

## Homework 3 (2023-24): R Programming

Due date : 2024-05-29 23:55



- M1 MIDS & MFA
- [Université Paris Cité](#)
- Année 2023-2024
- [Course Homepage](#)

### Objectives

This homework is concerned with developing methods for objects produced by factorial methods like Correspondence Analysis, Multiple Correspondence Analysis, Canonical Correlation Analysis, ... (R).

### Supplementing the broom package

The **broom** package offers S3 generic functions for building dataframes from the output of a variety of statistical techniques (for example `lm`, `prcomp`, or `kmeans`): `augment`, `tidy`, and `glance`.

The first goal of this homework is to design and code methods for generic functions `augment`, `tidy`, and `glance` for classes `CA`, `MCA`, `CCA`.

You may use classes `CA`, `MCA`, and `CCA` from `FactoMineR` or design your own classes.

### Programming with dplyr and ggplot2

The second goal of this homework is to design and code functions that take as input the output of `augment`, `tidy`, and `glance` (possibly simultaneously) to build `ggplot` objects corresponding to the plots associated with `CA`, `MCA`, and `CCA` (screeplot, row plot, column plot, and symmetric plot).

#### Note

`ggplot2` offers a generic function `autoplot()`. See [Tidyverse documentation on autoplot](#), More generally have a look at [automatic plotting](#)

The third goal of this homework is to design and code methods for generic function `autoplot()` for classes `CA`, `MCA`, `CCA`.

### Tip

Have a look at `autolayer()` generic. Could be useful for implementing symmetric plots (biplots).

## Package development

The function and methods coded in this homework should be delivered as a **package**.


Follow the package development guidelines in [R Packages \(2e\)](#).

- Define a dedicated rstudio project for this homework
- Don't forget documentation and testing

## References

- [Advanced R Programming](#)
- [S3](#)
- [Programming with/for ggplot2](#)
- [Cheatsheets](#)
- [Packages](#)

## Grading criteria

Criterion	Points	Details
Documentation	25%	English/French 
Testing	25%	✓
Coding	50%	</>