004-1d-data-structures

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1 TP 04 - R Data Structures - 4/4

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- Last update: 2024-02-01
- Based on https://www.w3schools.com/r/default.asp

1.1 Vectors

[ ]:
```r
# Vector of strings
fruits <- c("banana", "apple", "orange")
# Print fruits
fruits
```

[ ]:
```r
# Length
length(fruits)
```

[ ]:
```r
# Vector of numbers
numbers <- c(1, 2, 3, 4, 5)
numbers
```

[ ]:
```r
# Vector of mixed data types
mixed <- c("apple", 1, 2, 3, 4, 5)
mixed  # "apple" "1" "2" "3" "4" "5"
```

[ ]:
```r
# Same with int and float
mixed = c(1.4, 1, 0, 12)
mixed  # 1.4 1.0 0.0 12.0
```

[ ]:
```r
# Vector concatenation
fruits <- c("banana", "apple", "orange")
veggies <- c("tomato", "potato", "onion")
food <- c(fruits, veggies)
```

[ ]:
```r
# Be careful with the order of operations
fruits <- c("banana", "apple")
food  # here food was not modified
```

[ ]:
```r
# Sort
fruits < -c("banana", "apple", "orange", "mango", "lemon")
numbers < -c(13, 3, 5, 7, 20, 2)
sort(fruits)  # Sort a string
sort(numbers)  # Sort numbers
sort(numbers, decreasing=TRUE)  # Sort numbers in decreasing order
```

[ ]:
```r
# Rank
rank(fruits)  # Rank a string
rank(numbers)  # Rank numbers
```

[ ]:
```r
# Sum
sum(numbers) # Sum of numbers
sum(numbers, na.rm = TRUE) # Sum of numbers, ignoring NA values
```

[ ]:
```r
# Names of the elements
fruits < -c("banana", "apple", "orange")
names(fruits) < -c("first", "second", "third")
fruits
```

[ ]:
```r
# Accessssing items
fruits < -c("banana", "apple", "orange")
fruits[1]  # 1-based index => 1st item
fruits[2]  # 1-based index => 2nd item
```

[ ]:
```r
# Access the last item (orange)
fruits[length(fruits)]  # 1-based index => last item
fruits[-1]  # all but the first
fruits[-2]  # all but the second
```

[ ]:
```r
# Access the first and third item (banana and orange)
fruits < -c("banana", "apple", "orange", "mango", "lemon")
v = c(1, 3)  # indices
fruits[v]  # 1-based index => 1st and 3rd items
```

[ ]:
```r
# Access all but the first and third item (apple and mango)
fruits < -c("banana", "apple", "orange", "mango", "lemon")
v = c(-1, -3)  # indices
fruits[v]  # 1-based index => all but 1st and 3rd items
```

[ ]:
```r
# better :
v = c(1, 3)
fruits[-v]  # 1-based index => all but 1st and 3rd items
```

[ ]:
```r
# With a range
fruits <- c("banana", "apple", "orange", "mango", "lemon")
v = 1:3
```

```
fruits[v]  # 1-based index => 1st to 3rd items
```

[ ]:
```
# better :
fruits[1:3]  # 1-based index => 1st to 3rd items
```

[ ]:
```
# Change "banana" to "pear"
fruits[1] < -"pear"
fruits
```

1.2 Repetition and sequences

[ ]:
```
# Repetitions
repeat_each < -rep(c(1, 2, 3), each=3)
repeat_each
```

[ ]:
```
# Sequences
numbers <- seq(0, 100, 20)
numbers <- seq(from = 0, to = 100, by = 20)
numbers
```