R

AT THE BASE R IS A PROGRAMMING LANGUAGE

BUT, SINCE IT'S FOCUS IS ON STATISTICAL AND DATA ANALYSIS

THERE IS A LOT OF BUILT-IN FUNCTIONALITY FOR THESE TASKS

R BUILT-IN FUNCTIONALITY

THIS BUILT IN FUNCTIONALITY REVOLVES AROUND

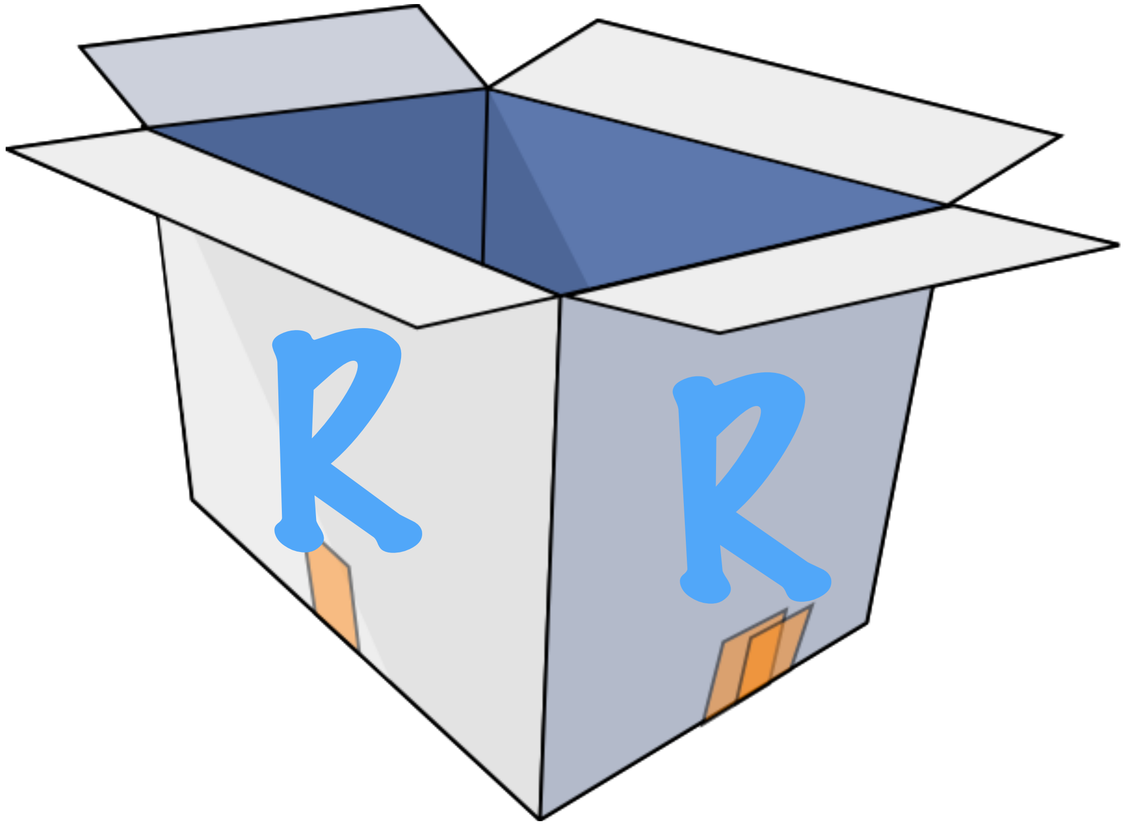
DATA STRUCTURES

ALL DATA IN R IS STORED IN DATA STRUCTURES

DATA STRUCTURES

HELP YOU TO STORE, ORGANIZE AND WORK WITH DATA

R PROVIDES US WITH MANY MANY DATA STRUCTURES OUT OF THE BOX



DATA STRUCTURES IN R

VECTOR

ARRAY

DATAFRAME

LIST

MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS THE SIMPLEST DATA STRUCTURE IN R

A VECTOR IS A COLLECTION OF ELEMENTS, ALL OF THE **SAME TYPE**

A NUMERIC VECTOR (1, 3.3, 5, 7)

A CHARACTER VECTOR ("A", "VECTOR", "OF", "CHARACTERS")

A LOGICAL VECTOR (FALSE, TRUE, FALSE, FALSE)

LIST
ARRAY
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)

("A", "VECTOR", "OF", "CHARACTERS")

(FALSE, TRUE, FALSE, FALSE)

LIST

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

LOGICAL

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

ARRAY
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)

("A", "VECTOR", "OF", "CHARACTERS")

(FALSE, TRUE, FALSE, FALSE)

LIST

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

LOGICAL

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

NUMERIC

ARRAY
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)

("A", "VECTOR", "OF", "CHARACTERS")

(FALSE, TRUE, FALSE, FALSE)

LIST

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

LOGICAL
CHARACTER
(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))
NUMERIC

ARRAY
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)

("A", "VECTOR", "OF", "CHARACTERS")

(FALSE, TRUE, FALSE, FALSE)

LIST

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

LOGICAL CHARACTER LOGICAL CHARACTER

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

NUMERIC NUMERIC

LIST WITHIN A LIST

ARRAY
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)

("A", "VECTOR", "OF", "CHARACTERS")

(FALSE, TRUE, FALSE, FALSE)

ARRAY

DATAFRAME

LIST

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

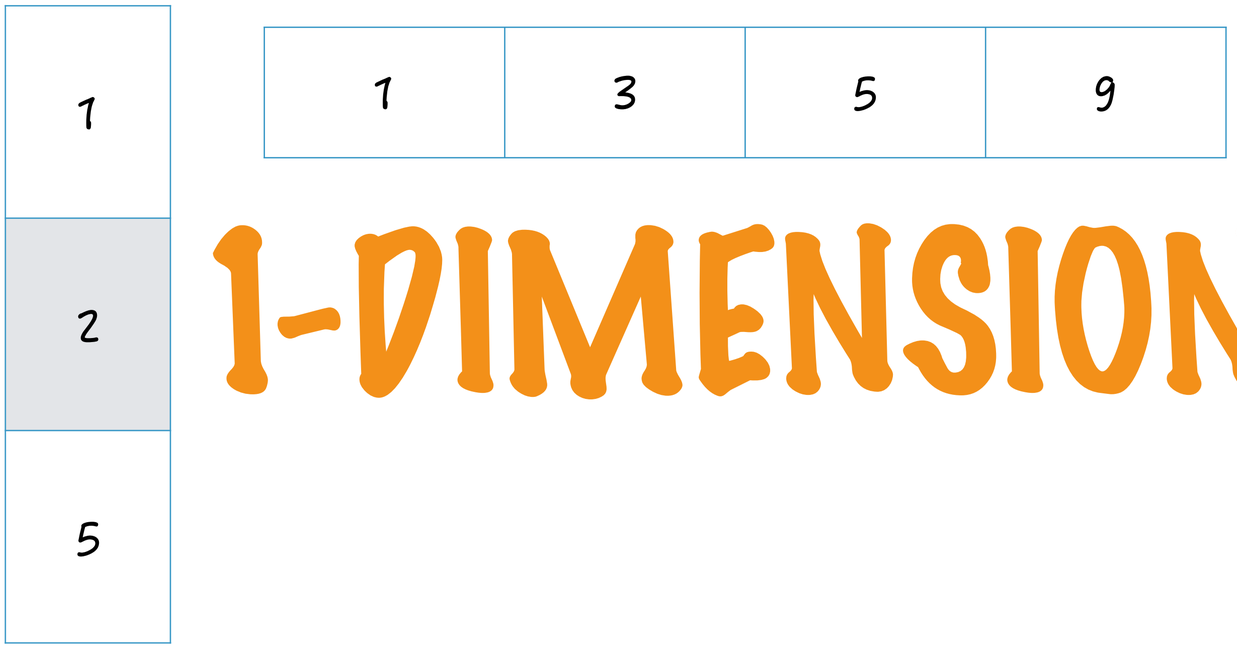
MATRIX

DATA STRUCTURES IN R

ARRAY

LIKE A VECTOR, AN ARRAY CAN ONLY HAVE ELEMENTS OF THE SAME TYPE

AN ARRAY HAS IT'S ELEMENTS ARRANGED IN DIMENSIONS (ROW, COLUMNS ETC)



1-DIMENSIONAL ARRAYS

LIST
VECTOR
DATAFRAME
MATRIX

DATA STRUCTURES IN R

ARRAY

LIKE A VECTOR, AN ARRAY CAN ONLY HAVE ELEMENTS OF THE SAME TYPE

AN ARRAY HAS IT'S ELEMENTS ARRANGED IN DIMENSIONS (ROW, COLUMNS ETC)

1-DIMENSIONAL ARRAYS

1
2
5

1	3	5	9

A 2-DIMENSIONAL ARRAY

IS A STACK OF 1 DIMENSIONAL ARRAYS

1	3	5	9
2	7	4	3
5	8	9	7

LIST
VECTOR
DATAFRAME
MATRIX

DATA STRUCTURES IN R

ARRAY

LIKE A VECTOR, AN ARRAY CAN ONLY HAVE ELEMENTS OF THE SAME TYPE

AN ARRAY HAS IT'S ELEMENTS ARRANGED IN DIMENSIONS (ROW, COLUMNS ETC)

1-DIMENSIONAL ARRAYS

1
2
5

1	3	5	9

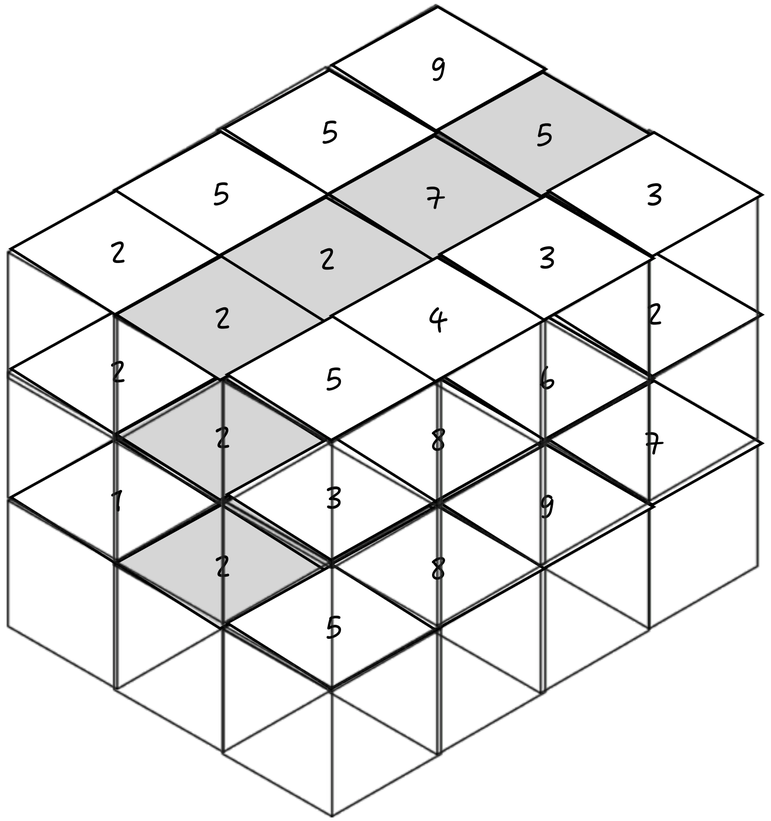
A 2-DIMENSIONAL ARRAY

IS A STACK OF 1 DIMENSIONAL ARRAYS

1	3	5	9
2	7	4	3
5	8	9	7

A 3-DIMENSIONAL ARRAY

IS A STACK OF 2 DIMENSIONAL ARRAYS



LIST
VECTOR
DATAFRAME
MATRIX

DATA STRUCTURES IN R

LIKE A VECTOR, AN ARRAY CAN ONLY HAVE ELEMENTS OF THE SAME TYPE

AN ARRAY HAS IT'S ELEMENTS ARRANGED IN DIMENSIONS (ROW, COLUMNS ETC)

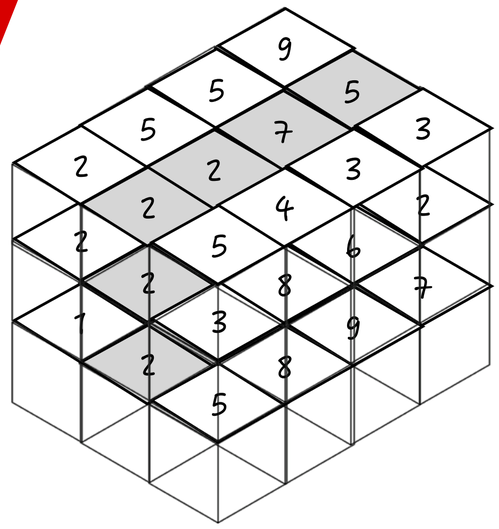
1-DIMENSIONAL ARRAYS

1
2
5

1	3	5	9

ARRAY

A 3-DIMENSIONAL ARRAY



A 2-DIMENSIONAL ARRAY

1	3	5	9
2	7	4	3
5	8	9	7

MATRIX

A MATRIX IS NOTHING BUT, A 2-DIMENSIONAL ARRAY

LIST
VECTOR
DATAFRAME

DATA STRUCTURES IN R

LIKE A VECTOR, AN ARRAY CAN ONLY HAVE ELEMENTS OF THE SAME TYPE

AN ARRAY HAS IT'S ELEMENTS ARRANGED IN DIMENSIONS (ROW, COLUMNS ETC)

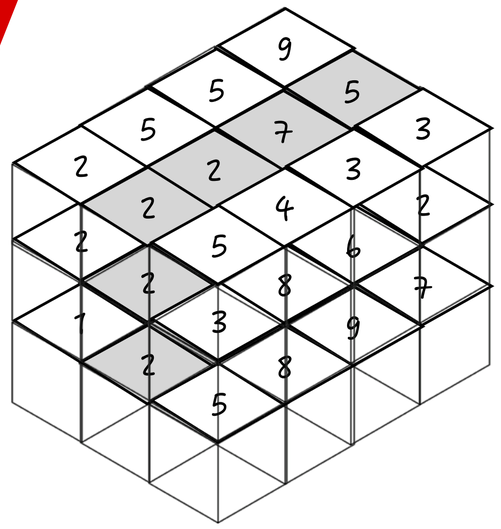
1-DIMENSIONAL ARRAYS

1
2
5

1	3	5	9

ARRAY

A 3-DIMENSIONAL ARRAY



A 2-DIMENSIONAL ARRAY

1	3	5	9
2	7	4	3
5	8	9	7

MATRIX

A MATRIX IS NOTHING BUT, A 2-DIMENSIONAL ARRAY

1	3	5	9
2	7	4	3
5	8	9	7

LIST
VECTOR
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)
("A", "VECTOR", "OF", "CHARACTERS")
(FALSE, TRUE, FALSE, FALSE)

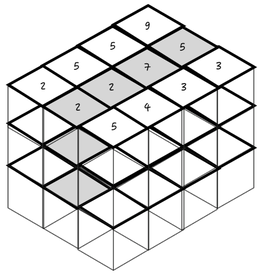
ARRAY

AN ARRAY HAS IT'S ELEMENTS
ARRANGED IN DIMENSIONS

1
2
5

1	3	5	9

1	3	5	9
2	7	4	3
5	8	9	7



DATAFRAME

LIST

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

MATRIX

A MATRIX IS NOTHING BUT,
A 2-DIMENSIONAL ARRAY

1	3	5	9
2	7	4	3
5	8	9	7

DATA STRUCTURES IN R

DATAFRAME

A DATAFRAME IS DATA ARRANGED IN ROWS AND COLUMNS

A DATAFRAME IS LIKE A LIST (OF VECTORS OR OTHER LISTS)

ROWS REPRESENT 1 UNIT OR 1 OBSERVATION

	NAME	AGE	PURCHASE DATE	AMOUNT
PERSON 1	"A"	20	Jan 1	100
PERSON 2	"B"	54	Feb 3	340
PERSON 3	"C"	36	Jan 20	700
PERSON 4	"D"	32	Dec 14	650
PERSON 5	"E"	45	Nov 18	321
PERSON 6	"F"	22	May 10	789

COLUMNS REPRESENT VARIABLES

ARRAY
LIST
DATAFRAME
MATRIX

DATA STRUCTURES IN R

VECTOR

A VECTOR IS A COLLECTION OF ELEMENTS,
ALL OF THE SAME TYPE

(1, 3.3, 5, 7)
("A", "VECTOR", "OF", "CHARACTERS")
(FALSE, TRUE, FALSE, FALSE)

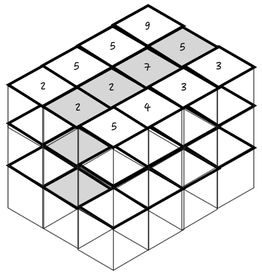
ARRAY

AN ARRAY HAS IT'S ELEMENTS
ARRANGED IN DIMENSIONS

1
2
5

1	3	5	9

1	3	5	9
2	7	4	3
5	8	9	7



DATAFRAME

A DATAFRAME IS DATA ARRANGED IN
ROWS AND COLUMNS

	NAME	AGE	PURCHASE DATE	AMOUNT
PERSON 1	"A"	20	Jan 1	100
PERSON 2	"B"	54	Feb 3	340
PERSON 3	"C"	36	Jan 20	700
PERSON 4	"D"	32	Dec 14	650
PERSON 5	"E"	45	Nov 18	321
PERSON 6	"F"	22	May	789

LIST

(FALSE, 1, "LIST", (3, FALSE, "SUBLIST"))

A LIST IS A COLLECTION OF ELEMENTS,
WHICH CAN BE OF DIFFERENT TYPES
INCLUDING LISTS

MATRIX

A MATRIX IS NOTHING BUT,
A 2-DIMENSIONAL ARRAY

1	3	5	9
2	7	4	3
5	8	9	7

THESE ARE THE BUILDING BLOCKS,
OF ANY DATA ANALYSIS OR
MODELING IN R

EACH OF THESE IS VERY COOL
IN THEIR OWN WAY

EACH HAS IT'S OWN SET
OF ATTRIBUTES,
FUNCTIONS AND QUIRKS