TP – Spotify Input and Output data

1. Problem Context

In this exercise, students will analyze a dataset of Spotify reproductions. The dataset contains user information, account codes, number of followers, and multiple playback records. The goal is to practice modular programming in C++ by processing the dataset, generating structured reports, and applying formatting functions for readable console and file output.

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2. Input Data Description

Students must use the file:

📂 **`spotify_reproducciones.txt`** (place inside `cmake-build-debug/Data/`)

- **Structure:** Each line corresponds to a single user.
- **Fields (separated by spaces or tabs):**
    - Creation date (DD/MM/YYYY)
    - User code (e.g., A001)
    - Username (string with dot and index)
    - Number of followers (integer)
    - Playback records: groups of three values:
        - Date (DD/MM/YYYY)
        - Time (HH:MM:SS)
        - Playback count (integer)
- **Notes:**
    - Each line may contain between 1 and 3 playback records.

- Extra spaces may appear between values; parsing must handle them.

3. Steps to Follow in `main()`

The program should:

1. Set a range of data to generate the report.
2. Call a function that calculates and print the report
3. Load the input file from Data/spotify_reproducciones.txt.
    a. Parse each line and extract user information and playback data.
    b. Store the parsed values in appropriate variables.
    c. Process the data to compute useful statistics (e.g., total reproductions, average reproductions per user).
    d. Generate a report file with the results, following the format below.

4. Report Format (Output Specification)

The output must follow the model given in:

📂 **`ejemplo_reporte.txt`**

Required Sections:

- **Header:**
    - Platform title
    - Date range of analysis
- **User Information:**
    - Code
    - Username
    - Number of followers
    - Account creation date

- **Playback Records:**
    - Publication date
    - Duration
    - Reproduction count

Example excerpt:

```
*****************************************************************************************************
                                    SPOTIFY PLATFORM
                        REPORT FOR DATES BETWEEN: 01/01/2000 AND 31/12/2010
=============================================================================
CODE                USERNAME            #FOLLOWERS          CREATED
A0004               SOFIA.ROJAS3                499860          15/05/2025
-----------------------------------------------------------------------------------------------------------------
LAST PLAYBACKS:
      DATE              TIME DURATION       #REPRODUCTIONS
      16/07/2025        00:25:55            1396
      30/07/2025        01:15:20            5680
…
```

5. Deliverables

Students must submit:

- **Source code files** (`.cpp`, `.hpp`) with modular functions.
- **Generated report file** (`.txt`) following the model.

6. Evaluation Criteria

- Correctness of parsing and statistics (30%)
- Code quality and modularization (20%)
- Proper formatting of report and console output (20%)
- Documentation clarity (30%)