Homerwork 6th feaures

This documents shows functions created for 6th homework of IPI PAN Advanced R course.

Exercise 06.01 - mode

This function calculates the most frequently occurring value in an integer vector (mode). If the mode is ambiguous returns the lowest mode. Please note that "mode" overrides mode function from base package.

- mode - Rcpp function
- mode2 - function written in R for reference

```
mode(c(5,4,4,5,4,4,6))
```

```
## [1] 4
```

```
mode(c(4,3,4,3,4,3))
```

```
## [1] 3
```

Exercise 06.02 - simplify2array2

This function behaves as most similar to simplify2array as possible for numeric vectors list. If list contains vectors of length 1, returns vector. If list contains vectors of the same length, returns matrix. Otherwise returns not changed list.

- simplify2array2 - Rcpp function
- simplify2array - function from R base

```
simplify2array2(list(c(4), c(3), c(-19)))
```

```
## [1]   4   3 -19
```

```
simplify2array2(list(4:10, 14:20, 20:26))
```

```
##      [,1] [,2] [,3]
## [1,]    4   14   20
## [2,]    5   15   21
## [3,]    6   16   22
## [4,]    7   17   23
## [5,]    8   18   24
## [6,]    9   19   25
## [7,]   10   20   26
```

```
simplify2array2(list(4:6, 17:20, 20:26))
```

```
## [[1]]
## [1] 4 5 6
##
## [[2]]
## [1] 17 18 19 20
##
## [[3]]
## [1] 20 21 22 23 24 25 26
```

Exercise 06.03 - ass

This function generates all possible 0-1 assignment vectors of 2n survey participants in such a way that exactly n of them are assigned to group 0 (control) and the other n ones are assigned to group 1 (treatment).

- ass - Rcpp function
- ass2 - function written in R for reference

```
ass(2)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0    1    1
## [2,]    0    1    0    1
## [3,]    0    1    1    0
## [4,]    1    0    0    1
## [5,]    1    0    1    0
## [6,]    1    1    0    0
```

```
ass(3)
```

```
##       [,1] [,2] [,3] [,4] [,5] [,6]
##  [1,]    0    0    0    1    1    1
##  [2,]    0    0    1    0    1    1
##  [3,]    0    0    1    1    0    1
##  [4,]    0    0    1    1    1    0
##  [5,]    0    1    0    0    1    1
##  [6,]    0    1    0    1    0    1
##  [7,]    0    1    0    1    1    0
##  [8,]    0    1    1    0    0    1
##  [9,]    0    1    1    0    1    0
## [10,]    0    1    1    1    0    0
## [11,]    1    0    0    0    1    1
## [12,]    1    0    0    1    0    1
## [13,]    1    0    0    1    1    0
## [14,]    1    0    1    0    0    1
## [15,]    1    0    1    0    1    0
## [16,]    1    0    1    1    0    0
## [17,]    1    1    0    0    0    1
## [18,]    1    1    0    0    1    0
## [19,]    1    1    0    1    0    0
## [20,]    1    1    1    0    0    0
```