

004-1d-data-structures

March 18, 2024

1 TP 04 - R Data Structures - 4/4

- Written by Alexandre Gazagnes
- Last update: 2024-02-01
- Based on <https://www.w3schools.com/r/default.asp>

1.1 Vectors

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

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

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

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

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

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

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

```
[ ]: # 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
```

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

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

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

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

```
[ ]: # 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
```

```
[ ]: # 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
```

```
[ ]: # 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
```

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

```
[ ]: # 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
```