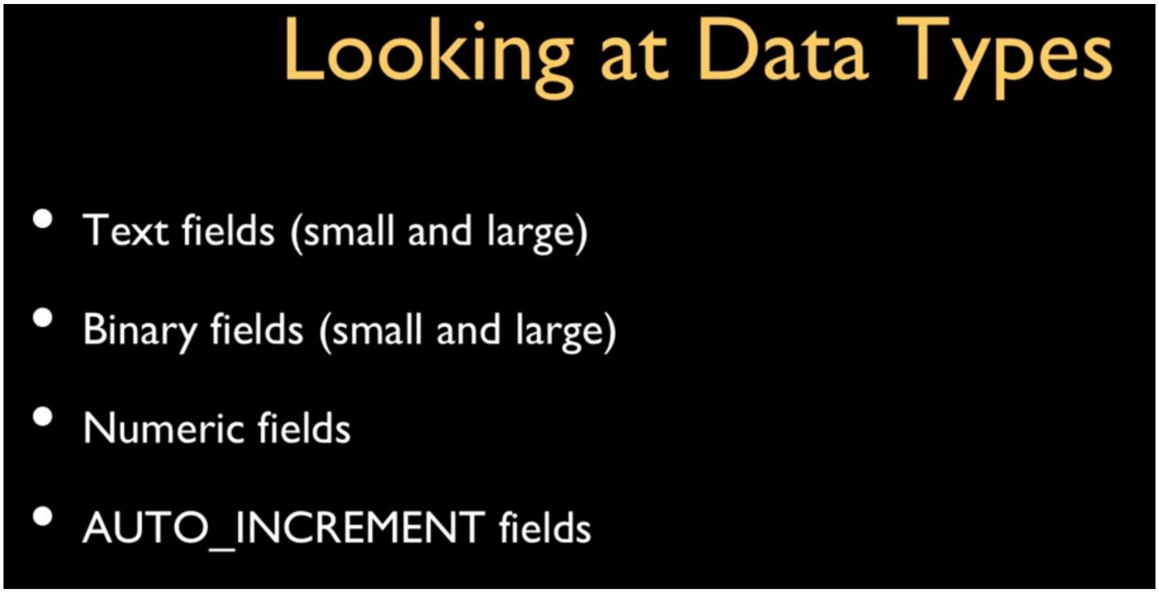
# Data Types in PostgreSQL

## The basic datatype in PostgreSQL



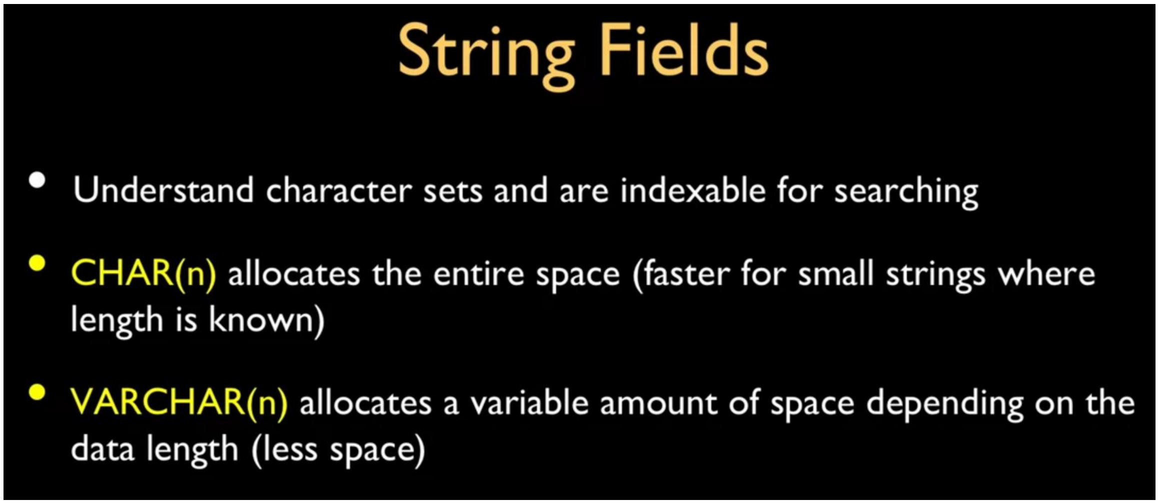
### Looking at Data Types

- Text fields (small and large)
- Binary fields (small and large)
- Numeric fields
- AUTO_INCREMENT fields

## String Fields

CHAR is using for **short string**, which below the 64 characters

VARCHAR is using for **string which you do not know the length.** Most of time we use this.

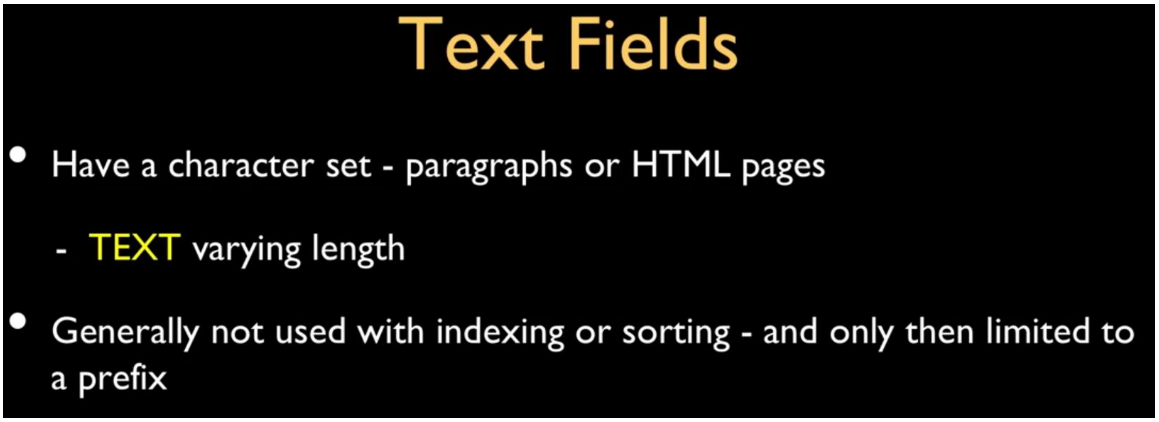


### String Fields

- Understand character sets and are indexable for searching
- CHAR(n) allocates the entire space (faster for small strings where length is known)
- VARCHAR(n) allocates a variable amount of space depending on the data length (less space)

## Text Fields

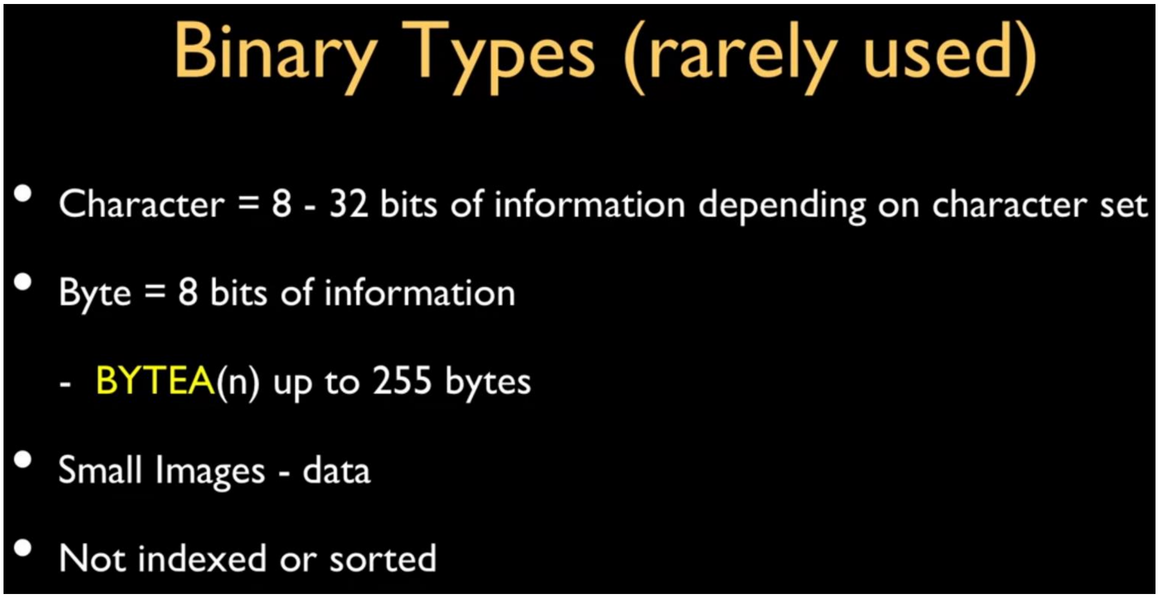
If you do not want the database **to limit the length on you**, use the text field instead of string.



# Text Fields

- Have a character set - paragraphs or HTML pages
  - TEXT varying length
- Generally not used with indexing or sorting - and only then limited to a prefix

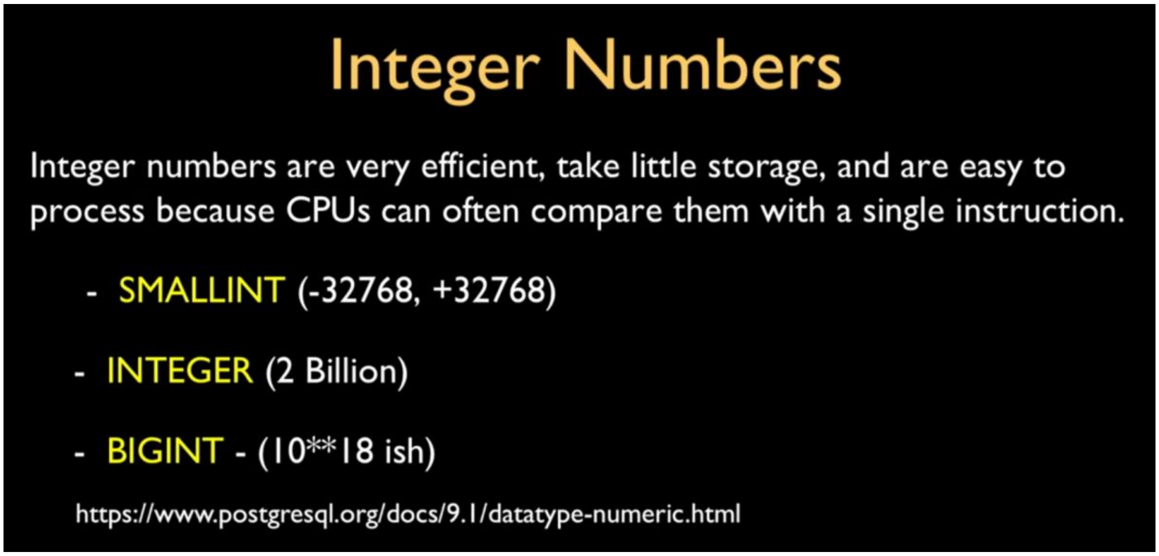
## Binary Types



# Binary Types (rarely used)

- Character = 8 - 32 bits of information depending on character set
- Byte = 8 bits of information
  - BYTEA(n) up to 255 bytes
- Small Images - data
- Not indexed or sorted

## Integer Numbers



## Integer Numbers

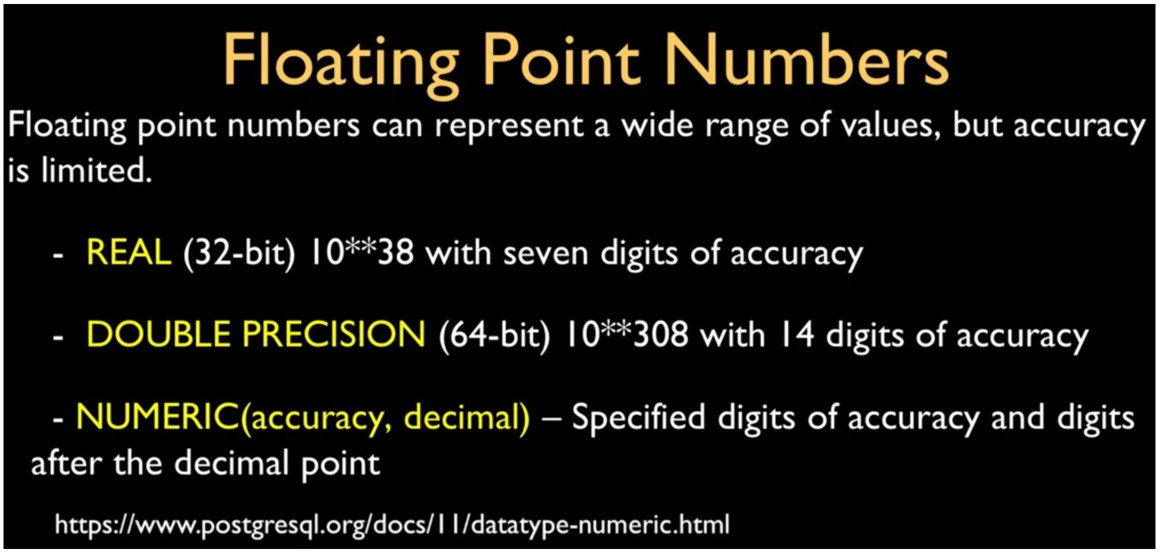
Integer numbers are very efficient, take little storage, and are easy to process because CPUs can often compare them with a single instruction.

- SMALLINT (-32768, +32768)
- INTEGER (2 Billion)
- BIGINT - (10**18 ish)

https://www.postgresql.org/docs/9.1/datatype-numeric.html

## Floating Number

Notice that, both **REAL** and **DOUBLE PRECISION** may lost some accuracy within the decimals. So, if we're dealing with important records (For instance, deal with money), please use **NUMERIC** type.



## Floating Point Numbers

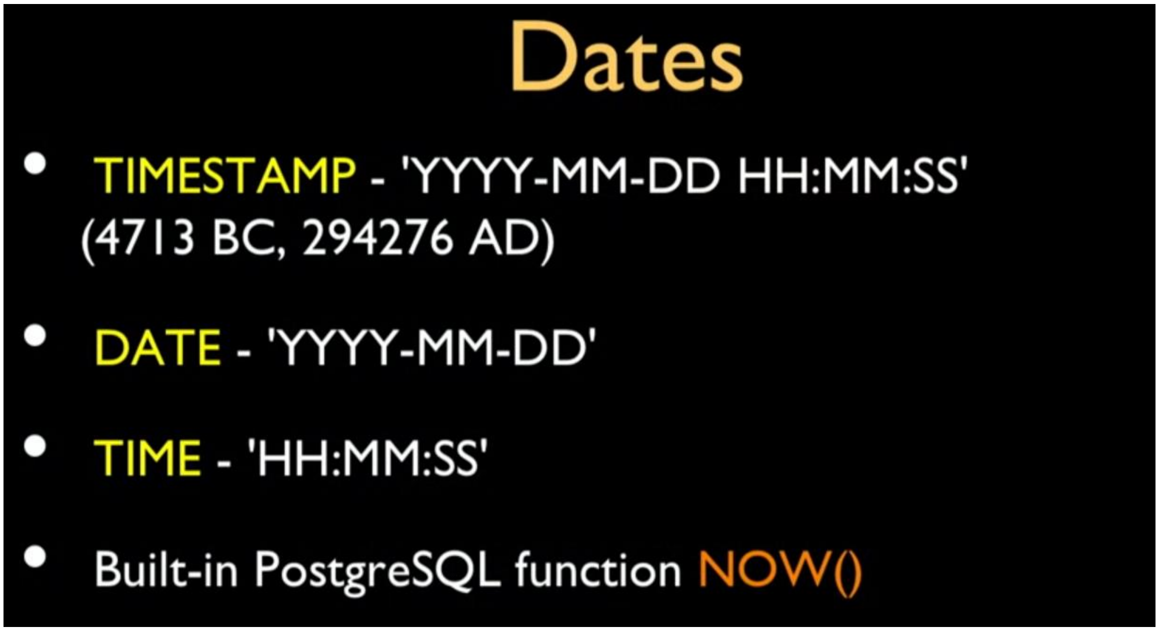
Floating point numbers can represent a wide range of values, but accuracy is limited.

- REAL (32-bit) 10**38 with seven digits of accuracy
- DOUBLE PRECISION (64-bit) 10**308 with 14 digits of accuracy
- NUMERIC(accuracy, decimal) – Specified digits of accuracy and digits after the decimal point

https://www.postgresql.org/docs/11/datatype-numeric.html

## Dates

TIMESTAMP is the most common dates type (64 bits).



# Dates

- TIMESTAMP - 'YYYY-MM-DD HH:MM:SS' (4713 BC, 294276 AD)
- DATE - 'YYYY-MM-DD'
- TIME - 'HH:MM:SS'
- Built-in PostgreSQL function NOW()