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ANSI/ASHRAE/IBPSA Standard 232-2024
Common Content and Specifications for Building Data Schemas

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE website at www.ashrae.org/technology.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

When a standard needs to include a data model, the first thing the authors must decide is how to format and document the data model. This effort detracts from development the content of the standard. Standard 232 provides a standard method for designing and documenting data models that are included in other standards. This standardization frees authors of other standards to concentrate on the content of their standards and frees adopters of multiple standards with data models from having to determine how the data model is formatted and specified.

This standard defines the structures, conventions, and formats (i.e., metaschema) for data models based on schemas such as Extensible Markup Language (XML) or JavaScript Object Notation (JSON). It is not intended for semantic schemas. As much as possible, the standard is schema format agnostic and describes the content in a generic fashion. In this way, the standard can continue to be relevant even as new schema formats are developed. The standard does not include data models of its own.

The standard has multiple parts. The first part describes how to structure and format the data model. The next part describes how to document the data model in a human-readable format. Data groups that are common to all Standard 232 compliant data models and data groups that are generic and universal for use in other data models are described. Finally, informative naming guidelines and examples are included.

The developers of Standard 232 recognize that there are many ways to format and document a data model, and some alternatives may work better than those chosen here for a specific data model. But the benefits of overall standardization across multiple data models outweigh the limits of standardization. Because it is impossible to cover everything that may need to be included in a data model, the intent is for the information included in the standard to be extensible when needed, as long as the rules established in the standard are not violated. The committee hopes that any extensions needed by other standards will be suggested for possible inclusion in future versions of this standard.

The content of Standard 232 was first developed during the writing of ASHRAE Standard 205 and was further refined in the IBPSA-USA Building Data Exchange Committee. It was moved into a stand-alone standard to improve referencing by other standards.

Standard 232 uses a `monospaced` *font to indicate names of schema elements as they would be used in computer code.*

1. PURPOSE

1.1 Purpose. This standard defines new schemas (such as data types, data elements, naming conventions, and formats) to specify and validate other standard schemas for data exchange among building performance and HVAC&R software.

2. SCOPE

2.1 Scope. This standard applies to data models and schemas specified in other standards for the design, operation, and performance of buildings.

3. DEFINITIONS AND SYMBOLS

3.1 Definitions

alternative: a set of data types allowed for a data element where one, and only one, corresponding value is provided.

array: an ordered collection of values of a single data type.

attribute: provides extra information about a data element. Attributes have name and type properties and are defined within the data model specification. An attribute can appear 0 or 1 times within a given element. Attributes are either optional or required (by default they are optional).

data element: a named data item with an explicit data type.

data group: multiple data elements grouped together.

data model: a collection of data groups and enumerations.

data model specification: a document of a data model and its relevant context.