**Problem Statement**

**Explain Primary data types and complex data types in Hive with an example in brief.**

**Solution :-**

**Primary Data Types:-**

Primary Data Types are classified into four categories.

They are:

• Numeric Types

• String Types

• Date/Time Types

• Miscellaneous Types

**Numeric Data Types :-**

• Integral types are – TINYINT, SMALLINT, INT & BIGINT

• Equivalent to Java’s byte , short , int , and long primitive types

• Floating types are – FLOAT, DOUBLE & DECIMAL.

• Equivalent to Java’s float and double , and SQL’s Decimal respectively.

• DECIMAL(5,2) represents total of 5 digits, out of which 2 are decimal digits.

**String Data Types :-**

STRING

• String literals can be expressed with either single quotes (') or double quotes (")

VARCHAR

• Varchar types are created with a length specifier (between 1 and 65355), which defines the maximum number of characters allowed in the character string.

CHAR

• Char types are similar to Varchar but they are fixed-length meaning that values shorter than the specified length value are padded with spaces but trailing spaces are not important during comparisons.

**Date/Time Types :-**

• Hive provides DATE and TIMESTAMP data types in traditional UNIX time stamp format for date/time related fields in hive.

• DATE values are represented in the form YYYY-MM-DD. Example: DATE ‘2014-12-07’. Date ranges allowed are 0000-01-01 to 9999-12-31.

• TIMESTAMP use the format yyyy-mm-dd hh:mm:ss[.f...].

• We can also cast the String, Time-stamp values to Date format if they match format.

**Miscellaneous Types :-**

• Hive supports two more primitive data types, BOOLEAN and BINARY. Similar to Java’s Boolean, BOOLEAN in hive stores true or false values only.

• BINARY is an array of Bytes and similar to VARBINARY in many RDBMSs

**Complex Data Types :-**

Complex Types can be built up from primitive types and other composite types.

• Data type of the fields in the collection are specified using an angled bracket notation.

• Currently Hive supports four complex data types. They are:

1) Array

2) Map

3) Struct

4) UnionType

**ARRAY**

• ARRAY<data\_type>

• An Ordered sequences of similar type elements that are indexable using zero-based integers.

• It is similar to arrays in Java.

• Example – array (‘siva’, ‘bala’, ‘praveen’);

• Second element is accessed with array[1].

**MAP**

• MAP<primitive\_type,data\_type>

• Collection of key-value pairs.

• Fields are accessed using array notation of keys (e.g., [‘key’]).

**STRUCT**

• It is similar to STRUCT in C language.

• It is a record type which encapsulates a set of named fields that can be any primitive data type.

• Elements in STRUCT type are accessed using the DOT (.) notation.

Example – For a column c of type STRUCT {a INT; b INT} the a field is accessed by the expression c.a

**UNIONTYPE**

• UNIONTYPE<data\_type,data\_type,…..>

• It is similar to Unions in C.

• At any point of time, an Union Type can hold any one (exactly one) data type from its specified data types.