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          Output of calling str(song)
 $ similar :List of 2
  ..$ title   : chr "R you on time?"
  ..$ duration: num 230
```

[**versus** [[

```
> 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
```

```
> 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
```

[**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
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
```

```
> 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
```

$ and extending

```
> 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
```

```
> 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"
```

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

INTRODUCTION TO R

Let's practice!