE TRUE
```

This gives a vector of TRUE and FALSE.

How can we get the index of this observation, so we can understand which day of the week that happens?

```
> which(phone.calls2 == 15)
```

```
[1] 4 7
```

`which` function extract by a logic vector

We can also make it on one line, but it is unreadable. And we don't recommend doing it this way.

```
> (1:length(phone.calls2))[phone.calls2 == max(phone.calls2)]
```

```
[1] 4 7
```

Find the number of all the phone calls for the second week.

```
> sum(phone.calls2)
```

```
[1] 55
```

Find the number of days with more than 5 calls in the second week.

```
> sum(phone.calls2 > 5)
```

```
[1] 4
```

Find what is the daily difference between the calls from the two weeks.

```
> phone.calls1 - phone.calls2
```

```
[1] 1 2 -3 -2 4 7 -7
```

Find the daily difference in the calls between the days during the second week.

```
> diff(phone.calls2)
```

```
[1] -7 2 11 -12 4 8
```

Example 2:

We have a stock prices for 10 days.

```
> stock.price = c(45, 43, 46, 48, 51, 46, 50, 47, 46, 45); stock.price
```

```
[1] 45 43 46 48 51 46 50 47 46 45
```

Find the min price and the max price of the stock during this 10 days.

```
> max(stock.price)
```

```
[1] 51
```

```
> min(stock.price)
```

```
[1] 43
```

Find what was the mean price of the stock during this 10 days

```
> mean(stock.price)
```

```
[1] 46.7
```

Find what was the median of the stock price during this 10 days

```
> median(stock.price)
```

```
[1] 46
```

Lets add the price for some more days

```
> stock.price = c(stock.price, 48, 49, 51, 50, 49)
```

How many days we have been observing the stock price

```
> length(stock.price)
[1] 15
```

We have observed that on day 16 the price was 41. Can you add it?

```
> stock.price[16] = 41 # Add to a specified index
```

Can you add the stock prices for the next 4 days?

```
> stock.price[17:20] = c(40, 38, 35, 40) # add to multiple specified indexes
```

What was the max and min price at any of the moments while we have been observing the stock price

```
> cummax(stock.price)
[1] 45 45 46 48 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51
> cummin(stock.price)
[1] 45 43 43 43 43 43 43 43 43 43 43 43 43 43 43 41 40 38 35 35
```

What was the daily difference in the stock price?

```
> diff(stock.price)
[1] -2 3 2 3 -5 4 -3 -1 -1 3 1 2 -1 -1 -8 -1 -2 -3
```

Sources

[1] Monika Petkova's notes on R programming language @ FMI, Sofia University