Homework: lubridate and purrr

Instructions

Complete the following exercises using the `lubridate` and `purrr` packages in R. Ensure that your solutions are optimized and use functional programming principles where applicable.

1. Load the necessary libraries.
2. Answer each question in separate R code chunks.
3. Provide detailed explanations for your approach.
4. Submit the rendered HTML file.

Exercise 1: Advanced Date Manipulation with lubridate

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.

Exercise 2: Complex Date Arithmetic

Question 2:

Given the following dates, compute the difference in **months** and **weeks** between each consecutive pair.

```
sample_dates <- c("2018-03-15", "2020-07-20", "2023-01-10", "2025-09-05")
```

Exercise 3: Higher-Order Functions with purrr

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))
```

Exercise 4: Combining lubridate and purrr

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**.

```
date_strings <- list("2023-06-10", "2022/12/25", "15-Aug-2021", "InvalidDate")
```

Submission

- Save your completed R Markdown file and render it as a pdf file.
- Provide well-commented code and explanations.
- Submit the rendered file to **Canvas** and your **GitHub repository**.
- Make at least **4 commits** to your GitHub repository for this assignment.
- Provide a link to your GitHub repository in the gradebook on Canvas (text submission).

Good luck!