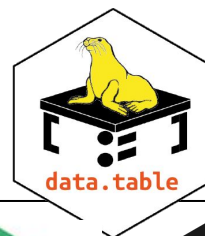
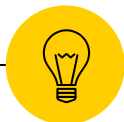




R Packages for Data Cleaning

R - Ladies Gaborone

25/01/2022





Overview

Who I am

Messy to tidy data

R Packages for Data Cleaning

Janitor

Naniar

Amelia

Data wizard

data.table

Demo in RStudio



Simisani Ndaba

Member of R-Ladies Gaborone,

Teaching Assistant since 2016, Department of Computer Science,
University of Botswana www.ub.bw

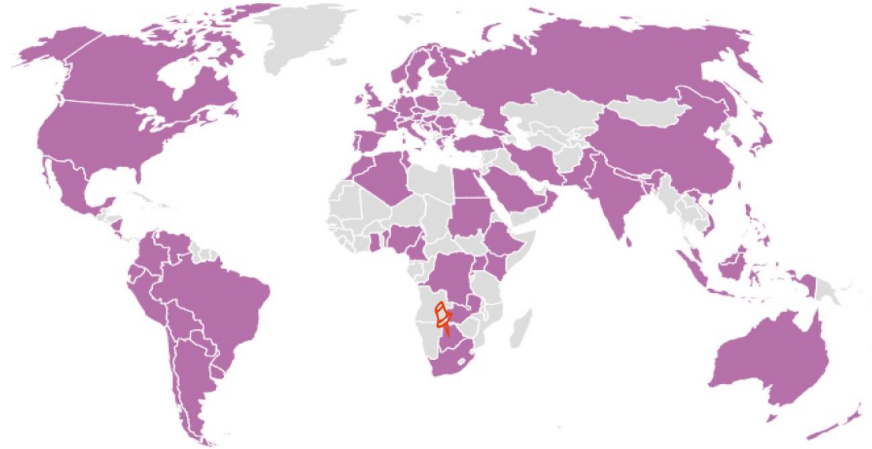
Msc in Computer Information Systems

 [@RLadiesGaborone](https://twitter.com/RLadiesGaborone)/[@simisani10](https://twitter.com/simisani10)

 simisani.ndaba013@gmail.com



Where I'm from





From messy to tidy data

Data preparation is not objective

Depends on the problem you want to solve:

- Data organisation for facilitation

- Data analysis tools

Tasks for tidy data analysis

- Manipulation, visualisation and modelling

Data cleaning involves

- Exploration, visualisation and fixing errors (structural, outliers, NA, Validation rules)



TidyTuesday

A weekly data project in R from the
R4DS online learning community



1999 21 15272
2000 21 18583

variables



observations

21 15272 127201
21 18583 128042

values



<https://codata.org/initiatives/data-skills/codata-connect/webinar-series-research-skills-enhancement/webinar-4-importance-of-data-cleaning/>

The screenshot shows a web browser with multiple tabs. The active tab is titled "Webinar 4: Importance of Data cleaning" and the address bar shows the URL: codata.org/initiatives/data-skills/codata-connect/webinar-series-research-skills-enhancement/webinar-4-importance-of-data-cleaning/. The website header features the CODATA logo (Committee on Data, International Science Council) and navigation links: About, Membership, Events, Initiatives, Publications, and Blog. The main heading is "Webinar 4: Importance of Data cleaning". Below this, it states: "The fourth webinar in this series, took place on 5th August 2021." and lists a link: "The slides are available at the link: [Download Presentation](#)". A search bar is visible on the right. The recording section indicates: "The recording is available below from Vimeo or in the CODATA GoToWebinar Channel". The video player shows a thumbnail for "Importance of Data cleaning.mp4" from CODATA. The video content displays the CODATA logo, a speaker (Simisani Ndaka), and the University of Botswana logo. Text at the bottom of the video frame reads: "Research Skill Enhancement Webinar co-hosted by RDA CODATA Summer School and CODATA Connect group presented by Simisani Ndaka".



R Packages for Data Cleaning

janitor

naniar

amelia

datawizard

data.table



Janitor_package

exploring and cleaning data

Functions: tabulations, duplications,

column names and formatting

The adorn_ functions dress up the results of these tabulations calls fast,

basic reporting

<https://cran.r-project.org/web/packages/janitor/vignettes/janitor.html>





Naniar_package

Naniar = NA in r

Developed by Nick Tierney

A suite of tools for generating visualisation of missing values,
imputations and summarising missing data

Data structures used to track missing data

<https://naniar.njtierney.com/articles/getting-started-w-naniar.html>





Multiple Imputation using amelia_package

imputation=replacement of missing values

Method:

- Joint Model=Gaussian/Normal Distribution
- Conditional Model=linear regression
- PCA(Principal Component Analysis)

Amelia_package

Joint Modeling

amelia() uses the

- bootstrap, resampling algorithm and
- EM(Expectation Maximum) algorithm, maximum likelihood based model



Data.table_package

Alternative version to data.frame

Used on tabular data

incredibly fast

DT syntax

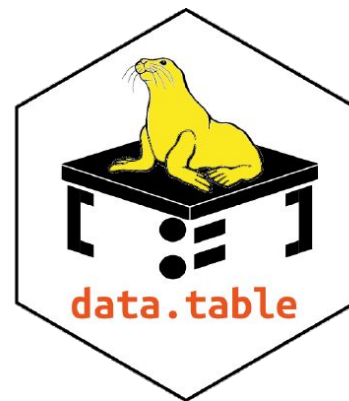
`DT[i , j, by]`

row, column, group by /SQL

Group using by

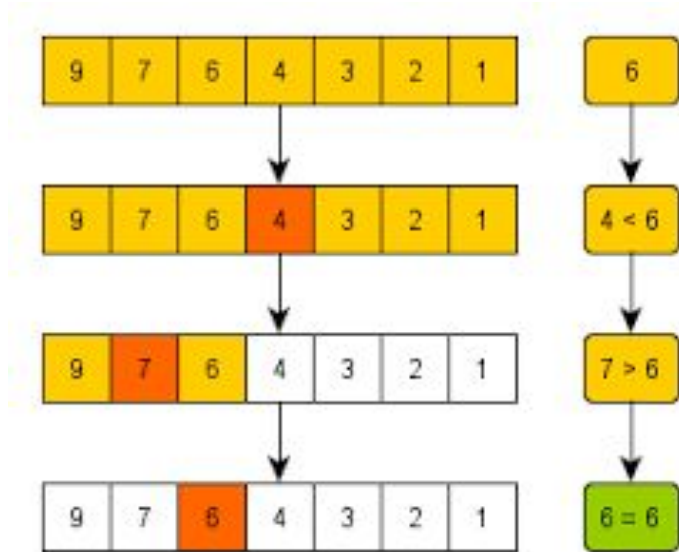
Binary search using Keys(reference)

<https://cran.r-project.org/web/packages/data.table/vignettes/datatable-intro.html>





Binary Search....Data.table package cont..





Datawizard_package

A lightweight package to easily manipulate, clean, transform and prepare data for analysis

Data wrangling, transformation, visualisation, text formatting, data properties

<https://easystats.github.io/datawizard/>





Demo in RStudio

```
install.packages(janitor)
```

```
install.packages(naniar)
```

```
install.packages(datawizard)
```

```
install.packages(data.table)
```

```
#extra functionality
```

```
install.packages(amelia)
```

```
install.packages(dplyr)
```

```
install.packages(readr)
```



Thanks!



<https://www.meetup.com/rladies-gaborone/>



[YouTube](#)



[https://github.com/rladies/meetup presentations gaborone](https://github.com/rladies/meetup_presentations_gaborone)

