Data types in SQL are:

1. String
2. Integers
3. Float
4. Boolean
5. Enum
6. Date/time
7. JSON
8. BLOB

Strings

1. char
2. varchar
3. \*text

char(x):

1. String of fixed length.
2. x can be 0 to 255.
3. Pincode, Aadhar Number, Roll Number,

char(4)

1. "abcd"
2. "abc" will store as "abc\_"
3. "ab" will store as "ab\_\_"
4. "a" will store as "a\_\_\_"
5. "" will store as "\_\_\_\_"
6. "abcde" will store as either "abcd" or throw an error

varchar(x):

1. String of variable length.
2. x can be 0 to 65535.
3. Name, address, email id, password, text blog etc.

varchar(4)

1. "abcd" will store as "4abcd"

\*text: text cannot be indexed

1. tinytext 255 Bytes
2. text 64 kilo Bytes
3. medium text 16mb
4. long text 4gb
5. paragraphs, articles, research papers etc.

Integer Data Types

|  |  |  |
| --- | --- | --- |
| TYPE | SIZE | RANGE |
| TINYINT | 1 BYTE | -128 to 127 |
| SMALLINT | 2 BYTES | -32768 to 32767 |
| MEDIUMINT | 3 BYTES | -8388608 to 8388607 |
| INT | 4 BYTES | -2147483648 to 2147483647 |
| BIGINT | 8 BYTES | 9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 |

|  |  |  |
| --- | --- | --- |
| TYPE | SIZE | RANGE |
| TINYINT | 1 BYTE | -27 to 27 - 1 |
| SMALLINT | 2 BYTES | -215 to 215 - 1 |
| MEDIUMINT | 3 BYTES | -223 to 223 - 1 |
| INT | 4 BYTES | -231 to 271 - 1 |
| BIGINT | 8 BYTES | -263 to 263 - 1 |

Float Data Types:

|  |  |
| --- | --- |
| FLOAT | Decimal (precise to 23 digits) |
| DOUBLE | Decimal (24 to 53 digits) |
| DECIMAL | DOUBLE stored as string |

Boolean Data Type:

In SQL, boolean is implemented using tinyint.

|  |  |
| --- | --- |
| BOOLEAN | TINYINT(1), TINYINT(0) |

Enum Data Type:

Constant set of values which can be used as type in attributes e.g. days in a week, months in a year,

Cars

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Name | Brand | Type |
| 1 | Nano | Tata | Hatchback |
| 2 | 730D | BMW | Sedan |
| 3 | Kuv700 | Mahindra | SUV |
| 4 | Scorpio | Mahindra | SUV |
| 5 | Thar | Mahindra | SUV |
| 6 | Safari | Tata | SUV |
| 7 | Harrier | Tata | SUV |

Redundancy: SUV is repeating five times.

If later on we want to change SUV to HUV, we will have to update the query over the entire table.

Cars

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Name | Brand | Type |
| 1 | Nano | Tata | 1 |
| 2 | 730D | BMW | 2 |
| 3 | Kuv700 | Mahindra | 3 |
| 4 | Scorpio | Mahindra | 3 |
| 5 | Thar | Mahindra | 3 |
| 6 | Safari | Tata | 3 |
| 7 | Harrier | Tata | 3 |

Car Type

|  |  |
| --- | --- |
| Id | Type Name |
| 1 | Hatchback |
| 2 | Sedan |
| 3 | SUV |

Decimal Data Types

|  |  |
| --- | --- |
| FLOAT | Decimal (precise to 23 digits) |
| DOUBLE | Decimal (24 to 53 digits) |
| DECIMAL | DOUBLE stored as string |

|  |  |  |  |
| --- | --- | --- | --- |
| DECIMAL | FIXED POINT NUMBER | 0 - 65 | -1038+1 to 1038-1 |
| FLOAT | FLOATING POINT NUMBER | 4 BYTES | -3.402823466E+38 to -1.175494351E-38, 0,  and 1.175494351E-38 to 3.402823466E+38 |

|  |  |
| --- | --- |
| Data Type | Structure |
| DECIMAL | DECIMAL(Precision, Scale) |
| FLOAT | FLOAT(Precision, Scale) |
| DOUBLE | DOUBLE(Precision, Scale) |

DECIMAL (7,2) will be stored as total of 9 digits where 7 digits are significant digits and 2 digits are after decimal in MySQL.

Date Timestamp Family

|  |  |
| --- | --- |
| DATE | YYYY-MM-DD |
| DATETIME | YYYY-MM-DD HH:MM:SS |
| TIMESTAMP | YYYYMMDDHHMMSS |
| TIME | HH:MM:SS |

Blobs Data Type

1. Binary Large Objects
2. storing large files in db.
3. Images, pdfs, files etc.

TINYBLOB

Typically allows for binary data up to 255 bytes in size. Useful for very small binary objects.

BLOB

Generally, allows for binary data up to 65,535 bytes (64 KB) in size.

Suitable for small to moderately-sized binary data, such as images or short documents.

MEDIUMBLOB

Typically allows for binary data up to 16,777,215 bytes (16 MB) in size.

Useful for larger binary objects like high-resolution images or longer documents.

LONGBLOB

Generally, allows for binary data up to 4,294,967,295 bytes (4 GB) in size. Ideal for very large binary objects such as multimedia files (audio, video), large documents, or archives.

Note

Until or unless being specifically told, do not use blobs.