

# Practice for Exam, Answers

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## Packages needed

```
library(tidyverse)
library(readxl)
library(writexl)
library(palmerpenguins)
library(gapminder)
```

## Introduction

In this pdf we will show you examples of exam questions.

## Assignment 0

Pull the repository [https://github.com/misjamikkers/Rprogramming21\\_student](https://github.com/misjamikkers/Rprogramming21_student) to find the data needed for the exam, the exam and the answers.

## Question 1

In the Sourcedata folder (and on Canvas) you will find the excel file with the name dataQ1.xlsx

Your task is to

1. read this data into a R notebook
2. keep the rows of Group1
3. make a scatterplot with Variable\_1 on the x-axis and Variable\_2 on the y\_axis

Which figure do you recognize in the graph?

- a. Dinosaur
- b. Heart
- c. the letter “L”
- d. the number “1”

## Question 2

Your task is to

- use the penguins data from the palmerpenguins package

- keep the rows with year 2009
- create a boxplot with on the x-axis Species per sex and on the y-axis body\_mass\_g.

Which species per sex has the highest median body mass?

- females of the Adelie species
- males of the Adelie species
- females of the Chinstrap species
- males of the Chinstrap species
- females of the Gentoo species
- males of the Gentoo species
- the NA group

## Question 3

Your task is

- use the data of the gapminder package
- keep the rows of year 2007
- calculate the medium life expectancy (lifeExp) per continent

What is the median life expectancy of Oceania? Round your answer to the nearest integer.

## Question 4a

Your task is to

- Copy the code below (NOTE: include the set.seed!!!) into a notebook
- Use left\_join to merge m1 and m2 (in that order!) in to a dataframe with the name “m3”

```
set.seed(123)

m1 <- tibble(id = sample(x= 1:100, size = 70, replace = TRUE)) %>%
  mutate(x = rnorm(n = length(id), mean = 0, sd = 1))

m2 <- tibble(id = sample(x= 1:100, size = 80, replace = TRUE)) %>%
  mutate(y = rnorm(n = length(id), mean = 10, sd = 5 ))
```

How many observations (rows) does m3 have?

## Question 4b

Your task is to use m3 from question 4a to

- create a long dataframe m4 with a new colum “Var” that indicates whether the row concerned shows a value of “x” or “y” and the values in column “Val”.

So your dataframe should look like:

id	Var	Val
31	x	-0.1639310
31	y	14.3968207
...	...	....
....	...	....

- Then delete all NA's.

How many observations (rows) does m4 have?

## Question 5

What does this code do?

```
knitr::opts_chunk$set(echo = FALSE)
```

- The code makes sure that this code chunk will not be executed
- The code makes sure that all the code chunks after this command in the Rmd will not be executed
- The code makes sure that this code chunk will not be shown in the output document (e.g. the pdf)
- The code makes sure that all the code chunks after this chunk will not be shown in the output document (e.g. the pdf)

## Question 6

Your task is to

- open a notebook
- simulate some data:
  - USE `set.seed(123)` [This is really important!]
  - generate an x-variable in a tibble with a normal distribution with mean 0, and standard deviation 15. We need 1000 observations
  - make a new column y with the formula  $\sin(x^2) + 33 * x^4$
  - calculate the mean of the variable y.

## Question 7

Create a function that for the numbers x to  $x + 2 * \pi$  calls the function `sin(x)` and adds the results.

The answer when you execute your function with the argument 3 should be 0.2044411