



INTRODUCTION TO R

# Subset and Extend Lists

# The song list

```
> similar_song <- list(title = "R you on time?",  
                        duration = 230)  
> song <- list(title = "Rsome times",  
               duration = 190, track = 5,  
               similar = similar_song)  
  
> song  
List of 4  
 $ title      : chr "Rsome times"  
 $ duration: num 190  
 $ track      : num 5  
 $ similar :List of 2  
  ..$ title      : chr "R you on time?"  
  ..$ duration: num 230
```

**Output of calling `str(song)`**

# [ versus [[

```
> song[1]
List of 1
 $ title: chr "Rsome times"
```

```
> song[[1]]
[1] "Rsome times"
```

```
> song[c(1, 3)]
List of 2
 $ title: chr "Rsome times"
 $ track: num 5
```

```
> song
List of 4
 $ title    : chr "Rsome times"
 $ duration: num 190
 $ track    : num 5
 $ similar  :List of 2
  ..$ title    : chr "R you on time?"
  ..$ duration: num 230
```

# [ versus [[

```
> song[[c(1, 3)]]  
Error in song[[c(1, 3)]] :  
  subscript out of bounds
```

```
> song[[1]][[3]]  
Error in song[[1]][[3]] :  
  subscript out of bounds
```

```
> song[[4]][[1]]  
[1] "R you on time?"
```

```
> song[[c(4, 1)]]  
[1] "R you on time?"
```

```
> song  
List of 4  
 $ title      : chr "Rsome times"  
 $ duration: num 190  
 $ track      : num 5  
 $ similar :List of 2  
  ..$ title      : chr "R you on time?"  
  ..$ duration: num 230
```

# Subset by names

```
> song[["duration"]]
[1] 190

> song["duration"]
List of 1
 $ duration: num 190

> song[c("duration", "similar")]
List of 2
 $ duration: num 190
 $ similar :List of 2
  ..$ title   : chr "R you on time?"
  ..$ duration: num 230
```

```
> song
List of 4
 $ title   : chr "Rsome times"
 $ duration: num 190
 $ track   : num 5
 $ similar :List of 2
  ..$ title   : chr "R you on time?"
  ..$ duration: num 230
```

# Subset by logicals

```
> song[c(FALSE, TRUE, TRUE, FALSE)]  
List of 2  
 $ duration: num 190  
 $ track   : num 5
```

```
> song[[c(FALSE, TRUE, TRUE, FALSE)]]  
Error : attempt to select less than one element
```

```
> song[[F]][[T]][[T]][[F]]  
Error : attempt to select less than one element
```

```
> song  
List of 4  
 $ title    : chr "Rsome times"  
 $ duration: num 190  
 $ track    : num 5  
 $ similar  :List of 2  
 ..$ title   : chr "R you on time?"  
 ..$ duration: num 230
```

# \$ and extending

```
> song$duration
[1] 190

> friends <- c("Kurt", "Florence",
               "Patti", "Dave")

> song$sent <- friends
> song
List of 5
 $ title      : chr "Rsome times"
 $ duration: num 190
 $ track      : num 5
 $ similar :List of 2
  ..$ title      : chr "R you on time?"
  ..$ duration: num 230
 $ sent       : chr [1:4] "Kurt" "Florence" "Patti" "Dave"
```

```
> song
List of 4
 $ title      : chr "Rsome times"
 $ duration: num 190
 $ track      : num 5
 $ similar :List of 2
  ..$ title      : chr "R you on time?"
  ..$ duration: num 230
```

# Extending lists

```
> song[["sent"]] <- friends

> song$similar$reason <- "too long"

> song
List of 5
 $ title      : chr "Rsome times"
 $ duration:  : num 190
 $ track      : num 5
 $ similar    :List of 3
  ..$ title      : chr "R you on time?"
  ..$ duration:  : num 230
  ..$ reason     : chr "too long"
 $ sent       : chr [1:4] "Kurt" "Florence" "Patti" "Dave"
```



# Wrap-up

- `[[` or `[` ?
  - `[[` to select list element
  - `[` results in sublist
- `[[` and `$` to subset and extend lists