R Warmup - Exercise Sheet - wi19b004

MS

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Override Print for varyvec Class

```
print.varyvec <- function(a){
  lapply(a, custprint)
}
```

This codeblock overrides the print functionality for Variables of the Class `varyvec`. `lapply` calls the custom function `custprint` for each vector in the list a.

Define Function for Custom Output

```
custprint <- function(a){
  cat(a[1],"...", a[length(a)-1], "\n", sep="")
}
```

This function is called by the custom `print()` function for the class `varyvec`. It prints the first element of the provided `a` vector with `a[1]` and the last element of the vector with `a[length(a)-1]`. It concatenates "..." in between and a new line at the end, with no separator between via the function `cat()`.

Define varyvec Function as required

```
varyvec <- function(a,b){
  retlist <- list(seqfromAto1 = a:1, seqevenintfromAto1 = as.integer(subset(a:1L, a:1L %% 2L == 0L)), s
  class(retlist) <- "varyvec"
  varyvec <- retlist
}
```

Defines the Function `varyvec(a, b)` and creates a list of vectors. These are:

- sequence from a to 1 with `a:1`
- sequence of all even integers from a to 1 with `as.integer(subset(a:1L, a:1L %% 2L == 0L))`
  - The subset ensures, that the modulo of 2 is 0, which are only even numbers

- sequence of all odd integers from a to 1 with `as.integer(subset(a:1L, a:1L %% 2L == 1L))`
  - The subset ensures, that the modulo of 2 is 1, which are only odd numbers
- sequence of all squared integers from a to 1 with `as.integer((a:1L)^2)`
- sequence of all integers from a to 1, not smaller than b with `as.integer(subset(a:1L, a:1L > b))`
  - The subset ensures, that no number is smaller than b It also sets the class of the list to `varyvec` and returns it.

Show RAW Output of varyvac

```
unclass(varyvec(10L,4L))
```

```
## $seqfromAto1
##  [1] 10  9  8  7  6  5  4  3  2  1
##
## $seqevenintfromAto1
## [1] 10  8  6  4  2
##
## $seqoddintfromAto1
## [1] 9 7 5 3 1
##
## $seqsquaredintfromAto1
##  [1] 100  81  64  49  36  25  16   9   4   1
##
## $seqsquaredintfromAto1smallerB
## [1] 10  9  8  7  6  5
```

The `unclass()` ensures, that the custom print function isn´t called. This Output shows, that the returned list of `varyvec` contains all correct vectors in a named list.

Show functionality

```
returnlist <- varyvec(10L,4L)
returnlist
```

```
## 10...2
## 10...4
## 9...3
## 100...4
## 10...6
```

This codeblock calls the `varyvec(a,b)` function and stores it´s return value in the variable `returnlist`. When printing this variable, the overridden print function is executed, which prints only the required output for each vector.