**Metadata analysis**

**Task:** You have to analyse data extracted from a game. The final goal is to discriminate players that are bad, normal, or good performers. For this reason, you have to process and visualise the data, as well as cluster the players.

**Context:** In a particular game, players are presented with a sequence of individual letters on the screen, one at a time. Their task is to respond to each letter by pressing one of two buttons: a **green button for "match"** and a **red button for "no match".** The challenge varies by level, with specific rules for identifying a match. Each levels has 25 charcaters.

1. **During the first level, which consists of the first 25 characters, the focus is on the letter 'B'.** Players must press the green button when the letter 'B' appears on the screen, indicating a "match." For any other letter displayed, players must press the red button, signalling a "no match."
2. **During the 2nd level, players must press the green button if it matches the character shown immediately before it.**

Example: the level starts with the display of 'C'. Players do not need to respond to this initial character. When the second character, 'D', is presented, players must press the green button if it matches the previously shown character (in this case, 'C'). Since 'D' does not match 'C', they would press the red button. For each subsequent character, such as the third character 'D', players must press the green button if it matches the character shown immediately before it (in this case, 'D' matches 'D'). If there is no match, they should press the red button.

1. **During level 3, players must press the green button if it matches the character shown 2 positions earlier.**

Example: the level starts with the display of the first character, 'A', and the second character, 'B'. Players do not need to respond to these initial two characters. When the third character, 'C', appears on the screen, players must press the green button if it matches the very first character, 'A'. In this case, since 'C' does not match 'A', they should press the red button. For each subsequent character, such as the fourth character 'B', players must press the green button if it matches the second character, 'B', like in this case, that was shown 2 positions before it. If there is no match, they should press the red button.

**Data:**

In the folder “n\_back\_data”, you can find a series of parquet files for the different game sessions. The data is structured in this way:

* “i” 🡪 global counter: it indicates the ordering position of the events
* “timestamps” 🡪 timings at which the letters were presented or the player pressed the buttons
* “event\_id” 🡪 see the event schema for clarification.

"event schema": {  
 "1": "user pressed green button and the character was a match",  
 "2": "user pressed red button and the character was not a match",  
 "3": "user pressed green button and the character was not a match",  
 "4": "user pressed red button and the character was a match",  
 "5": "user selected no answer",  
 "6": "character presentation"  
 }

Example:

**A screenshot of a computer

Description automatically generated**