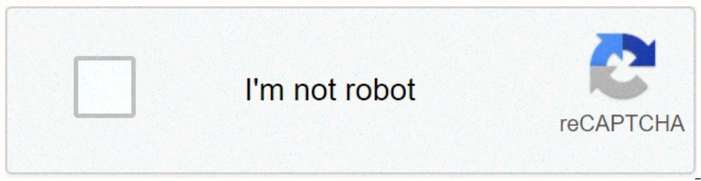


Continue

# Sql boolean data type postgresql

Represent a SQL JSON type. Note JSON is provided as a façade for vendor-specific JSON types. Because it supports JSON SQL operations, it only works on backends that have an actual JSON type, currently: PostgreSQL MySQL as of version 5.7 (MariaDB as of 10.2 series not) SQLite as of version 3.9 JSON is part of Core in support of the growing popularity of native JSON data types. The JSON type stores arbitrary JSON format data, such as: data_table = table('data_table', metadata, Column('id', Integer, primary_key=True), Column('data', JSON) ) with engine.connect() as conn: conn.execute( data_table.insert(), data = {key1: value1, key2: value2} ) JSON-specific expression operators The JSON data type provides these additional SQL operations: Keyed index operations: data_table.c.data['some key'] Integer index operations: Path index operations: data_table.c.data[('key_1', 'key_2', 5, ..., 'key_n')] Data casters for specific JSON element types, after invoking an index or path operation: data_table.c.data[some key].as_integer() Additional operations may be available from the dialect-specific versions of JSON, such as JSON and JSONB, both of which offer additional PostgreSQL-specific operations. Casting JSON Elements to Other Types Index operations, i.e. those that are invoked by calling the expression using the Python mount operator that in some_column ['some key'], return an expression object whose type defaults JSON by default, so that additional JSON-oriented instructions can be called the result type. However, it is likely that an index operation is expected to return a specific scale element, such as a string or integer. To provide access to these elements in a back-end agnostic way, a series of data throwers are provided: These data throwers are implemented by supporting dialects to ensure that comparisons with the above types will work as expected; such as: # integer comparison data_table.c.data[some_integer_key].as_integer() == 5 # boolean comparison data_table.c.data[some_boolean].as_boolean() == True New in version 1.3.11: Added type-specific linkers for the basic JSON data element types. Note The data caster features are new in version 1.3.11, replacing the previously documented procedures for using CAST; for reference, this looked like: from sqlalchemy import cast, type_coerce from sqlalchemy import String, JSON cast( data_table.c.data['some_key'], String ) == type_coerce(55; JSON) The above case now works directly as: data_table.c.data['some_key'].as_integer() == 5 For details of the previous comparison approach within the 1.3.x series, see the documentation for SQLAlchemy 1.2 or the included HTML files in the doc/directory of the version's distribution. Detect changes in JSON columns when the SNAKE the JSON type, when used with SQLAlchemy SNAKE, does not to the structure. To detect these, the sqlalchemy.ext.mutable extension must be used. This extension will allow on-site changes to the data structure to produce events that will be detected by the work unit. See the example of HSTORE for a simple example involving a dictionary. Support for JSON null vs. SQL NULL When working with NULL values, the JSON type recommends using two specific constants to distinguish between a column evaluated to SQL NULL, such as no value, compared to the JSON-encoded string of null. To insert or select against a value that is SQL NULL, use the constant null(): from sqlalchemy import null conn.execute(table.insert(), json_value=null()) To insert or select against a value that is JSON null, use the constant JSON. NULL: conn.execute(table.insert(), json_value=JSON. NULL) The JSON type supports a flag JSON.none_as_null that when set to True will result in the python constant No evaluating to the value of SQL NULL, and when set to False results in the Python constant No evaluating to the value of JSON null. The Python value None can be used with either JSON. NULL and null() to enter NULL values, but caution must be taken into account with regard to the value of JSON.none_as_null in these cases. Customize the JSON Serializer JSON serializer and deserializer used by JSON defaults to Python's json.dumps and json.loads features; in the case of the psycopg2 dialect, psycopg2 can use its own custom loader function. To affect the serializer/deserializer, they are currently configurable at the create_engine() level via create_engine.json_serializer and create_engine.json_deserializer parameters. For example, to turn off ensure_ascii: engine = create_engine( sqlite://, json_serializer=lambda obj: json.dumps(obj, ensure_ascii=False)) Modified in version 1.3.7: SQLite dialect json_serializer and json_deserializer parameters renamed from _json_serializer and _json_deserializer. See also JSON JSON JSON JSON Class Comparator(expr)¶ Define comparison operations for JSON. method sqlalchemy.types.JSON.Comparator.as_boolean()¶ Cast an indexed value as boolean. e.g.: stmt = select([mytable.c.json_column['some_data'].as_boolean() ]).there( mytable.c.json_column['some_data'.as_boolean() == True ) method sqlalchemy.types.JSON.Comparator.as_float()¶ Cast an indexed value as float. e.g.: stmt = select([mytable.c.json_column['some_data'].as_float() ]).there( mytable.c.json_column['some_data'.as_float() == 29,75 ) method sqlalchemy.types.JSON.Comparator.as_integer()¶ Cast an indexed value as integer. e.g.: stmt = select([mytable.c.json_column['some_data'].as_integer() ]).where( mytable.c.json_column['some_data'.as_integer() == 5 ) method sqlalchemy.types.JSON.Comparator.as_json()¶ Cast an indexed like JSON. This is the default behavior of indexed elements in the Case. Note that comparison of full JSON structures may not be supported by all backends. method sqlalchemy.types.JSON.Comparator.as_string()¶ Cast an indexed value as string. e.g.: stmt = select([mytable.c.json_column['some_data'].as_string() ]).there( mytable.c.json_column['some_data'].as_string() == 'some string') class JSONTypeElement¶ Common function for index/path element in a JSON expression. method sqlalchemy.types.JSON.JSONElementType.bind_processor(dialect)¶ Return a conversion function for processing bind values. Returns a callable that will have a bind parameter value as the only positional argument and will return a value to pass to the DB API. If processing is not necessary, the method should return None. Parameters dialect¶ - Dialect occurrence in use. method sqlalchemy.types.JSON.JSONElementType.literal_processor(dialect)¶ Return a conversion function for processing literal values to be rendered directly without binding is used. This feature is used when the compiler uses the literal_binds flag, which is typically used in DDL generation, and in some scenarios where backends do not accept bound parameters. method sqlalchemy.types.JSON.JSONElementType.string_bind_processor(dialect)¶ method sqlalchemy.types.JSON.JSONElementType.string_literal_processor(dialect)¶ class JSONIndexType¶ Placeholder for the data type of a JSON index value. This allows run-time processing of JSON index values for special syntaxes. Class JSONPathType¶ Placeholder type for JSON path operations. This allows run-time processing of a path-based index value to a specific SQL syntax. sqlalchemy.types.JSON.NULL = symbol('JSON_NULL')¶ Describe the json value of NULL. This value is used to force the JSON value for null to be used as a value. A value of Python None will be recognized either as SQL NULL or JSON null, based on setting JSON.none_as_null the flag; Json. NULL constant can be used to always settle to JSON null regardless of this setting. This contrasts with the null() design, which always resolves to SQL NULL. E.g.: from sqlalkemi import null from sqlalchemy.dialects.postgresql import JSON # will * always * insert SQL NULL obj1 = MyObject(json_value=null()) # will * always * insert JSON string null obj2 = MyObject(json_value=JSON. NULL) session.add_all([obj1, obj2]) session.commit() To be able to set JSON NULL as a default value for a column, the most transparent method is to use text(): Table( 'my_table', metadata, Column('json_data', JSON, default=text('null')) ) While it is possible to use JSON. NULL in this context, the JSON. The NULL value will be returned as the value of the column, which in the context of snake or other resetting of the default value, may not be desirable. Using an SQL statement value will be re-retrieved from the database within the framework of the generated default values. method sqlalchemy.types.JSON.__init__(none_as_null=False)¶ Construct a JSON type. Parameters none_as_null=False¶ - If True remains, the value None remains as a SQL NULL value, not the JSON encoding of null. Note that when this flag is False, the null() constructer can still be used to comprise a NULL value: from sqlalchemy import null conn.execute(table.insert(), data=null()) method sqlalchemy.types.JSON.bind_processor(dialect)Return a conversion function for processing binding values. Returns a callable that will have a bind parameter value as the only positional argument and will return a value to pass to the DB API. If processing is not necessary, the method should return None. Parameters dialect¶ - Dialect occurrence in use. attribute sqlalchemy.types.JSON.comparator_factory¶ sqlalkemi alias.sql.sqltypes.JSON.Comparator attribute sqlalchemy.types.JSON.python_type¶ method sqlalchemy.types.JSON.result_processor(dialect, carbon type)¶ Return a conversion function for processing result line values. Returns a callable that will have a result row column value as the only position argument and will return a value to return to the user. If processing is not necessary, the method should return None. Parameters dialect¶ - Dialect occurrence in use. coltype¶ - DBAPI coltype arguments received in cursor.description. attribute sqlalchemy.types.JSON.should_evaluate_none¶ Alias for JSON.none_as_null Page 2 Object Name Description Concatenable A mixin that selects a type that supports 'concatenation', typically strings. Indexable A mixin that marks a type to support indexing operations, such as array or JSON structures. NullType An unknown type. TypeEngine The ultimate base class for all SQL data types. Variant A cover type that chooses from a variety of implementations based on dialect in use. class sqlalchemy.types.TypeEngine¶ The ultimate base class for all SQL data types. Common subclasses of TypeEngine include String, Integer, and Boolean. For an overview of the sqlalchemistry writing system, see Column and Data Types. See also The Comparator(select)¶ Base class for custom comparison actions defined at the type level. Look TypeEngine.comparator_factory. attribute sqlalchemy.types.TypeEngine.Comparator.default_comparator = None¶ sqlalchemy.types.TypeEngine.Comparator.operate(default_comparator, op, *other, **kwargs)¶ Act on an argument. This is the lowest level of operation, NotImplementedError raises by default. Overriding this on a subclass can allow common behavior to be applied to all operations. For example, override ColumnOperators to apply func.lower() to the left and right sides: class MyComparator(ColumnOperators): def operate(self, op, other): return op(func.lower(self), func.lower(other)) Parameters op¶ – Operator *other¶ - the 'other' side of the off Will be a single scalar for most operations. **kwargs¶ - modifier. These can be passed by special operators such as ColumnOperators.contains(). method sqlalchemy.types.TypeEngine.Comparator.reverse_operate(default_comparator, op, others, **kwargs)¶ Reverse act on an argument. Usage is the same as operate(). method sqlalchemy.types.TypeEngine.adapt(cls, **kw)¶ Produce a custom form of this type, given an impl class to work with. This method is used internally to associate generic types with implementation types specific to a particular dialect. method sqlalchemy.types.TypeEngine.bind_expression(bindvalue)¶ Given bind value (i.e. a BindParameter instance), returns an SQL statement in its place. This is usually a SQL function that wraps the existing bound parameter within the statement. It is used for special data types that require literals to be wrapped in any particular database function to force an application-level value into a database-specific format. It is the SQL analog of the TypeEngine.bind_processor() method. The method is evaluated at statement compiling time, as opposed to statement design time. Note that this method, when implemented, should always return the exact same structure, without any conditional logic, because it can be used in a executemany() call against an arbitrary number of bound parameter sets. See also Apply binding/result processing method at SQL level sqlalchemy.types.TypeEngine.bind_processor(dialect)¶ Return a conversion function for processing binding values. Returns a callable that will have a bind parameter value as the only positional argument and will return a value to pass to the DB API. If processing is not necessary, the method should return None. Parameters dialect¶ - Dialect occurrence in use. method sqlalchemy.types.TypeEngine.coerce_compared_value(op, value)¶ Suggest a type for a 'coerced' Python value in an expression. Given an operator and value, the type provides a chance to return a type that the value should be forced to. The default behavior here is conservative; if the right side is already forced to a SQL type based on its Python type, it is usually left alone. End user functionality extension here should generally via TypeDecorator, which provides more liberal behavior in that it defaults to force the other side of the expression in this type, thus applying specific Python conversions in addition to those needed by DBAPI to both ides. It also provides the public method TypeDecorator.coerce_compared_value() intended for the end-user to adapt this behaviour. method sqlalchemy.types.TypeEngine.column_expression(colexpr)¶ Given a SELECT column expression, return a cover SQL statement. This is usually a SQL function that wraps a column expression that is reproduced in the statement column of a used for special data types that require columns to be wrapped in any particular database function in order to force the value before they are sent back to the application. It is the SQL analog of the method TypeEngine.result_processor(). The method is evaluated at statement compiling time, as opposed to statement design time. See also Apply sql-level binding/result processing attributes sqlalchemy.types.TypeEngine.comparator_factory¶ A Comparator class to perform operations by owning ColumnElement objects. The attribute comparator_factory is a hook that is consulted by the core expression system when column and SQL expression operations are performed. When a comparison class is associated with this attribute, it allows custom redefinition of all existing operators, as well as the definition of new operators.

Existing operators include those provided by Python operator overload such as ColumnOperators.__add__() and ColumnOperators.__eq__(), those provided as standard attributes for ColumnOperators such as ColumnOperators.like() and ColumnOperators.in_(). Rudimentary use of this hook is permitted by simple underclassification of existing types, or alternatively by using TypeDecorator. See the Documentation section Redefine and create new operators for examples. sqlalkemi alias.sql.type_api.TypeEngine.Comparator method sqlalchemy.types.TypeEngine.compare_against_backend(dialect, conn_type)¶ Compare this type against the given server type. This feature is not currently implemented for SQLAlchemy types, and for all built-in types will return None. However, it can be implemented by a user-defined type where it can be consumed by schema comparison tools like Alembic autogenerate. A future release of SQLAlchemy will potentially implement this method for builtin types as well. The function should return True if this type is equivalent to the given type; the type is normally reflected from the database, should be database-specific. The dialect in use is also passed. It can also return False to claim that the type is not equal. Parameters dialect¶ – one Dialect involved in the comparison. conn_type¶ - the type object reflected from the backend. method sqlalchemy.types.TypeEngine.compare_values(x, y)¶ Compares two values for equality. sqlalchemy.types.TypeEngine.compile(dialect=None)¶ Produce a string compiled form of this TypeEngine. When called without arguments, use a default dialect to produce a string result. Parameters dialect¶ - a Dialect instance. method sqlalchemy.types.TypeEngine.dialect_impl(dialect)¶ Return a dialect-specific implementation for this TypeEngine. method sqlalchemy.types.TypeEngine.evaluates_none()¶ Return a copy of this type that has should_evaluate_none the flag set to True. E.g.: Table( 'some_table'; metadata, Column( nullable=True; nullable=True; value') ) The snake uses this flag to indicate that a positive value of None is sent to the column in an INSERT statement, rather than omitting the column from the INSERT statement that has the effect of being fired by defaults at the column level. It also allows for types that have specific behavior associated with the Python None value to indicate that the value does not necessarily translate to SQL NULL; an excellent example of this is a JSON type that may want to remain JSON value 'null'. In all cases, the actual NULL SQL value can always be permanent in any column using the null SQL construct in an INSERT statement or associated with a SNAKE-mapped attribute. method sqlalchemy.types.TypeEngine.get_dbapi_type(dbapi)¶ Return the corresponding type object from the underlying DB API, if any. This can be useful for calling setinputsizes(), for example. the sqlalchemy.types.TypeEngine.hashable attribute = True¶ Flag, if False, means that values from this type are not hashable. Used by SNAKE when uniquing result lists. method sqlalchemy.types.TypeEngine.literal_processor(dialect)¶ Return a conversion function for processing literal values to be rendered directly without binding is used. This feature is used when the compiler uses the literal_binds flag, which is typically used in DDL generation, and in some scenarios where backends do not accept bound parameters. attribute sqlalchemy.types.TypeEngine.python_type¶ Return the Python type object expected to be returned by instances of this type, if known. Basically, for the types that force a return type, or are known across the board to make such for all common DBAPIs (like int for example), will return that type. If a return type is not defined, ImplementedError does not raise. Note that all types also hold NULL in SQL which means that you can also get back None from any type in practice. method sqlalchemy.types.TypeEngine.result_processor(dialect, carbon type)¶ Return a conversion function for processing result line values. Returns a callable that will have a result row column value as the only position argument and will return a value to return to the user. If processing is not necessary, the method should return None. Parameters dialect¶ - Dialect occurrence in use. coltype¶ - DBAPI coltype arguments received in cursor.description. attribute sqlalchemy.types.TypeEngine.should_evaluate_none = False¶ If True is considered python constant None is explicitly handled by this type. Snake uses this flag to indicate that a positive value of None is sent to the column in an INSERT statement, rather than omitting the column from the INSERT statement that has the effect of firing off defaults at the column level. It also allows types that have special behavior for Python None, such as a JSON type, to indicate that they would like to handle the No. To set this this on an existing type, use the TypeEngine.evaluates_none() method. See also TypeEngine.evaluates_none() attributes sqlalchemy.types.TypeEngine.sort_key_function = None¶ A sort function that can be passed as a key to sorted. The default value for None indicates that the values stored of this type are self-sorting. method sqlalchemy.types.TypeEngine.with_variant(type_, dialect_name)¶ Produce a new type object that will use the given type when applied to the affectionate name dialect. e.g.: from sqlalchemy.types import String from sqlalchemy.dialects import mysql s = String() s = s.with_variant(mysql. VARCHAR(collation='foo'), 'mysql') The construction of TypeEngine.with_variant() is always from the reserve type to the dialect-specific. The returned type is an instance of Variant, which in itself produces a Variant.with_variant() that can be called repeatedly. Parameters type_¶ – A TypeEngine that will be selected as a variant from the original type, when a dialect of first name is used. dialect_name¶ - the base name of the dialect that uses this type. (ie postgresql, mysql, etc.) class sqlalchemy.types.Concatenable¶ A mixin that marks a type that supports 'concatenation', typically strings. .sql sqlalchemy.types.Concatenable.comparator_factory Indexable A mixin that marks a type as supporting indexing operations, such as array or JSON structures. class Comparator(expr)¶ attribute sqlalchemy.types.Indexable.comparator_factory¶ alias for sqlalchemy.sql.sqltypes.Indexable.Comparator class sqlalchemy.types.NullType An unknown type. NullType is used as the default type for cases where a type cannot be determined, including: During table reflection, when the type of a column is not recognized by the dialect When SQL expressions are constructed with common Python objects of unknown types (e.g. somecolumn == my_special_object) When a new Column is created and the given type is sent as None or not sent at all. The NullType can be used within the SQL statement invocation without any problems, it just has no behavior either at the expression design level or at the bind parameter/result processing level. NullType will result in a CompileError if the compiler is asked to reproduce the type itself, for example, if it is used in a cast() operation or within a schema creation operation such as the one cited by the MetaData.create_all() or createtable construct. class sqlalchemy.types.Variant(base, mapping)¶ A wrapping type that chooses from a variety of implementations based on dialect in use. The Variant type is normally constructed using the TypeEngine.with_variant() method. See also TypeEngine.with_variant() for an example of usage. method sqlalchemy.types.Variant.__init__(base, mapping)¶ Construct a new Parameters base¶ - base 'fallback' type mapping¶ - dictionary of string dialect names to TypeEngine instances. method sqlalchemy.types.Variant.with_variant(type_, dialect_name)¶ Return a new Variant that adds the given type + dialect name to the mapping, in addition to the mapping found in this Variant. Parameters type_¶ – A TypeEngine that will be selected as a variant from the original type, when a dialect of first name is used. dialect_name¶ - the base name of the dialect that uses this type. (ie postgresql, mysql, etc.) etc.)

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