What is a list?

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Lists

```
cash
```

```
  company cash_flow year
1       A      1000    1
2       A      4000    3
3       A       550    4
4       B      1500    1
5       B      1100    2
6       B       750    4
7       B      6000    5
```

```
company_name <- "DataCampers Inc"
```

Lists

```
my_company <- list(company_name, cash)
my_company
```

```
[[1]]
"DataCampers Inc."
[[2]]
  company cash_flow year
1       A      1000    1
2       A      4000    3
3       A       550    4
4       B      1500    1
5       B      1100    2
6       B       750    4
7       B      6000    5
```

Subsetting lists

```
my_company[1]
```

```
[[1]]
"DataCampers Inc."
```

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

```
"DataCampers Inc."
```

```
my_company[[2]]
```

```
  company cash_flow year
1       A      1000    1
2       A      4000    3
3       A       550    4
4       B      1500    1
5       B      1100    2
6       B       750    4
7       B      6000    5
```

Let's practice!

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A few list creating functions

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split() it up

```
debt
```

```
  name payment
1  Dan     100
2  Dan     200
3  Dan     150
4  Rob      50
5  Rob      75
6  Rob     100
```

split() it up

```
grouping <- debt$name

split_debt <- split(debt, grouping)
split_debt
```

```
$Dan
  name payment
1  Dan     100
2  Dan     200
3  Dan     150

$Rob
  name payment
4  Rob      50
5  Rob      75
6  Rob     100
```

split() it up

```
split_debt$Dan
```

```
  name payment
1  Dan     100
2  Dan     200
3  Dan     150
```

```
split_debt$Dan$payment
```

```
100 200 150
```

```
unsplit(split_debt, grouping)
```

```
  name payment
1  Dan     100
2  Dan     200
3  Dan     150
4  Rob      50
5  Rob      75
6  Rob     100
```

split() example

- Unique calculation for Dan versus Rob
- Dan gets a 20% discount, Rob a 10% discount
  - split data frame by name
  - apply discounts
  - combine data frames back
- `"split-apply-combine"`

split-apply-combine

```
split_debt <- split(debt, grouping)
grouping <- debt$name
split_debt$Dan$new_payment <- split_debt$Dan$payment * .8
split_debt$Rob$new_payment <- split_debt$Rob$payment * .9
split_debt
```

```
$Dan
  name payment new_payment
1  Dan     100          80
2  Dan     200         160
3  Dan     150         120

$Rob
  name payment new_payment
4  Rob      50        45.0
5  Rob      75        67.5
6  Rob     100        90.0
```

split-apply-combine

```
unsplit(split_debt, grouping)
```

```
  name payment new_payment
1  Dan     100         80.0
2  Dan     200        160.0
3  Dan     150        120.0
4  Rob      50         45.0
5  Rob      75         67.5
6  Rob     100         90.0
```

Attributes

```
my_matrix <- matrix(c(1,2,3,4,5,6), nrow = 2, ncol = 3)
attributes(my_matrix)
```

```
$dim
2 3
```

```
attributes(debt)
```

```
$names
"name"    "payment"

$row.names
1 2 3 4 5 6

$class
"data.frame"
```

Let's practice!

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Congratulations!

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More to learn

- Financial Trading in R
- Machine Learning with caret in R
- Visualizing Geospatial Data in R

Keep learning!

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