Good coding practices

in  and  + 

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Outline

1. **General principles**

2. **Major topics regardless of language**
   - General form
   - Comments
   - Imports
   - White space
   - Naming conventions
   - Writing functions

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Regardless of the language:

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  3. with the generally accepted standard for that language.*

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- Prefixing script names with numbers can be useful for running in sequence.

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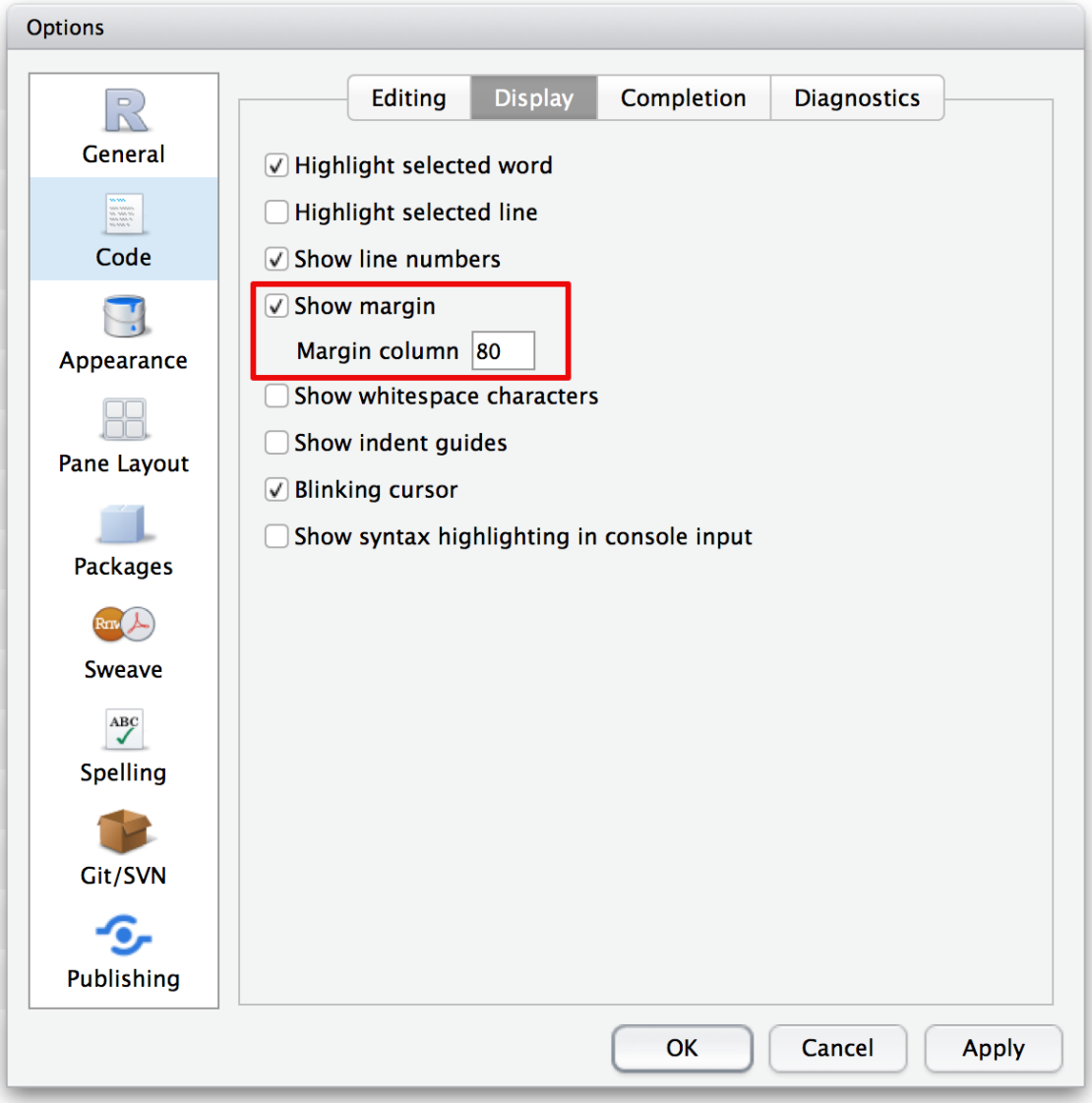
5. Object declarations (and read-in data sets).
6. Executed statements (analysis).

General form 2: File organisation

```r
# Author: Caterina Constantinescu
# 12 November 2015
# EdinbR presentation due on 18 November 2015

# Imports ----------------------------------------------------------------------

library(datasets)

# Functions --------------------------------------------------------------------

my_function <- function(dataset){
  return(names(dataset))
}

# Constants --------------------------------------------------------------------

IMPORTANT_COLUMNS <- c("hp", "cyl")

# Datasets / Object declarations -----------------------------------------------

data(mtcars)
my_data <- mtcars

# Analysis ---------------------------------------------------------------------

my_function(my_data)
```

General form 3: Line length



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- Temporarily removing code: ONLY for active development phase.

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1 library(utils) # getAnywhere() lives here
2
3 library(descr)
4 library(psych)
5 library(Hmisc)
6
7 library(lme4)
```

White space 1a. Blank spaces

```
1  # Comment
2
3  # Always after a comma, but not between function and bracket,
4  # or bracket and first arg:
5  c(1, 2, 3)
6
7  # No space between '=' sign and args in fun call:
8  some_function(arg1=FALSE, arg2=TRUE)
9
10 # Between keyword and parenthesis:
11 if (some_number == 2)
12
13 base::get
14
15 some_variable[1, 5] # But:
16 some_other_variable[1:5]
17
18 my_number <- 1
19
20 my_average <- mean(my_vector1 / my_vector2 + 3)
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- Wrap lines after e.g., comma.

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   - Never use 'l'(el), 'O' (oh), or 'I' ('eye') as variable names - in some fonts they are not easily distinguishable from 0 / 1.

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   - Object names should be meaningful, and when possible, concise.

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  - Java: get and set: someClass.getURLProtocol() or setPhoneNumber().
- CONSTANTS: TOTAL, MAX_OVERFLOW.
- Variables (nouns): some_variable (disliked by Google and Bioconductor), who suggest someVariable or some.variable*.

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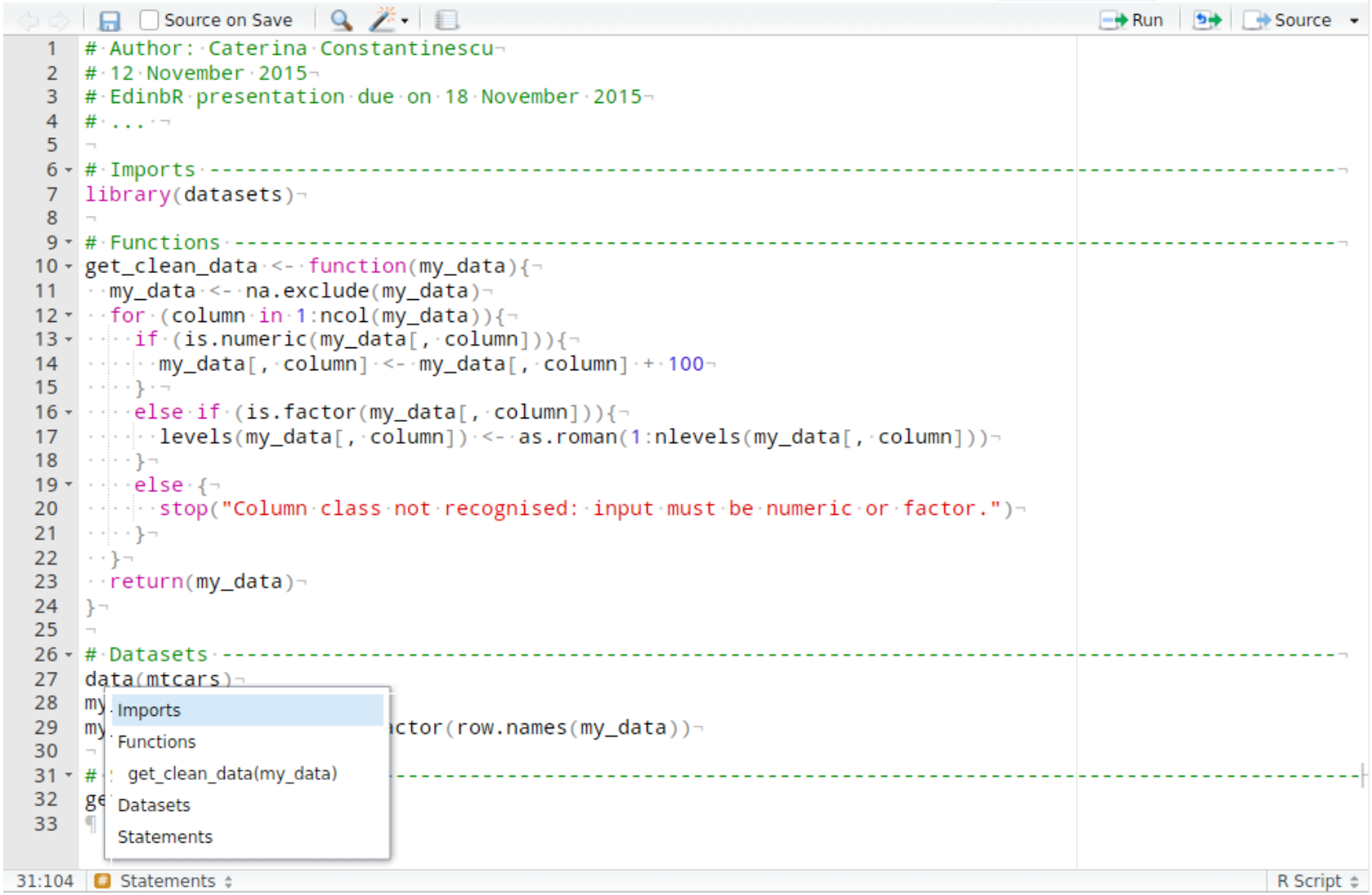
2. return() before final brace
3. Length: 20-30 lines

Example

```r
# Author: Caterina Constantinescu
# EdinbR presentation due on 18 November 2015

# Imports ----------------------------------------------------------------------
library(datasets)

# Functions --------------------------------------------------------------------
get_clean_data <- function(my_data){
  my_data <- na.exclude(my_data)
  for (column in 1:ncol(my_data)){
    if (is.numeric(my_data[, column])){
      my_data[, column] <- my_data[, column] + 100
    }
    else if (is.factor(my_data[, column])){
      levels(my_data[, column]) <- as.roman(1:nlevels(my_data[, column]))
    }
    else {
      stop("Column class not recognised: input must be numeric or factor.")
    }
  }
  return(my_data)
}

# Datasets ---------------------------------------------------------------------
data(mtcars)
my_data <- mtcars
my_data$car_type <- as.factor(row.names(my_data))

# Statements -------------------------------------------------------------------
get_clean_data(my_data)
```

Example


Source on Save
Run
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Functions
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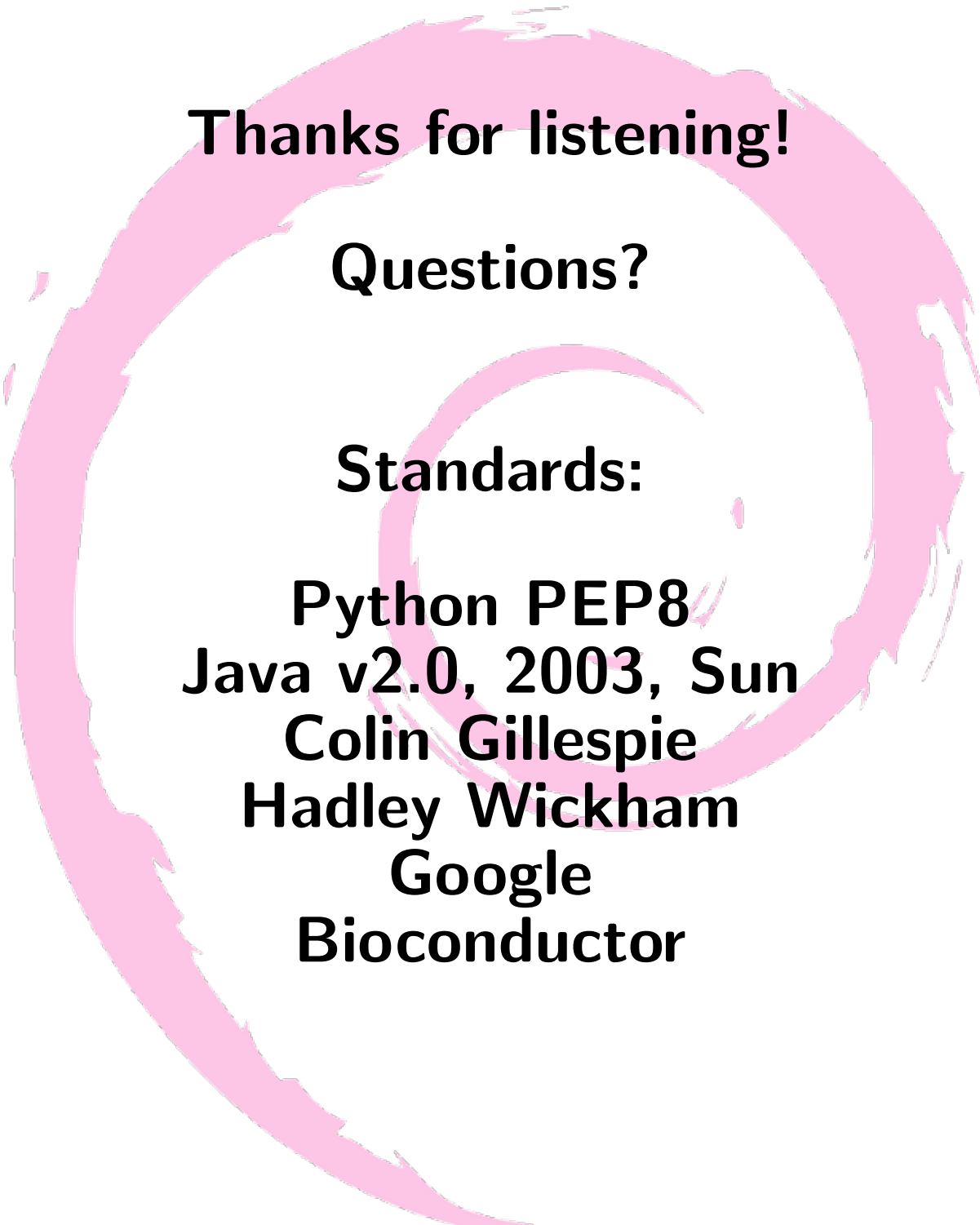
Datasets
Statements
31:104
Statements
R Script



Thanks for listening!

Questions?

Standards:

Python PEP8
Java v2.0, 2003, Sun
Colin Gillespie
Hadley Wickham
Google
Bioconductor