Data Transformation with dplyr & stringr + ggplot2

CMB 710 Tidybiology

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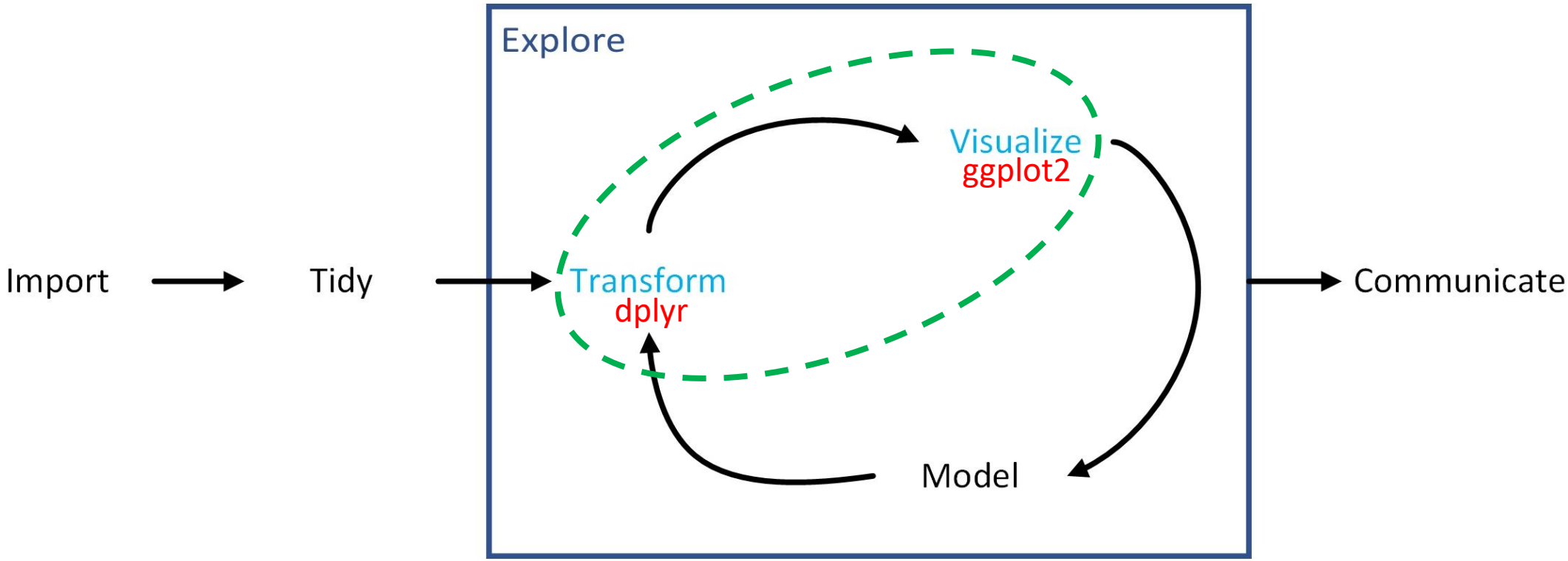
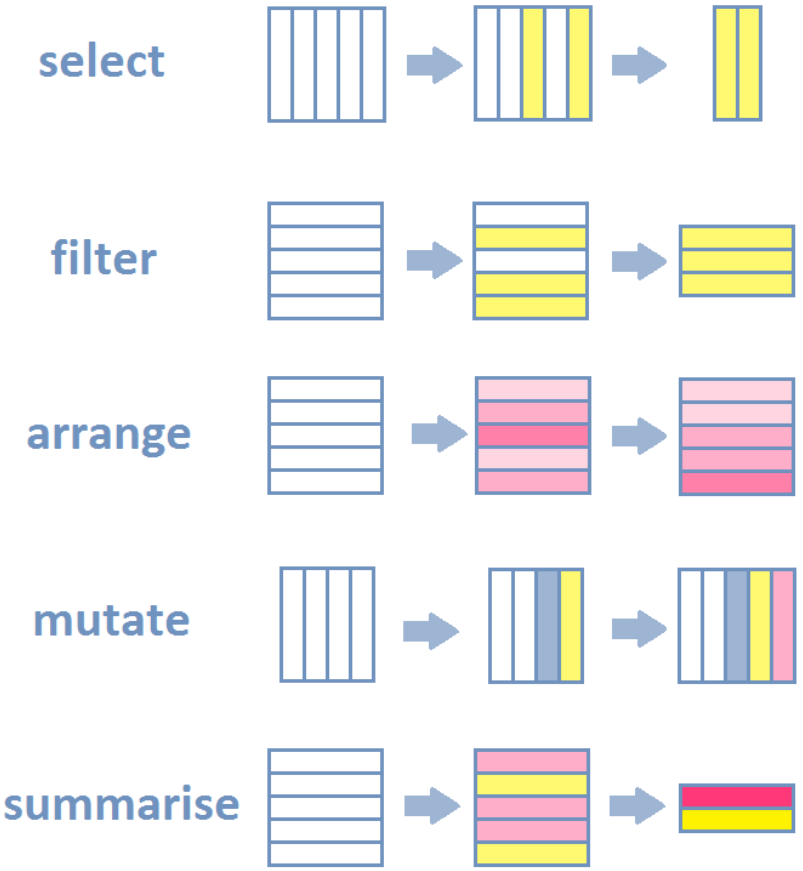
ggplot2 Works with dplyr for Data Communication



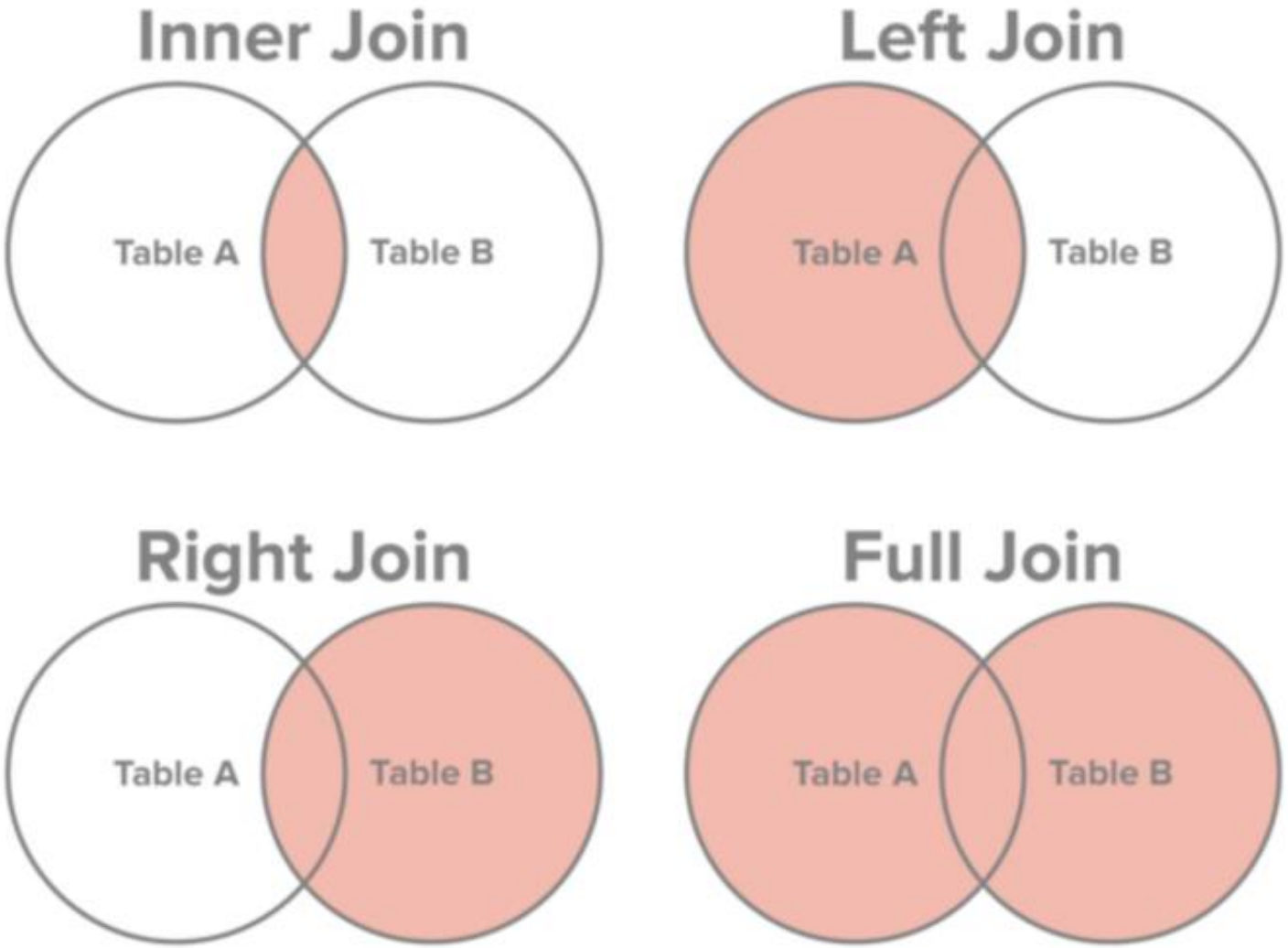
Quick Review of Basic dplyr



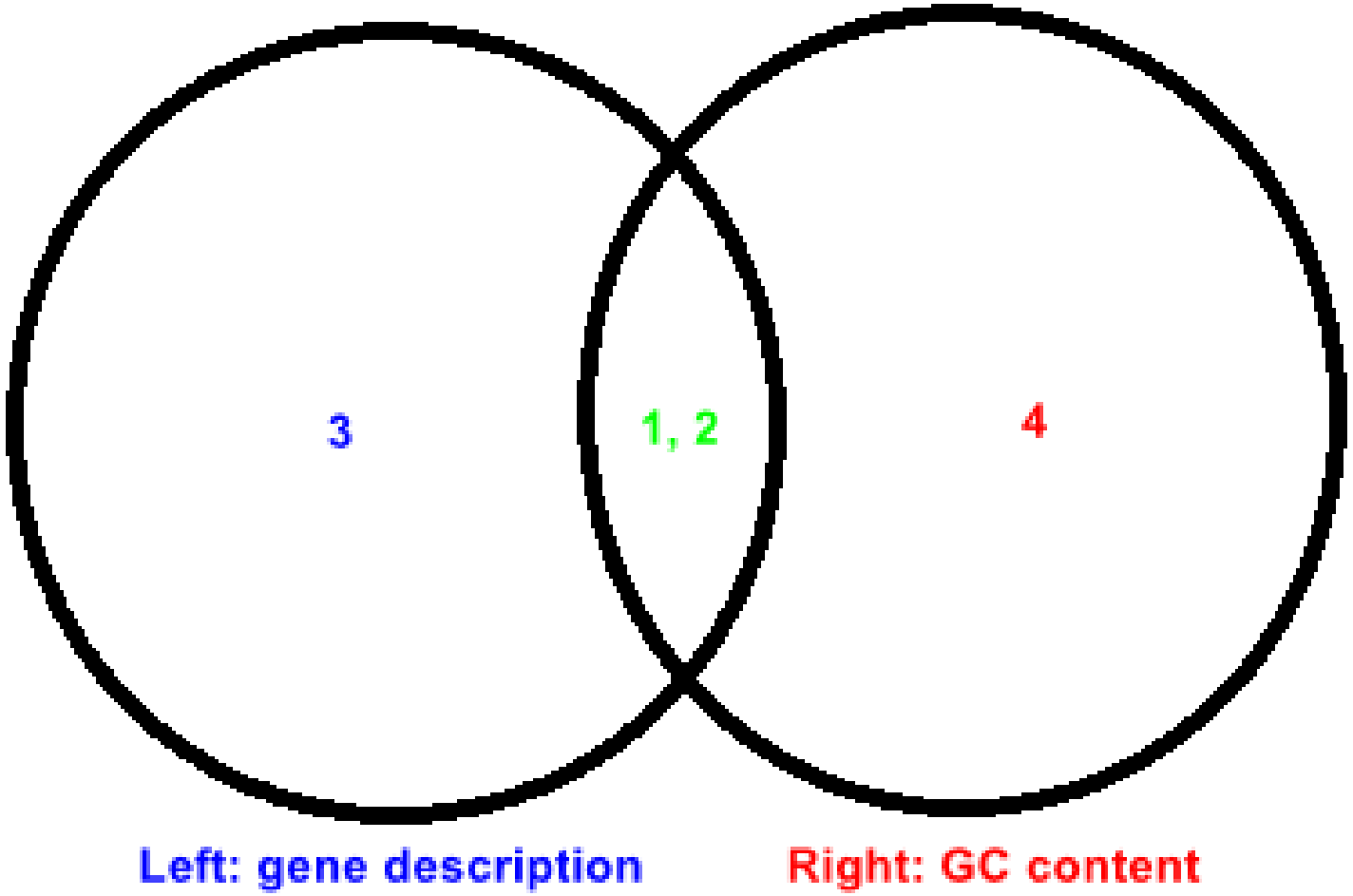
http://perso.ens-lyon.fr/lise.vaudor/dplyr/

Data Transformation Cheatsheet: https://github.com/rstudio/cheatsheets/raw/master/data-transformation.pdf

Graphical Review of 4 join()

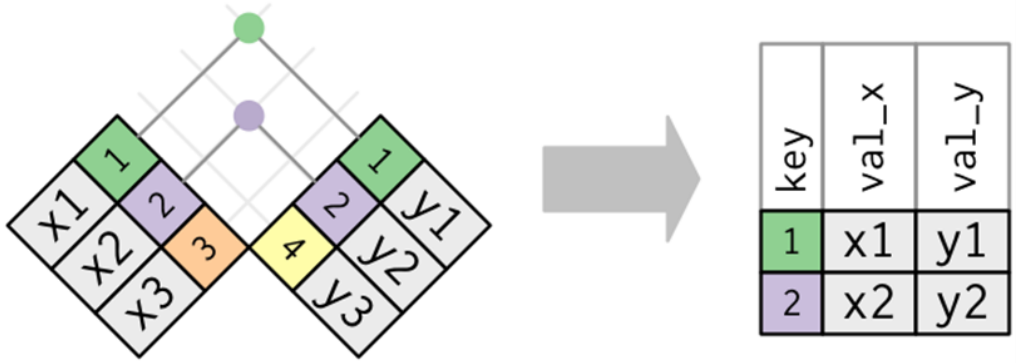


Dummy DataFrames for join() Revisit

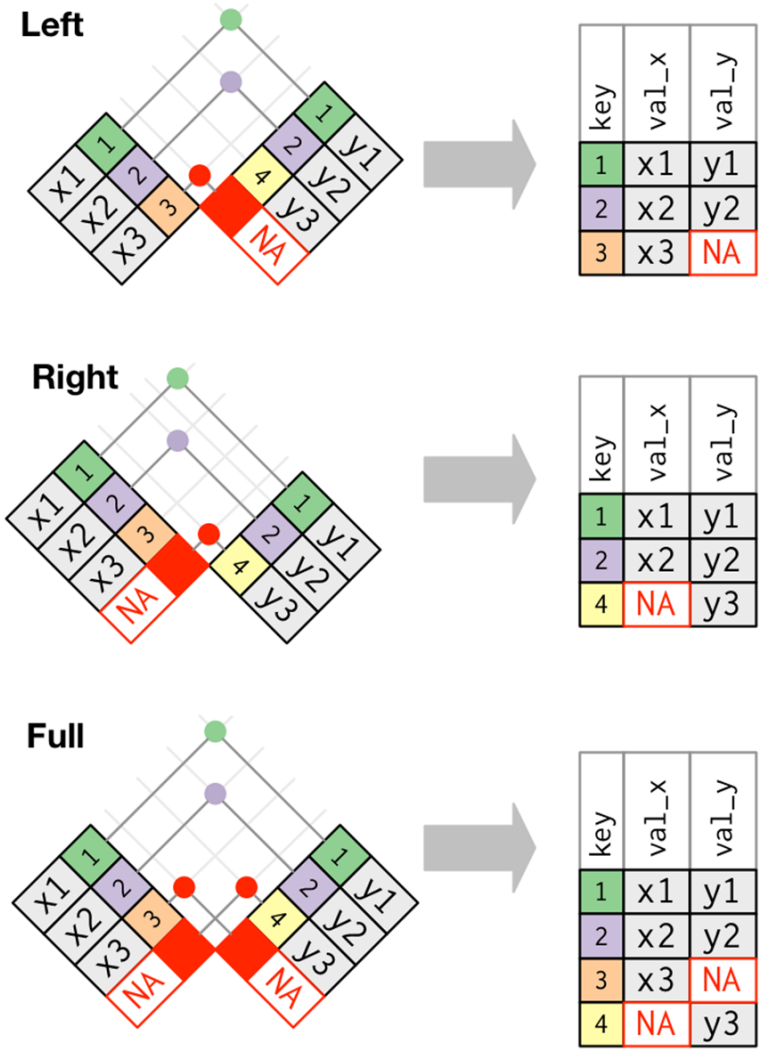


Graphical Review of 4 Mutating join()

Inner join



Outer join

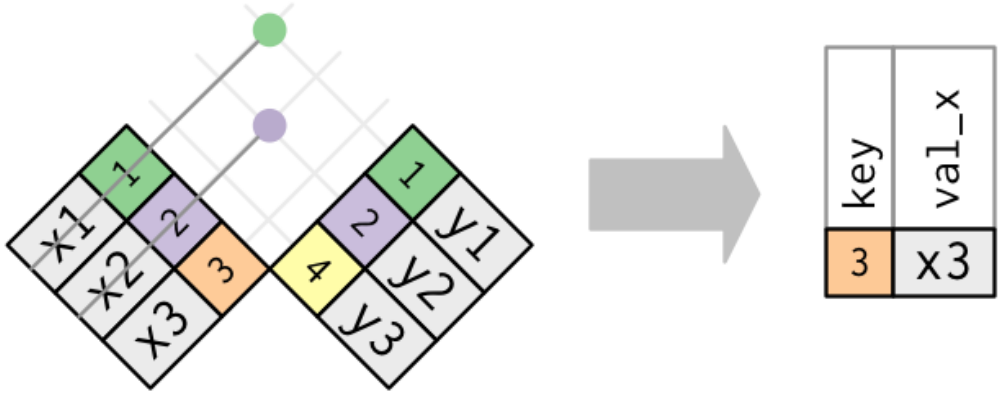


https://r4ds.had.co.nz/relational-data.html#relational-data

2 More Filtering join()

semi_join(x, y) keeps all observations in x that have a match in y

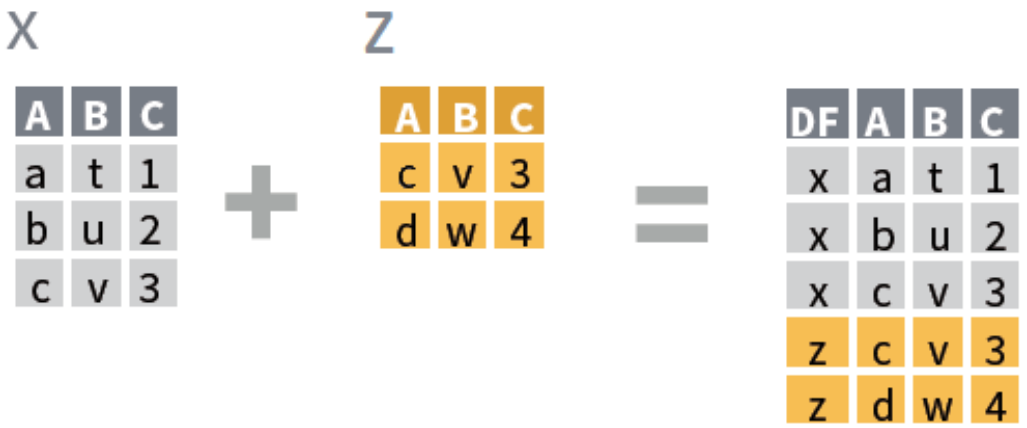
anti_join(x, y) drops all observations in x that have a match in y.



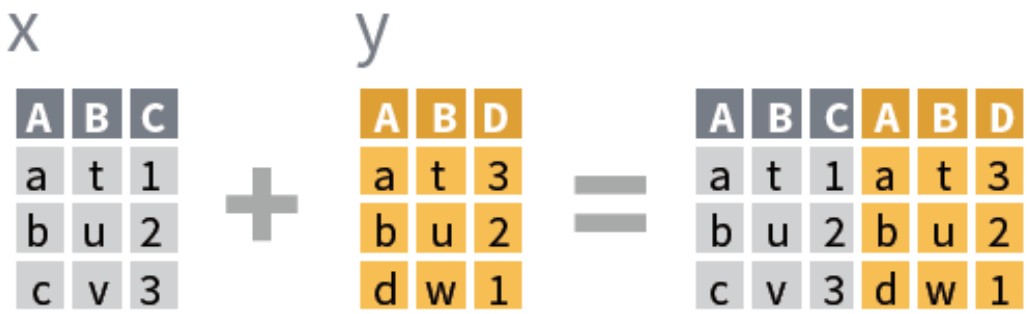
https://r4ds.had.co.nz/relational-data.html#relational-data

DataFrames Binding/Assembly

bind_rows() faster than rbind()



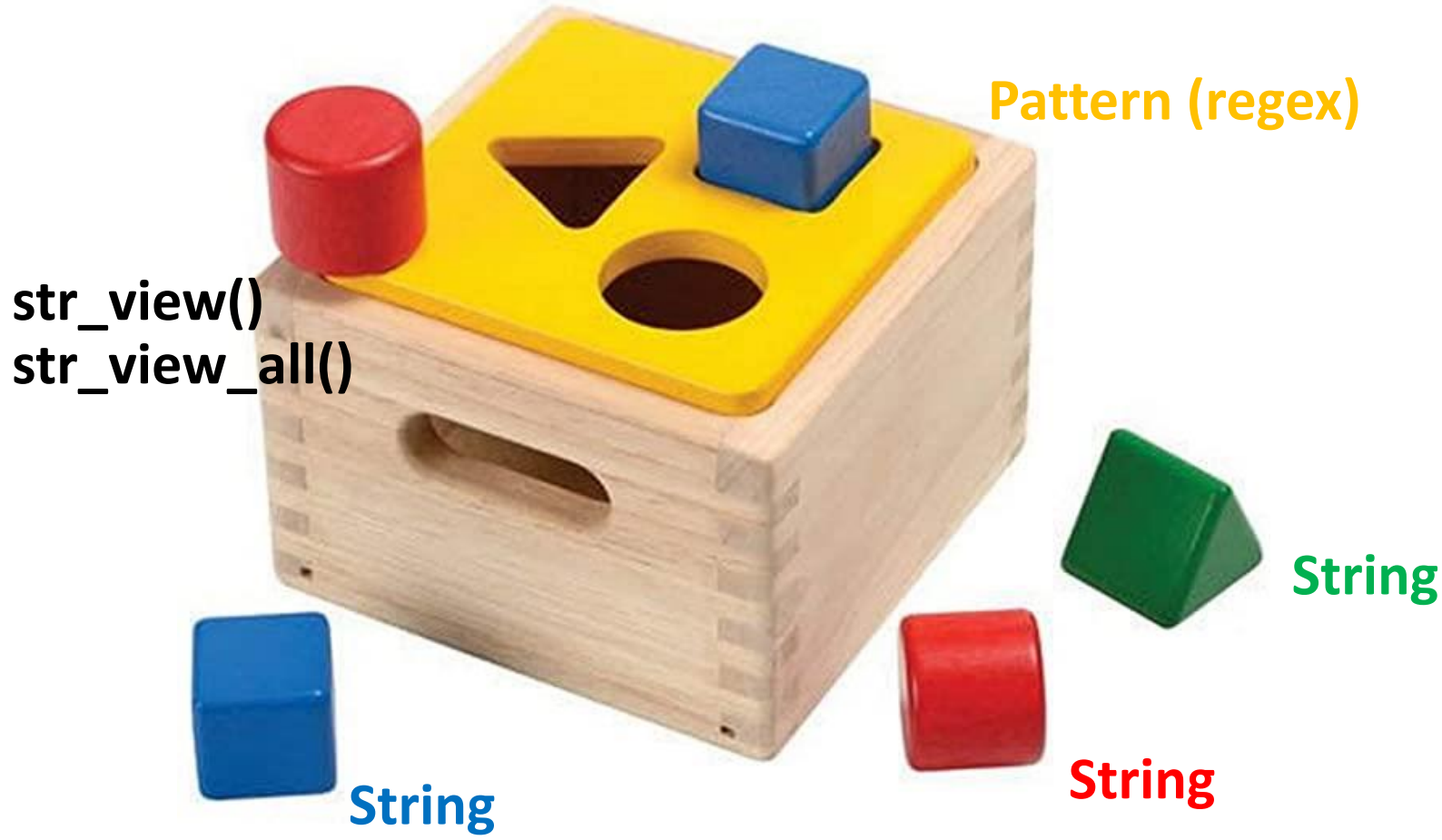
bind_cols() faster than cbind()



Data Transformation on the Run for ggplot2

- Data filtering by df subseting
  - Syntax: ggplot(df[JUDGEMENT(df$col_name),])+
- Conditional styling by ifelse()
  - Syntax: …styling_parameter=ifelse(JUDGEMENT(df$col_name), ValueIfTrue, ValueIfFalse)…
- If used in combination, need to tell ifelse() that df has changed
  - Method 1
    - NewDf <- df[JUDGEMENT(df$col_name),]
    - ggplot(NewDf)+
      - …styling_parameter=ifelse(JUDGEMENT(NewDf$col_name), ValueIfTrue, ValueIfFalse)…
  - Method 2
    - ggplot(df[JUDGEMENT(df$col_name),])+
    - …styling_parameter=ifelse(JUDGEMENT(df[JUDGEMENT(df$col_name),]$col_name), ValueIfTrue, ValueIfFalse)…

String Processing: Stringr ≈ Shape Sorter

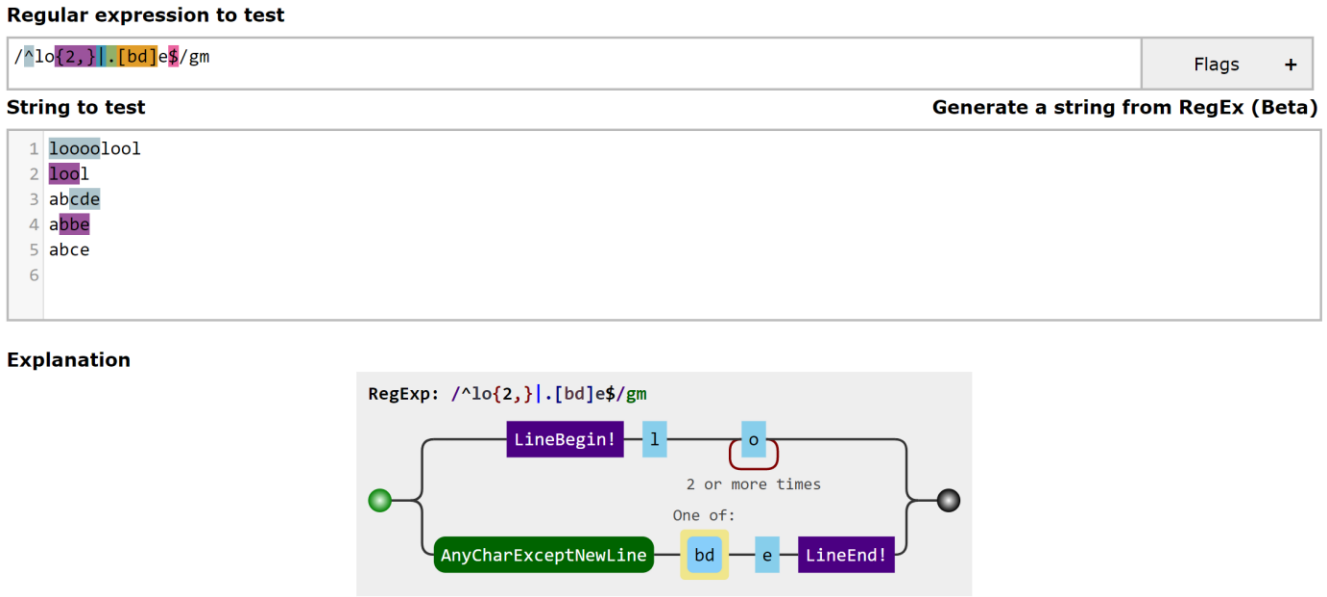


Stringr Pattern Design

Meaning	Syntax	Example pattern	Example result
Or	$C_1\|C_2$	str_view_all('abcdefg','bc|f')	abcdefg
One of the collection	$[C_1C_2\ldots]$	str_view_all('abcdefg','[bdf]')	abcdefg
Anything but	$[\hat{}C_1C_2\ldots]$	str_view_all('abcdefg','[^bdf]')	abcdefg
Range	$[C_1\text{-}C_2]$	str_view_all('abcdefg','[b-f]')	abcdefg
Start of	^C	str_view_all(c('abc','def'),'^a')	abc def
End of	C$	str_view_all(c('abc','def'),'f$')	abc def
0 or 1	C?	str_view_all('looooloolol','o?')	_looooloolol_
0 or more	C*	str_view_all('looooloolol',’o*')	_looooloolol_
1 or more	C+	str_view_all('looooloolol’,’o+')	looooloolol
N or more	C{N,}	str_view_all('looooloolol','o{2,}')	looooloolol

Stringr Pattern Tester

- Patter explanation with diagram: https://extendsclass.com/regex-tester.html#python



- Pattern explanation with texts: https://regex101.com/

Realize Ideas to Graphs with dplyr & ggplot2

- Interpret the questions → cheat sheets / Stack Overflow / Google → ggplot2 explorer → finalize details
- Filtering a dataset on-the-run in ggplot2 by subset()