HW_Date_Map

Chun Hui, Chu (Bernice)

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```
# Homework: Date_Map(lubridate and purrr)

library(lubridate)
```

```
##
## 載入套件：'lubridate'
```

```
## 下列物件被遮斷自 'package:base':
##
##     date, intersect, setdiff, union
```

```
library(purrr)

# Question 1: Generate a sequence of dates from January 1, 2015 to December 31, 2025, spaced by every two months. Extract the year, quarter, and ISO week number for each date.
date_seq <- seq(ymd("2015-01-01"), ymd("2025-12-31"), by = "2 months")

date_info <- data.frame(
  Date = date_seq,
  Year = year(date_seq),
  Quarter = quarter(date_seq),
  ISO_Week = isoweek(date_seq)
)
date_info
```

```
##          Date Year Quarter ISO_Week
## 1  2015-01-01 2015       1        1
## 2  2015-03-01 2015       1        9
## 3  2015-05-01 2015       2       18
## 4  2015-07-01 2015       3       27
## 5  2015-09-01 2015       3       36
## 6  2015-11-01 2015       4       44
## 7  2016-01-01 2016       1       53
## 8  2016-03-01 2016       1        9
## 9  2016-05-01 2016       2       17
## 10 2016-07-01 2016       3       26
## 11 2016-09-01 2016       3       35
## 12 2016-11-01 2016       4       44
## 13 2017-01-01 2017       1       52
## 14 2017-03-01 2017       1        9
## 15 2017-05-01 2017       2       18
## 16 2017-07-01 2017       3       26
## 17 2017-09-01 2017       3       35
## 18 2017-11-01 2017       4       44
## 19 2018-01-01 2018       1        1
## 20 2018-03-01 2018       1        9
## 21 2018-05-01 2018       2       18
## 22 2018-07-01 2018       3       26
## 23 2018-09-01 2018       3       35
## 24 2018-11-01 2018       4       44
## 25 2019-01-01 2019       1        1
## 26 2019-03-01 2019       1        9
## 27 2019-05-01 2019       2       18
## 28 2019-07-01 2019       3       27
## 29 2019-09-01 2019       3       35
## 30 2019-11-01 2019       4       44
## 31 2020-01-01 2020       1        1
## 32 2020-03-01 2020       1        9
## 33 2020-05-01 2020       2       18
## 34 2020-07-01 2020       3       27
## 35 2020-09-01 2020       3       36
## 36 2020-11-01 2020       4       44
## 37 2021-01-01 2021       1       53
## 38 2021-03-01 2021       1        9
## 39 2021-05-01 2021       2       17
## 40 2021-07-01 2021       3       26
## 41 2021-09-01 2021       3       35
## 42 2021-11-01 2021       4       44
## 43 2022-01-01 2022       1       52
## 44 2022-03-01 2022       1        9
## 45 2022-05-01 2022       2       17
## 46 2022-07-01 2022       3       26
## 47 2022-09-01 2022       3       35
## 48 2022-11-01 2022       4       44
## 49 2023-01-01 2023       1       52
## 50 2023-03-01 2023       1        9
## 51 2023-05-01 2023       2       18
## 52 2023-07-01 2023       3       26
## 53 2023-09-01 2023       3       35
## 54 2023-11-01 2023       4       44
## 55 2024-01-01 2024       1        1
## 56 2024-03-01 2024       1        9
## 57 2024-05-01 2024       2       18
## 58 2024-07-01 2024       3       27
## 59 2024-09-01 2024       3       35
## 60 2024-11-01 2024       4       44
## 61 2025-01-01 2025       1        1
## 62 2025-03-01 2025       1        9
## 63 2025-05-01 2025       2       18
## 64 2025-07-01 2025       3       27
## 65 2025-09-01 2025       3       36
## 66 2025-11-01 2025       4       44
```

```
# Question 2: Given the following dates, compute the difference in months and weeks between each consecutive pair.
sample_dates <- ymd(c("2018-03-15", "2020-07-20", "2023-01-10", "2025-09-05"))
map2(sample_dates[-length(sample_dates)], sample_dates[-1], ~ {
  list(
    Month_Diff = interval(.x, .y) %/% months(1),
    Week_Diff = interval(.x, .y) %/% weeks(1)
  )
})
```

```
## [[1]]
## [[1]]$Month_Diff
## [1] 28
## 
## [[1]]$Week_Diff
## [1] 122
## 
## 
## [[2]]
## [[2]]$Month_Diff
## [1] 29
## 
## [[2]]$Week_Diff
## [1] 129
## 
## 
## [[3]]
## [[3]]$Month_Diff
## [1] 31
## 
## [[3]]$Week_Diff
## [1] 138
```

```
# Question 3: Using map() and map_dbl(), compute the mean, median, and standard deviation for each numeric vector in the following list:
num_lists <- list(c(4, 16, 25, 36, 49), c(2.3, 5.7, 8.1, 11.4), c(10, 20, 30, 40, 50))

list(
  Mean = paste(map_dbl(num_lists, mean), collapse = ", "),
  Median = paste(map_dbl(num_lists, median), collapse = ", "),
  SD = paste(map_dbl(num_lists, sd), collapse = ", ")
)
```

```
## $Mean
## [1] "26, 6.875, 30"
##
## $Median
## [1] "25, 6.9, 30"
##
## $SD
## [1] "17.4212513901843, 3.84219989068763, 15.8113883008419"
```

```
# Question 4: Given a list of mixed date formats, use map() and possibly() from purrr to safely convert them to Date format and extract the month name.
Sys.setlocale("LC_TIME", "C")
```

```
## [1] "C"
```

```
date_strings <- list("2023-06-10", "2022/12/25", "15-Aug-2021", "InvalidDate")
safe_parse_date <- possibly(~ as.Date(.x, tryFormats = c("%Y-%m-%d", "%Y/%m/%d", "%d-%b-%Y")), NA)
converted_dates <- map(date_strings, safe_parse_date)
map_chr(converted_dates, ~ if (!is.na(.x)) as.character(month(.x, label = TRUE, locale = "en_US")) else "Invalid")
```

```
## [1] "Jun"     "Dec"     "Aug"     "Invalid"
```