

Week 4 Tutorial Worksheet

AY22/23 Semester 2

Question 1 R functions

1. Create a function named `pass_check` that takes a numeric input argument and returns `pass` if the input is greater than 5, and `fail` if it is equal or smaller than 5.
2. Create a function named `factor_convert` that automatically coerces all character variables into factors. The function should work with any data frame regardless of its dimension, the number, the name, or the position of character variable(s).

Question 2 Working with Dates

In this question, we use functions from the `lubridate` package to work with dates. Read its [documentation here](#) before performing the following tasks.

```
# install.packages("lubridate")
library(lubridate)
```

1. Download the file `Shanghai.csv` from Canvas. The data contain historical land-surface temperature by Berkeley Earth (<https://berkeleyearth.org/data/>), which takes temperature observations from a large collection of weather monitoring stations and produces an estimate of the underlying temperature for a given location.

Read it into R and name the object as `df`. Then display the first *three* rows of the data frame.

2. The data frame has information on date split across two columns: `Year` and `Month`. They are both stored as integers. Combine them into a string that follows a `Year-Month` format and name it as `Date`. *Hint: After this manipulation, the first observation in the data frame would read as the following:*

```
head(df, n = 1)
```

```
##   Year Month Temp   Date
## 1 1841     1 1.809 1841-1
```

- 3) Use the `lubridate` functions to convert the character string into a `Date` type variable.
Hint: `lubridate` does not have functions to convert just the Year-Month strings. We will need to first assign an artificial day of the month (say, the first day of the month) to the Year-Month string before using the `ymd()` function.
- 4) Recreate, as much as you can, the graph below using base R syntax.

