Data Structures in R

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x

a	b	c	d
●	●	●	●

x[3] or x['c']

x

a	b	c	d
●	●	●	●
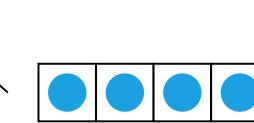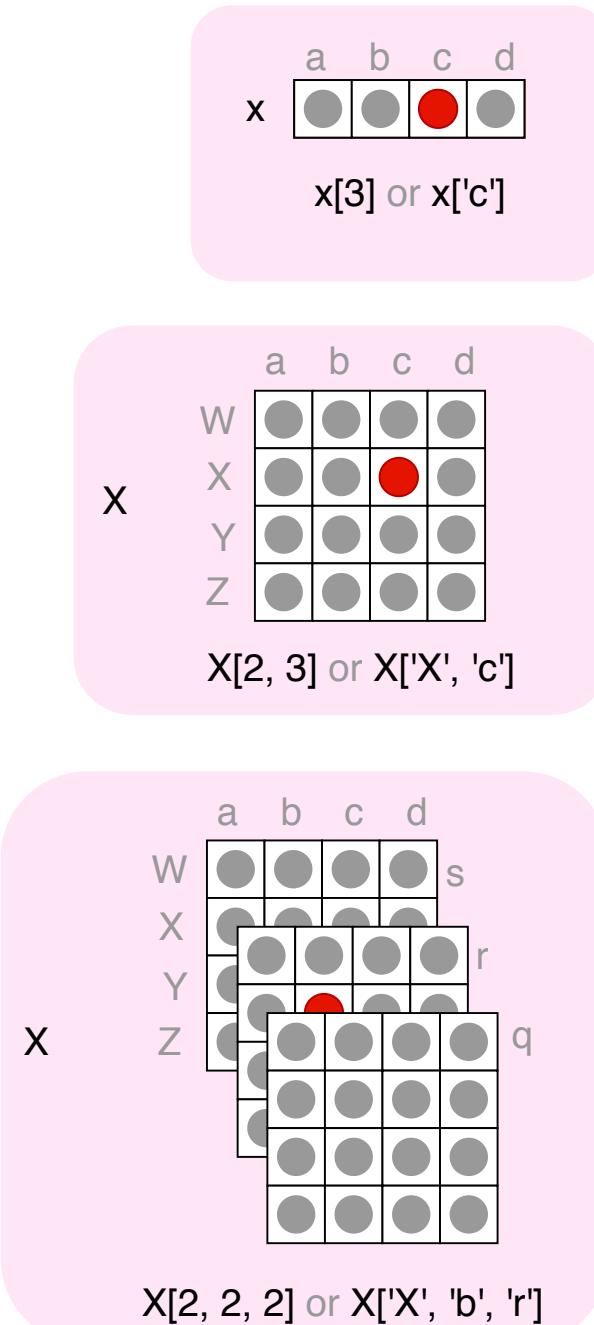
x[[3]] or x[['c']] or x$c

vector
- one dimension
- all elements of the same type
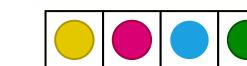
list
- one dimension
- all elements can be of different type
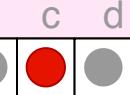
S3 class object
- a list with a particular name set as class attribute

fancy.class

X

	a	b	c	d
W	●	●	●	●
X	●	●	●	●
Y	●	●	●	●
Z	●	●	●	●

X[2, 3] or X['X', 'c']
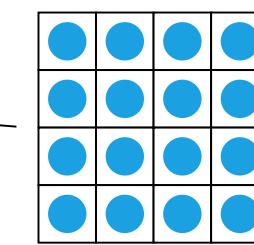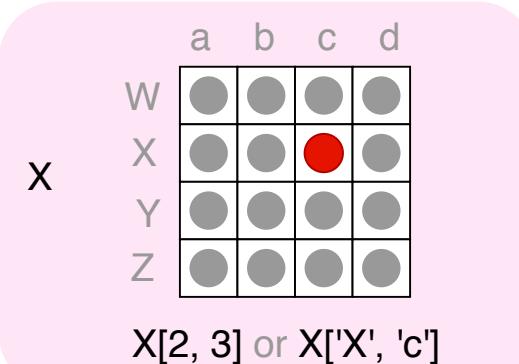
matrix
- two dimensions
- all elements of the same type
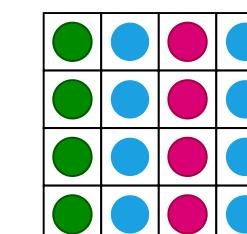
data frame
- two dimensions
- elements in columns have the same type, different columns can have different data types

X

	a	b	c	d
W	●	●	●	●
X	●	●	●	●
Y	●	●	●	●
Z	●	●	●	●

X[2, 3] or X['X', 'c'] or X$c[2]

X

	a	b	c	d
W	●	●	●	●
X	●	●	●	●
Y	●	●	●	●
Z	●	●	●	●

X[2, 2, 2] or X['X', 'b', 'r']
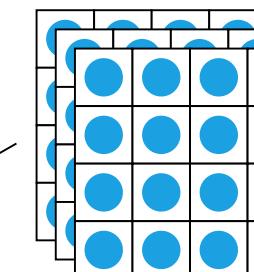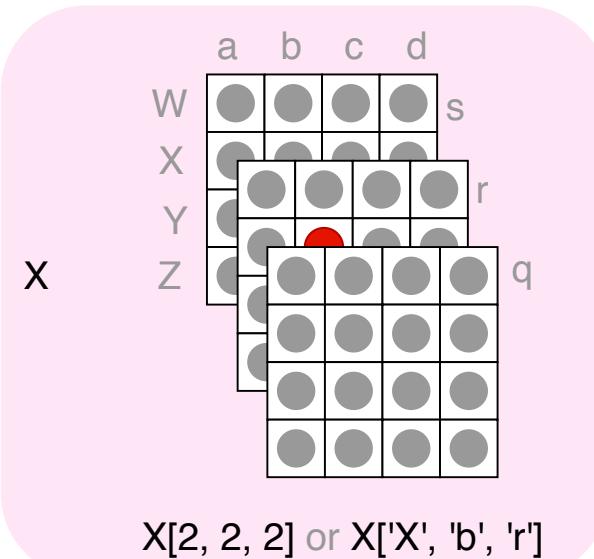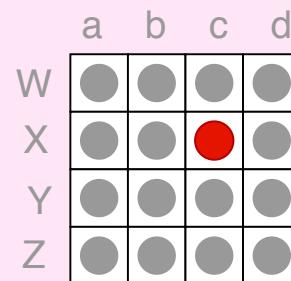
array
- three and more dimensions
- all elements of the same type
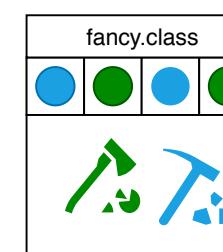
S4 class object
- a "box" with data inside plus a collection of methods (=functions) you can apply to these data

fancy.class

X

fancy.class

X@b