PROG101: Intro to R and RStudio

Introduction to R and RStudio

MARINCS 100B | Intro to Marine Data Science | Winter 2025

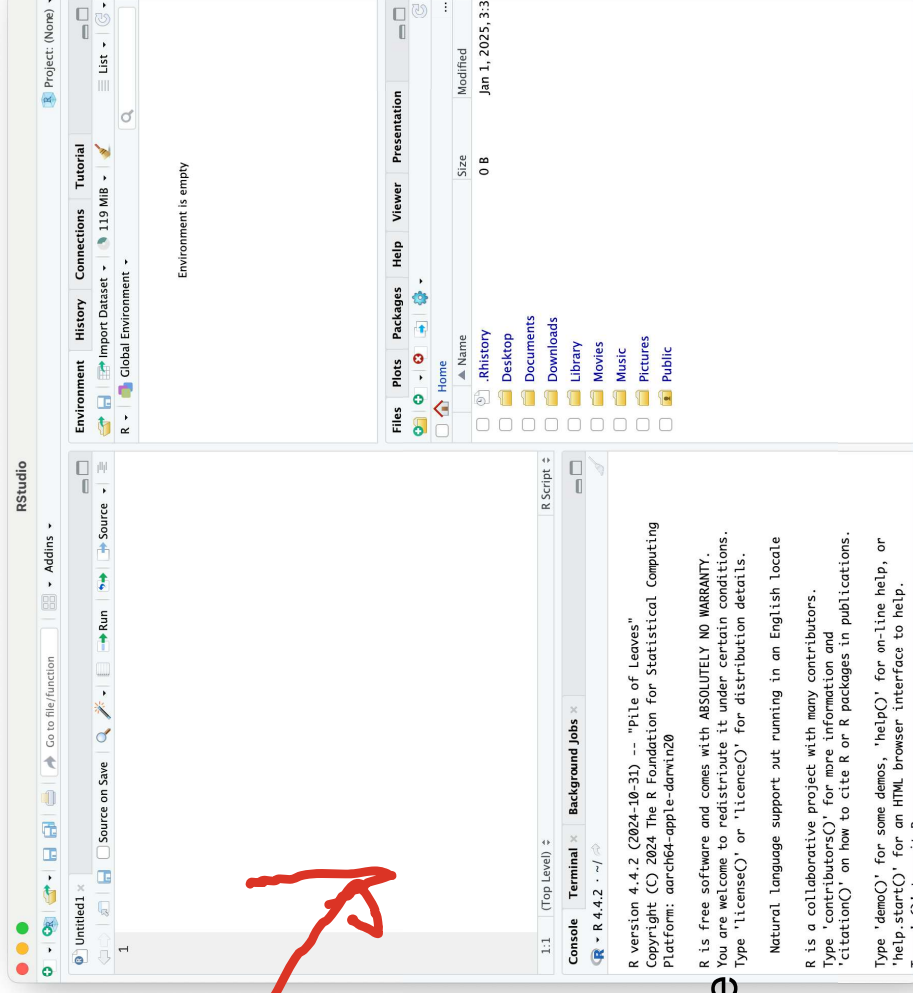**Key concepts**

R is a programming language
R studio is IDE
Writing code is not equal to running code

A tour of RStudio

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Editor

Console R
Runs the code

Environment
Results/analyze/
execute

Files
On hard drive

IDE features

Help write code (autocomplete)
Interactivity (see output immedately, shift between tabs)
Project Management!

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Expressions and variables

Key concepts

Expressions are sentences
Built from nouns and verbs
Variables are nouns

Expression examples

See .R script

New vocabulary and lingering questions

New vocabulary

Encapsulation – making complex simple through creating variables
Not much else

Lingering questions
When

When do we learn syntax?

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Using functions

Key concepts

Functions are "verbs"
Takes arguements as input
Encapsulate (make easier to read/understand) procedures

Function examples

See .R Studio

New vocabulary and lingering questions

New vocabulary

Arguments - variables or other data put into a function that changes it.

Lingering questions

No questions

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Basics of vectors

Key concepts

Vectors are collections of elements all of the same type (like all numbers)
Can access parts of vectors with indexing
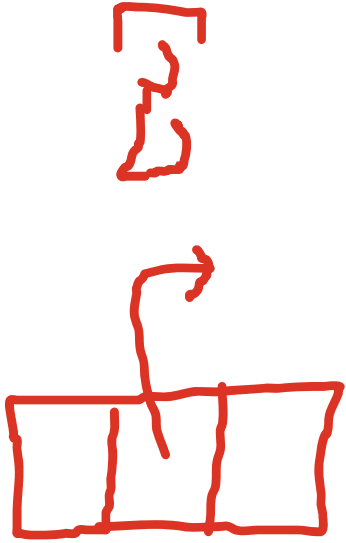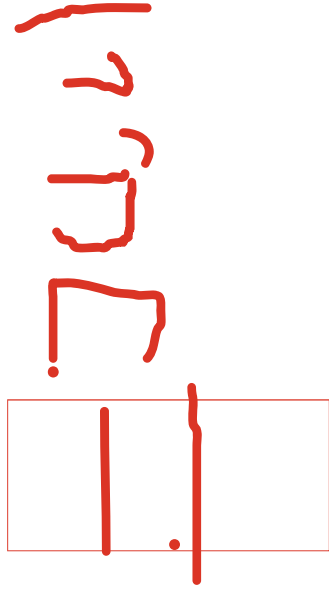Pay close attention to output vector sizes

WHEE WHOO ^^^

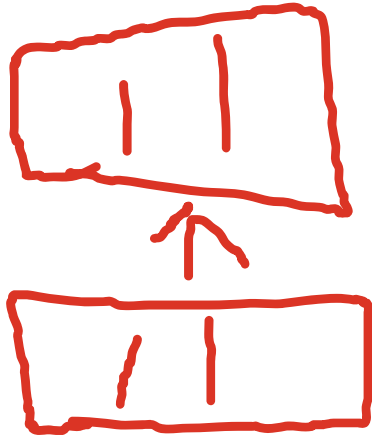# Vector examples

See .R Studio

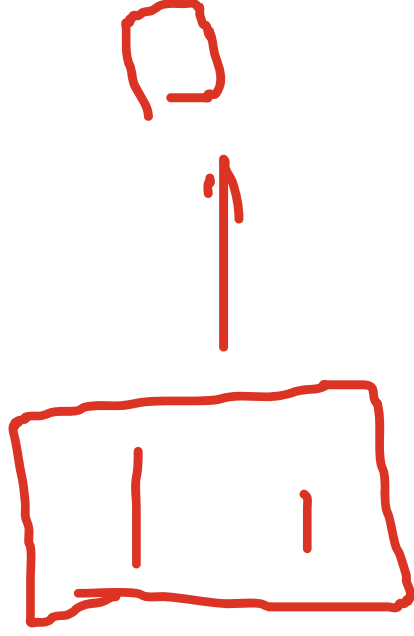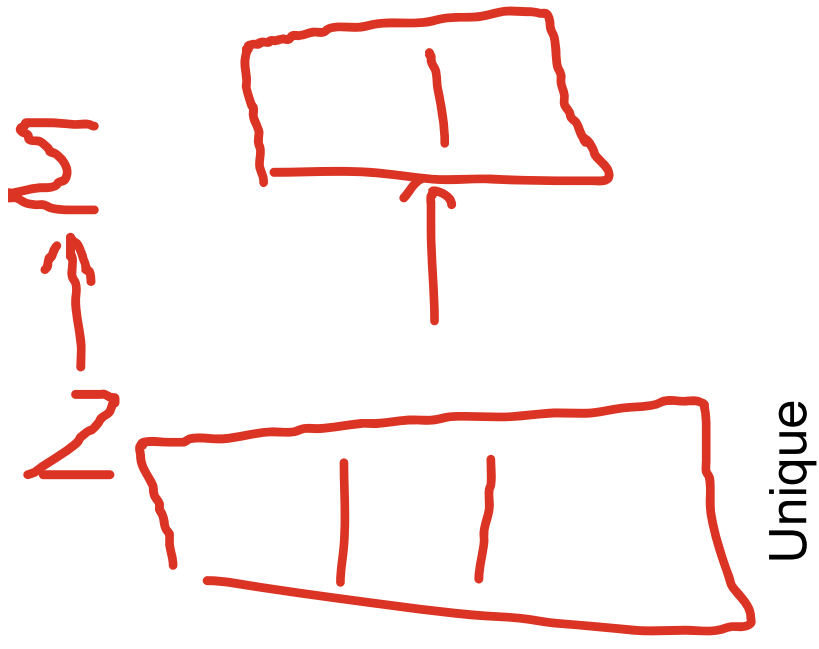**Vector indexing**

1. Single element

Slice

Non-contingous

Vector output size

Sqrt(),
Transformations
N -> N

Mean()
N -> 1
Summaries

Unique

$N \to 1$

$N \to N$

New vocabulary and lingering questions

New vocabulary

Indexing -> sorting through vector until index is reaches ie

Lingering questions

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Multiple vectors

Key concepts

Work on multiple vectors element-wise

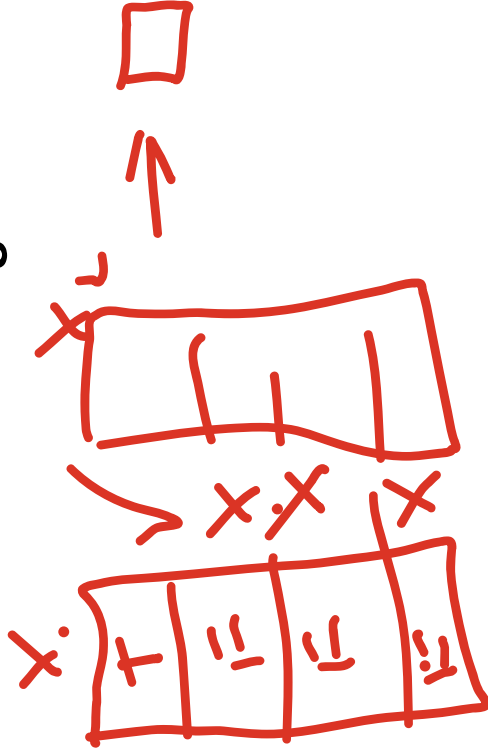Use conditions of 1 vector to index another

Multiple vector examples

See .R Studio

Element-wise operations

Multi-vector indexing

New vocabulary and lingering questions

New vocabulary

paste – combine vectors

Lingering questions