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.

```r
diff(phone.calls2)
## [1]  -7   2  11 -12   4   8
```

Example 2:

We have a stock prices for 10 days.

```r
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.

```r
max(stock.price)
## [1] 51
min(stock.price)
## [1] 43
```

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

```r
mean(stock.price)
## [1] 46.7
```

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

```r
median(stock.price)
## [1] 46
```

Lets add the price for some more days

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

How many days we have been observing the stock price

```r
length(stock.price)
## [1] 15
```

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

```r
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 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
```