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Information technology — The JSON data interchange syntax

Technologies de l'information — Syntaxe d'échange de données JSON

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO/IEC 21778 was prepared by Ecma International (as ECMA-404) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

Introduction

JSON[1)] is a text syntax that facilitates structured data interchange between all programming languages. JSON is a syntax of braces, brackets, colons, and commas that is useful in many contexts, profiles, and applications. JSON stands for JavaScript Object Notation and was inspired by the object literals of JavaScript aka ECMAScript as defined in the ECMAScript Language Specification, Third Edition.[1] However, it does not attempt to impose ECMAScript's internal data representations on other programming languages. Instead, it shares a small subset of ECMAScript's syntax with all other programming languages. The JSON syntax is not a specification of a complete data interchange. Meaningful data interchange requires agreement between a producer and consumer on the semantics attached to a particular use of the JSON syntax. What JSON does provide is the syntactic framework to which such semantics can be attached

JSON syntax describes a sequence of Unicode code points. JSON also depends on Unicode in the hex numbers used in the `\u` escapement notation.

JSON is agnostic about the semantics of numbers. In any programming language, there can be a variety of number types of various capacities and complements, fixed or floating, binary or decimal. That can make interchange between different programming languages difficult. JSON instead offers only the representation of numbers that humans use: a sequence of digits. All programming languages know how to make sense of digit sequences even if they disagree on internal representations. That is enough to allow interchange.

Programming languages vary widely on whether they support objects, and if so, what characteristics and constraints the objects offer. The models of object systems can be wildly divergent and are continuing to evolve. JSON instead provides a simple notation for expressing collections of name/value pairs. Most programming languages will have some feature for representing such collections, which can go by names like `record`, `struct`, `dict`, `map`, `hash`, or `object`.

JSON also provides support for ordered lists of values. All programming languages will have some feature for representing such lists, which can go by names like `array`, `vector`, or `list`. Because objects and arrays can nest, trees and other complex data structures can be represented. By accepting JSON's simple convention, complex data structures can be easily interchanged between incompatible programming languages.

JSON does not support cyclic graphs, at least not directly. JSON is not indicated for applications requiring binary data.

It is expected that other standards will refer to this one, strictly adhering to the JSON syntax, while imposing semantics interpretation and restrictions on various encoding details. Such standards may require specific behaviours. JSON itself specifies no behaviour.

Because it is so simple, it is not expected that the JSON grammar will ever change. This gives JSON, as a foundational notation, tremendous stability.

JSON was first presented to the world at the `JSON.org` website in 2001. A definition of the JSON syntax was subsequently published as IETF RFC 4627 in July 2006. ECMA-262, Fifth Edition (2009) included a normative specification of the JSON grammar. This specification, ECMA-404, replaces those earlier definitions of the JSON syntax. Concurrently, the IETF published RFC 7158/7159 and in 2017 RFC 8259 as updates to RFC 4627. The JSON syntax specified by this specification and by RFC 8259 are intended to be identical.

1) Pronounced **/ˈdʒeɪˑsən/**, as in "Jason and The Argonauts".