

Foundations of R Software

Lecture 31

Operations on Lists

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Merging Lists

Merging the lists.

Create two lists.

```
list1 = list(1,2,3)
```

```
list2 = list("water", "juice", "lemonade")
```

```
> list1
```

```
[[1]]
```

```
[1] 1
```

```
[[2]]
```

```
[1] 2
```

```
[[3]]
```

```
[1] 3
```

```
> list2
```

```
[[1]]
```

```
[1] "water"
```

```
[[2]]
```

```
[1] "juice"
```

```
[[3]]
```

```
[1] "lemonade"
```

Merging Lists

```
list12 = c(list1, list2)
```

```
> list12
```

```
[[1]]
```

```
[1] 1
```

```
[[2]]
```

```
[1] 2
```

```
[[3]]
```

```
[1] 3
```

```
[[4]]
```

```
[1] "water"
```

```
[[5]]
```

```
[1] "juice"
```

```
[[6]]
```

```
[1] "lemonade"
```

Merging Lists

```
R Console
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> list1
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 3

> list2
[[1]]
[1] "water"

[[2]]
[1] "juice"

[[3]]
[1] "lemonade"
```

```
R Console
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> list12 = c(list1,list2)
> list12
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 3

[[4]]
[1] "water"

[[5]]
[1] "juice"

[[6]]
[1] "lemonade"
```

Lists to vector

Converting list to vector. Use `unlist()` command.

```
list1 = list(1,2,3)
```

```
list2 = list("water", "juice", "lemonade")
```

```
> unlist(list1)
```

```
[1] 1 2 3
```

```
> unlist(list2)
```

```
[1] "water"      "juice"      "lemonade"
```

```
> mode(list1)
```

```
[1] "list"
```

```
> mode(unlist(list1))
```

```
[1] "numeric"
```

Lists to vector

Converting list to vector. Use `unlist()` command

```
R Console
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> unlist(list1)
[1] 1 2 3
> unlist(list2)
[1] "water"      "juice"      "lemonade"
>
> mode(list1)
[1] "list"
> mode(unlist(list1))
[1] "numeric"
> |
```

Appending lists

Appending list. Use `append()` command.

```
list1 = list(1,2,3)
```

```
list2 = list("water", "juice", "lemonade")
```

```
> append(list1, 100)
```

```
[[1]]
```

```
[1] 1
```

```
[[2]]
```

```
[1] 2
```

```
[[3]]
```

```
[1] 3
```

```
[[4]]
```

```
[1] 100
```

```
> append(list2, "coffee")
```

```
[[1]]
```

```
[1] "water"
```

```
[[2]]
```

```
[1] "juice"
```

```
[[3]]
```

```
[1] "lemonade"
```

```
[[4]]
```

```
[1] "coffee"
```

Appending lists

Appending list. Use `append()` command.

```
R Console  
  
> list2 = list("water", "juice", "lemonade")  
> append(list1, 100)  
[[1]]  
[1] 1  
  
[[2]]  
[1] 2  
  
[[3]]  
[1] 3  
  
[[4]]  
[1] 100  
  
> append(list2, "coffee")  
[[1]]  
[1] "water"  
  
[[2]]  
[1] "juice"  
  
[[3]]  
[1] "lemonade"  
  
[[4]]  
[1] "coffee"
```

Appending lists

Appending list after a position. Use `append(, after)` command.

```
list1 = list(1,2,3)
```

```
list2 = list("water", "juice", "lemonade")
```

```
> append(list1, 100,  
after = 2)
```

```
[[1]]
```

```
[1] 1
```

```
[[2]]
```

```
[1] 2
```

```
[[3]]
```

```
[1] 100
```

```
[[4]]
```

```
[1] 3
```

```
> append(list2, "coffee",  
after = 2)
```

```
[[1]]
```

```
[1] "water"
```

```
[[2]]
```

```
[1] "juice"
```

```
[[3]]
```

```
[1] "coffee"
```

```
[[4]]
```

```
[1] "lemonade"
```

Appending lists

Appending list after a position. Use `append(, after)` command.

```
R Console
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> list1
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 3

> list2
[[1]]
[1] "water"

[[2]]
[1] "juice"

[[3]]
[1] "lemonade"
```

```
R Console
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> append(list1, 100, after = 2)
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 100

[[4]]
[1] 3

> append(list2, "coffee", after = 2)
[[1]]
[1] "water"

[[2]]
[1] "juice"

[[3]]
[1] "coffee"

[[4]]
[1] "lemonade"
```

Removing from list

Removing from list at a position. Use `listname[-position]` command.

```
list1 = list(1,2,3)
```

```
list2 = list("water", "juice", "lemonade")
```

```
> list1[-2]
```

```
[[1]]
```

```
[1] 1
```

```
[[2]]
```

```
[1] 3
```

```
> list2[-1]
```

```
[[1]]
```

```
[1] "juice"
```

```
[[2]]
```

```
[1] "lemonade"
```

Removing from list

R Console

```
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> list1
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 3

> list2
[[1]]
[1] "water"

[[2]]
[1] "juice"

[[3]]
[1] "lemonade"
```

R Console

```
> list1 = list(1,2,3)
> list2 = list("water", "juice", "lemonade")
> list1[-2]
[[1]]
[1] 1

[[2]]
[1] 3

> list2[-1]
[[1]]
[1] "juice"

[[2]]
[1] "lemonade"
```

Extracting from list

Extracting from list. Use a range of indexes as `listname[indexes]` command.

```
list1 = list(1,2,3,4,5,6)
```

```
list2 = list("water", "juice", "lemonade", "tea",  
"coffee", "milk")
```

Execute following commands

```
list1[2:4]
```

```
list1[c(1,3,5)]
```

```
list1[2:4]
```

```
list1[c(1,3,5)]
```

Extracting from list

Extracting from list. Use a range of indexes as `listname[indexes]` command.

```
list1 = list(1,2,3,4,5,6)
```

```
> list1
```

```
[[1]]  
[1] 1
```

```
[[2]]  
[1] 2
```

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

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

```
[[5]]  
[1] 5
```

```
[[6]]  
[1] 6
```

```
> list1[2:4]
```

```
[[1]]  
[1] 2
```

```
[[2]]  
[1] 3
```

```
[[3]]  
[1] 4
```

```
> list1[c(1,3,5)]
```

```
[[1]]  
[1] 1
```

```
[[2]]  
[1] 3
```

```
[[3]]  
[1] 5
```

Extracting from list

Extracting from list. Use a range of indexes as `listname[indexes]` command.

```
list1 = list(1,2,3,4,5,6)
```

R Console

```
> list1 = list(1,2,3,4,5,6)
```

```
> list1
```

```
[[1]]  
[1] 1
```

```
[[2]]  
[1] 2
```

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

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

```
[[5]]  
[1] 5
```

```
[[6]]  
[1] 6
```

R Console

```
> list1[2:4]
```

```
[[1]]  
[1] 2
```

```
[[2]]  
[1] 3
```

```
[[3]]  
[1] 4
```

R Console

```
> list1[c(1,3,5)]
```

```
[[1]]  
[1] 1
```

```
[[2]]  
[1] 3
```

```
[[3]]  
[1] 5
```

Extracting from list

Extracting from list. Use a range of indexes as `listname[indexes]` command.

```
list2 = list("water", "juice", "lemonade", "tea",  
"coffee", "milk")
```

```
> list2  
[[1]]  
[1] "water"  
  
[[2]]  
[1] "juice"  
  
[[3]]  
[1] "lemonade"  
  
[[4]]  
[1] "tea"  
  
[[5]]  
[1] "coffee"  
  
[[6]]  
[1] "milk"
```

```
> list2[2:4]  
[[1]]  
[1] "juice"  
  
[[2]]  
[1] "lemonade"  
  
[[3]]  
[1] "tea"
```

```
> list2[c(1,3,5)]  
[[1]]  
[1] "water"  
  
[[2]]  
[1] "lemonade"  
  
[[3]]  
[1] "coffee"
```

Extracting from list

Extracting from list. Use a range of indexes as

`listname[indexes]` command.

```
list2 = list("water", "juice", "lemonade",  
"tea", "coffee", "milk")
```

R Console

```
> list2 = list("water", "juice", "lemonade", "tea", "coffee", "milk")
```

```
> list2
```

```
[[1]]
```

```
[1] "water"
```

```
[[2]]
```

```
[1] "juice"
```

```
[[3]]
```

```
[1] "lemonade"
```

```
[[4]]
```

```
[1] "tea"
```

```
[[5]]
```

```
[1] "coffee"
```

```
[[6]]
```

```
[1] "milk"
```

R Console

```
> list2[2:4]
```

```
[[1]]
```

```
[1] "juice"
```

```
[[2]]
```

```
[1] "lemonade"
```

```
[[3]]
```

```
[1] "tea"
```

R Console

```
> list2[c(1,3,5)]
```

```
[[1]]
```

```
[1] "water"
```

```
[[2]]
```

```
[1] "lemonade"
```

```
[[3]]
```

```
[1] "coffee"
```