

- What are the respective advantages/disadvantages of using either:
- **separate key-value pairs to output the results**
  - Pros:
    - provides a simplistic data format, this makes write and read operations fast (a)
    - flexible schemas (a)
    - great for simple data storage (a)
    - often designed to be horizontally scalable (c)
    - you are able to .set each instance rather than multiple return statements for more efficient code
    - you are able to get a collection of all the data and manipulate it that way for ease
    - easier way to sort, shuffle, and parse data
  - Cons:
    - you need to parse to store multiple values (a)
    - not optimized for lookup (a)
    - The value can be updated only as a whole (b)
    - Can't filter on value fields (b)
    - lacking indexes and scanning capabilities other than basic CRUD operations ©

OR

- **using comma separated combined values**
  - Pros:
    - simple schema (f)
    - parsing through the data is extremely easy (f)
    - stores data stores it as-is (f)
    - easy to programmatically manipulate since they are all simple text files (f)
  - Cons:
    - difficult to nest data in comparison to JSON or XM
      - this makes objects and arrays more trouble than they're worth. (d)
    - common incorrect usage of carriage returns resulting in frustrating errors (d)
    - a homemade parser is required in order to convert the CSV data to a native data structure (e)
    - does not really support data hierarchies (e)

Sources:

- a. <https://medium.freecodecamp.org/the-pros-and-cons-of-different-data-formats-key-values-vs-tuples-f526ad3fa964>
- b. <https://indexoutofrange.com/What-is-the-problem-with-key-value-databases-and-how-wide-column-databases-solve-it/>
- c. <http://www.dotnetfunda.com/interviews/show/6385/what-are-the-pros-and-cons-of-using-key-value-store>
- d. <https://www.astronomer.io/blog/data-formats-101/>
- e. <https://applerepairstation.co.uk/csv-vs-xml-vs-json-which-is-the-best-response-data-format/>
- f. <https://github.com/prakhargvp/csvWithCplusplus/wiki/Advantages-of-CSV-file>