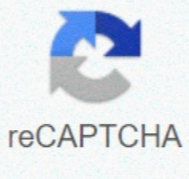




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Struct data type in hive

Array struct data type in hive. Struct data type in hive example.

In this post, we will discuss all types of hive data with examples for each type of data. Hive supports most of the primitive data types supported by many relational databases, and even if something is missing, it is added/introduced to the hive in every release. Hive data types are used to specify the type of column/field in Hive tables. Hive data types can be classified into two categories. Primary Data Types Complex Data Types Primary Data Types Primary data types are further classified into four categories. They are: Numerical types String types Date/time types Various types These data types and their sizes are similar to the Java/SQL primitive data types and sizes. Numerical Data Types Integral Types are TINYINT, SMALLINT, INT & BIGINT Equivalent to Java bytes, short, int and long primitive The floating types are FLOAT, DOUBLE & DECIMAL. Equivalent to Java float and double, and SQL are decimals respectively. DECIMAL (5,2) represents a total of 5 digits, 2 of which are decimal digits. Below is the graph for all numerical types with their ranges and examples. In Hive, default integer values are treated as INT unless they exceed the INT value range as shown in the table above. But if we have to use an integral value as low as 100 to be treated as TINYINT or SMALLINT or BIGINT then we have to suffix the value with Y, S or L respectively. Examples: 100Y TINYINT, 100S SMALLINT, 100L BIGINT String Data Types Three string data types are supported in Hive, as of version 0.14. They are listed in the graph below. CHAR vs VARCHAR CHAR is fixed length and shorter values than those padded with spaces. VARCHAR is variable in length but you must specify the maximum field length (example: name VARCHAR (64)). If the values are less than the specified maximum length, the remaining space will be freed. The maximum length of CHAR is 255 but VARCHAR can be up to 65,355 bytes. Space/storage optimization is done in VARCHAR by releasing unused bytes, but in CHAR unused bytes are not released but filled with spaces. If a value of the string assigned to a VARCHAR value exceeds the specified length, the string is silently truncated. Date/Time Data Types Hive provides the DATE and TIMESTAMP data types in the traditional UNIX time stamp format for the date/time fields in the hive. DATE values are represented in the form YYYY-MM-DD. Example: DATE '2014-12-31' The allowed date ranges are from 0000-01-01 to 9999-12-31. TIMESTAMP uses the format yyyy-mm-dd hh:mm:ss[.]. We can also run the string, Time-stamp values to the data format if they match the layout but declared as String or Time-stamp data type. Type Cast Result Cast as date Same date date date cast value (data as string) The date is formatted as string in the form «AAAA-MM-GG». cast (date as timestamp) Midnight of the year/month/day of the date value is returned as timestamp. cast (string as date) If the string is in the form «AAAA-MM-GG», «AAAA-MM-GG» a date value corresponding to that is returned. If the string value does not match this format, NULL is returned. cast (timestamp as date) The year/month/day of the timestamp is returned as a date value. Various types Hive supports two more primitive data types, BOOLEAN and BINARY. Similar to Java Boolean, BOOLEAN in hive stores only real or false values. BINARY is an array of bytes and similar to VARBINARY in many RDBMSs. The BINARY columns are stored within the record, not separately as BLOBs. We may include arbitrary bytes in the BINARY column and these bytes are not analyzed by Hive as numbers or strings. Implied conversion between primitive data types Primitive type Primitive type DOUBLE FLOAT BIGINT DECIMAL (can be converted into string, only varchar) STRING (can be converted into varchar, double, decimal) VARCHAR (can be converted into string, double, decimal) DATE (Converted into TIMESTAMP string) In the hierarchy above, the implicit conversion is allowed for types from son to ancestor. Thus, TINYINT can be converted into any other type of numerical data but BIGINT can only be converted to FLOAT or DOPPIO but the Boolean & Binary data types will not be converted to any other type of data implicitly. Explicit conversion The explicit conversion of the type can be made using only the cast operator. Example: CAST (500 AS INT) converts the string 500 to the full value 500. But if cast is used incorrectly as in CAST (500 AS INT), then the cast operation will fail and return NULL. As discussed above, all types of primitive data of Hive are similar to the primitive data types of other languages or RDBMS. In addition to primitive data types, Hive also supports complex data types (also known as collection data types) which are not available in many RDBMS. Complex types can be built from primitive types and other composite types. The type of data of the fields of the collection is specified using a notation in brackets angled. Currently Hive supports four complex data types. They are: ARRAY Ordered sequences of similar elements that are indexable using wholes based on zero. It's similar to Java arrays. Example of 'array' [1,2,3,4,5] It is accessed to the second element with array[1]. MAP Collection of key-value pairs. You access the fields using the array notation of the keys (e.g., [a-key]). Example: «First» -> «Bala» -> «Ultimo» -> «PG» is represented as a map («First», «Bala», «Ultimo», «Ultimo», «PG»). It is now possible to access 'bala' with map['first'] STRUCT It is similar to STRUCT in language C. It is a type of record that contains a set of named fields that can be any type of primitive data. The elementsType Struct are accessible using the DOT notation (.). Example «For a column C type Struct {A INT; b INT} The field A is accessible from the expression C.A UnionType «is similar to Unions in C. At any point of the A type of union may contain one (exactly one) type of data from its specified data types. For example, if we declare a column as a union type as below screenshot shown. Create table test (Col1 Uniontype

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