

ML Competency

Infrastructure Task

Configuration Management Implementation.

Config Format - Pros and Cons of YAML, TOML and JSON formats

YAML:

YAML stands for [Ain't Markup Language](#), and new data format for serialization language like [toml](#) or [ini](#) file format.

These files contain text data arranged in a *hierarchical structure*.

It supports Scalar types (Integer, strings, float, Boolean, Time) and collection types (array, list).

Important points:

- It is case sensitive
- file extension is .yaml
- Tabs are not allowed
- Some editors allow spaces

Advantages

- Lightweight
- It is very easy and simple to represent the complex mapping
- Human friendly readable and writable
- Simple to modify with any text editor
- Suitable for configuration settings
- Support for major programming languages

Disadvantages

- It is a new format introduced recently, and a learning curve exists.
- Not much popular other than XML and JSON
- It is very complex to represent configuration in the hierarchy of data

yaml files are created with extension .yaml or .yml. You can use any IDE or text editor to open this file.

All the popular IDE support the .yaml file extension and provide plugins to validate the yaml file content.

TOML:

TOML is abbreviated as Tom's Obvious, Data format serialization language and it is a new file format. It is used for specifying data in configurations similar to YAML.

Usually, each software or application has some configuration data, Before the TOML format existed, we used to have a property file with key and value pairs like key=value.

The property files are not suitable when there is a complex structure of configuration.

TOML is suitable for representing data in **hash-table** format and is easy to read and write data using various programming languages.

Advantages of TOML

- It is human-readable for complex configuration and settings
- Support all popular languages - GO, Java, Python, JavaScript, etc.
- Supports Comments
- Maintainable
- Gain more popularity than other file formats
- Read and write capabilities
- the content of these files looks like windows init format

Disadvantages of TOML

- Numbers like NAN and infinity are not supported
- No support for binary data
- Only supports a few data types, not extendable

TOML use cases

- TOML can be used in many types of projects for different purposes
- Configuration and settings of the software applications

TOML file extension

TOML document grouped in a file with extension .toml, you can use any IDE or text editor to open this file.

All the popular IDE supports the toml file extension and provides plugins to validate the toml file content

toml data rules

- data in toml files are case sensitive
- file supports UTF-8 encoding format only
- Supports whitespaces, tabs, and newlines ascii code

JSON:

JSON is an abbreviated JavaScript object notation. Data in Json is represented as a JavaScript object with keys and values Initialize values as language and it is a new file format. It is used as a lightweight data format in size to exchange between client and server over HTTP APIs

JSON file is a file extension, a data format for storing and transferring data between different systems over HTTP networks. These files contain configuration values very popularly used by the Windows Operating System.

It contains a String, integers and arrays, and a list. It is also used to store some configuration data with Json files with key and value pairs like key: value. These are enclosed in braces.

Advantages of JSON file extension

- Easy to read by humans with simple syntax: The format contains keys and values in a text file, easily read by humans.
- Lightweight data transfer format between client and server: Used as a JSON format for REST API communication between different components and Systems.
- Processing JSON is faster compared with XML, YAML
- Support all popular languages - GO, Java, Python, JavaScript, etc.
- Maintainable
- Easy to Read and write with any programming language
- the content of these files with easy key and value pairs
- It is lightweight compared with other formats such as XML

JSON Disadvantages

- JSON data is not secure when interchange data between different systems.
- No support for binary data
- No support for Date type but the date in the string can be saved
- There is no support for comments in JSON content

JSON use cases

- JSON can be used in any type of project for configuration settings
- Windows uses configuration settings for drivers, keyboards, mouses
- Configuration and settings of the software applications

JSON file extension

Initialize configuration in a file with the extension .json, you can use any IDE or text editor to open this file.

JSON File extension rules:

- JSON files extension is .JSON by default
- file supports UTF-8 encoding format only
- Supports whitespaces, tabs, and newlines ascii code

Comparison -> Green: best, Yellow: normal, Red: worst

Features	YAML	TOML	JSON
Readability	Human-Readable	Not human-readable	Less readable as the design goal of JSON is to be as simple as possible and be universally usable
Serialization Performance	Normal	Normal	Best, quickly and easily parse JSON serialized data
Community Support	Less than JSON	Less than json and yaml	Huge community support

Comments Support	Yes, comments can be added anywhere in the file using “#” character	Provides support for comments	No support for comments
Complex Structures and referencing other objects	Another feature that YAML provides is the ability to reference other data objects. With this “referencing”, it is possible to write recursive data in the YAML file.	Does not provide referencing	Does not provide referencing
Nested Structure	Does not allow	Allows Nested structure	Does not allow