Whiteboard

Quick Introduction to Python

- Simplest Programming Language
- Dynamic
- High Level
- Object Oriented
- Case Sensitive
- Scripting
- Indentation
- Reference Variables
- Cross Platform

- Mutable and Immutable
- Interpreted (Not compiled)
- Various Use Cases
  - Web Development
  - AI / ML
  - Data Engineering
- Slower than C / C++ / Java
- Lot of Libraries
- Open Source

Introduction

- Python is a general-purpose, high-level programming language
- Developed in 1989, Guido Van Rossam – National Research Institute
- Python was made available to public in 1991

  - Functional Programming from C
  - Object Oriented Programming from C++
  - Scripting from Perl and Shell
  - Modular Programming from Modula-3

Introduction

- Python is easy to learn
- Open Source
- High Level Programming Language
- Platform Independent
- Dynamically Typed
- Interpreted
- Extensible

- **Everything is an object in Python**

Keywords and Identifiers

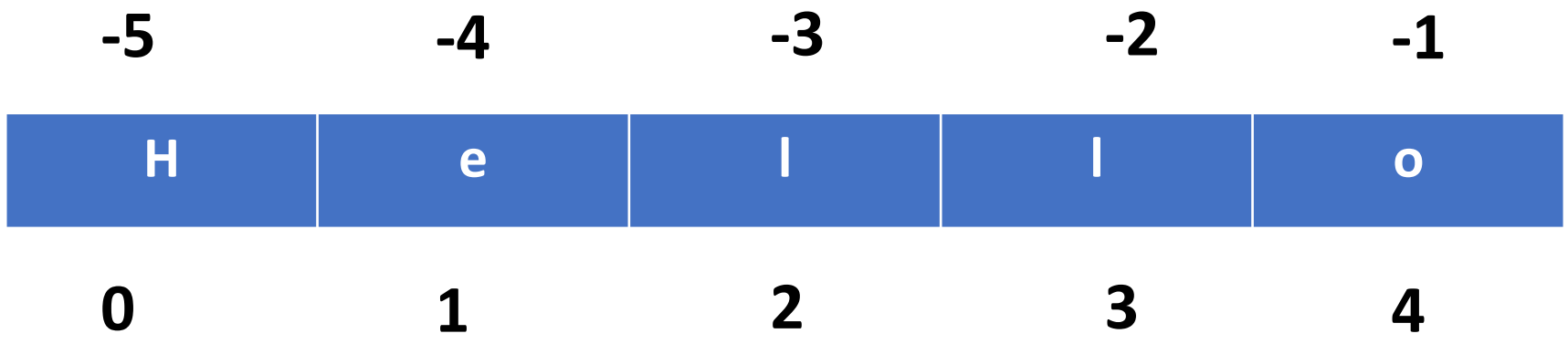
- 30+ keywords
- Identifier – Name given to an entity (variable, function, class, module etc.)
- Keyword – Reserved words

- *Keywords cannot be used as Identifiers*

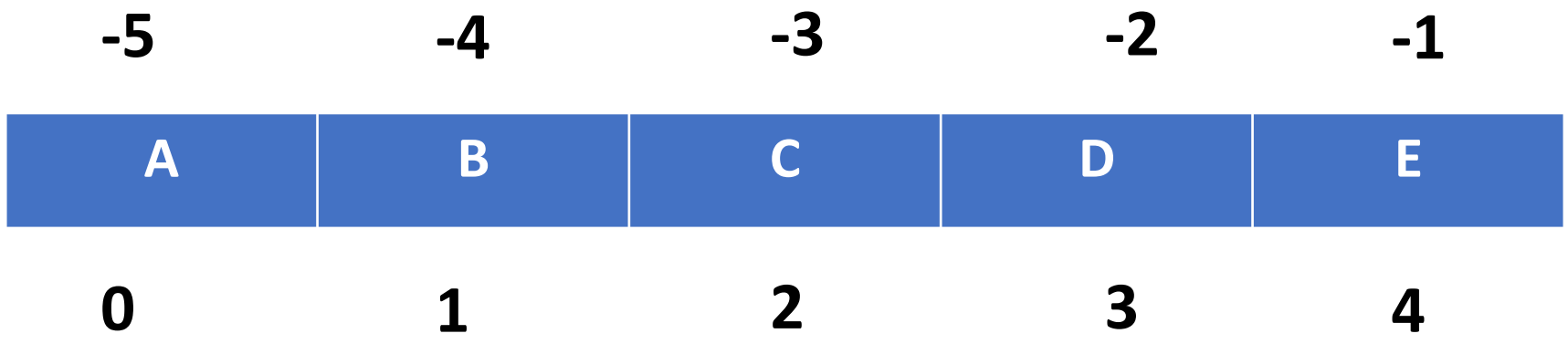
Datatypes and Variables

- Datatype represents the type of data present inside a variable
- Int, Float, String, Boolean, Complex, Bytes, Bytearray, Range, Lists, Tuples, Dictionary, Set, Frozen Set, None
- Variable is a reference to an object in Python, an object can be data stored in memory
- Fundamental Datatypes → Int, Float, Boolean, Complex, String
- Fundamental Datatypes are Immutable

s5 = “Hello”

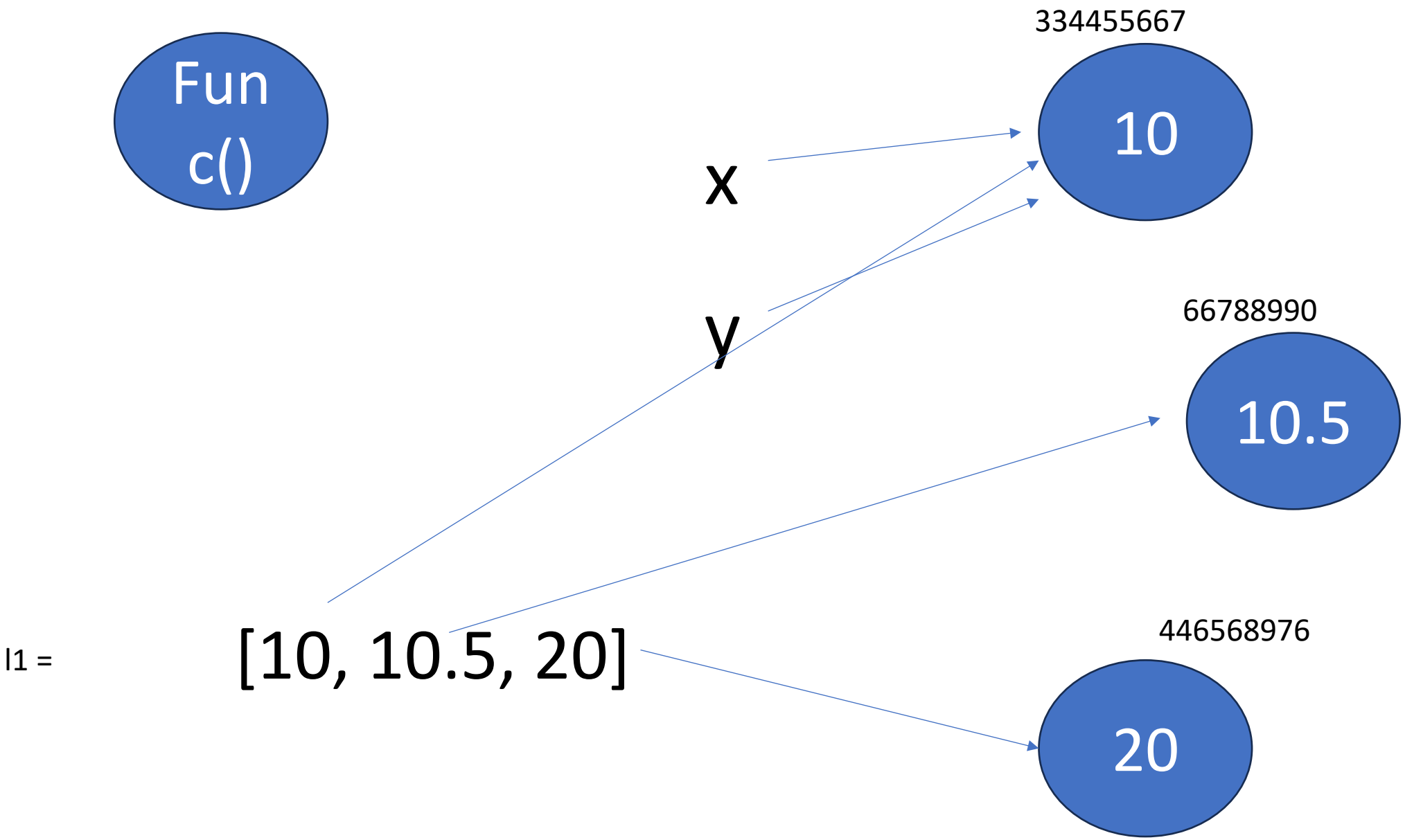


s5 = “Hello”



Datatypes

- Lists → Ordered, Mutable, Heterogeneous collection of elements which allow duplicate values
- Tuple → Similar to List, the only difference is that it is immutable
- Dictionary → Represent a group of values as key, value pairs


Fun
c()
334455667
10
x
y
66788990
10.5
l1 =
[10, 10.5, 20]
446568976
20

Functions / Modules / Library

- A group of statements with a name are functions
- A group of functions saved to a file are modules
- A group of modules is a library

What is an exception?

- An expected event that disturbing the flow of execution

- We need to handle exceptions !
  - The objective of exception handling is graceful termination of the program
  - *Exception handling does not mean that we repair the exception*
  - Define alternate ways to continue the rest of the program

- Every exception in Python is an object. For every exception type, the corresponding classes are available
- Whenever an exception occurs, the PVM will create a corresponding exception object and will check if there is a handler code. If the handler code is not available, then the interpreter terminates the program abnormally, and prints the exception information to the console

Decorators

- Decorator is a function that can take a function as argument and extend its functionality without modifying the base function

Generators

- A generator is a function which generates a sequence of values, uses yield keyword to return values

Abstraction and Encapsulation

- The methods that we create, which the objects will call, are the layers of abstraction that are provided to the user (Hiding Implementation Details from the user and exposing only essential features)

- The statements inside the methods are the encapsulation being done (Wrapping data and methods into a single entity and restricting direct access)

Access Specifiers

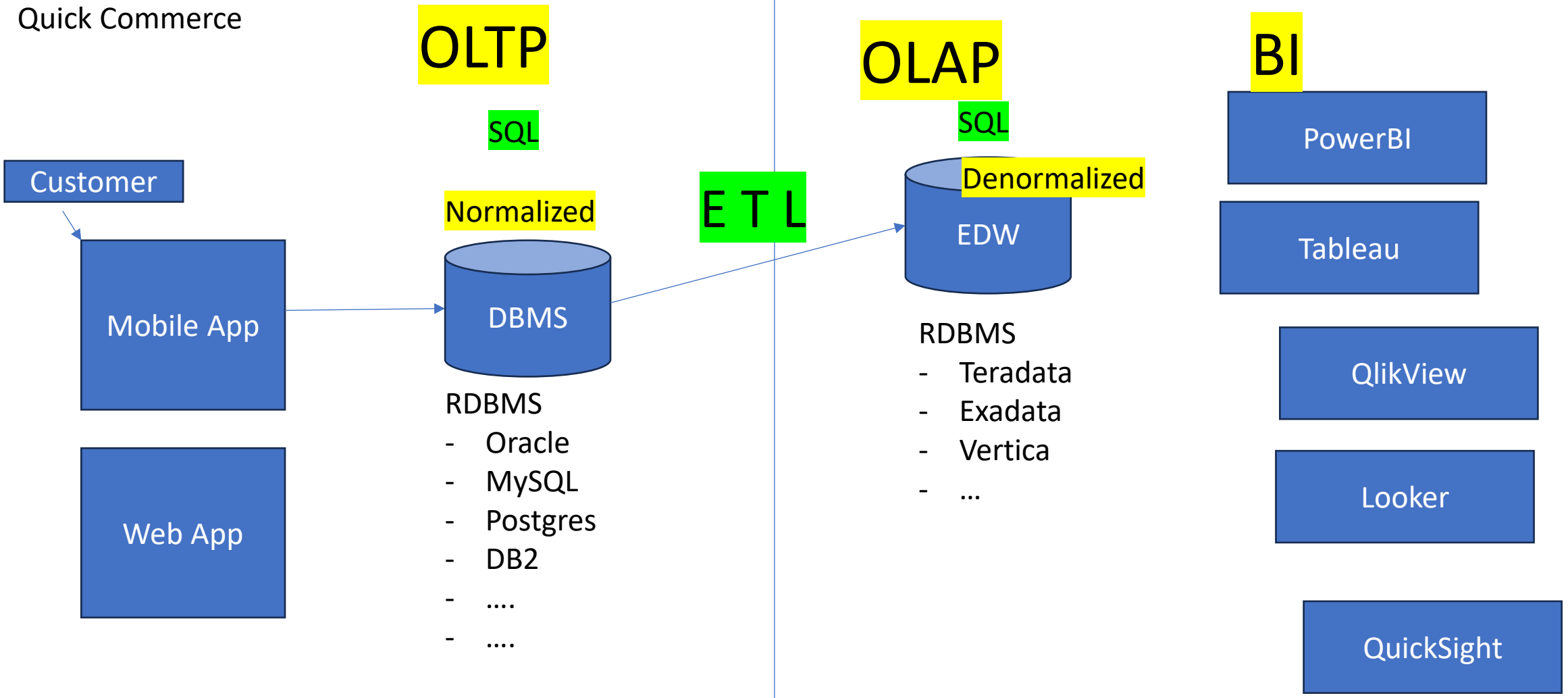
- Unlike Java / C++, Python does NOT enforce access control with keywords
- These are defined by naming conventions, developer needs to follow
- In Python, access levels are by convention, not by compiler rules

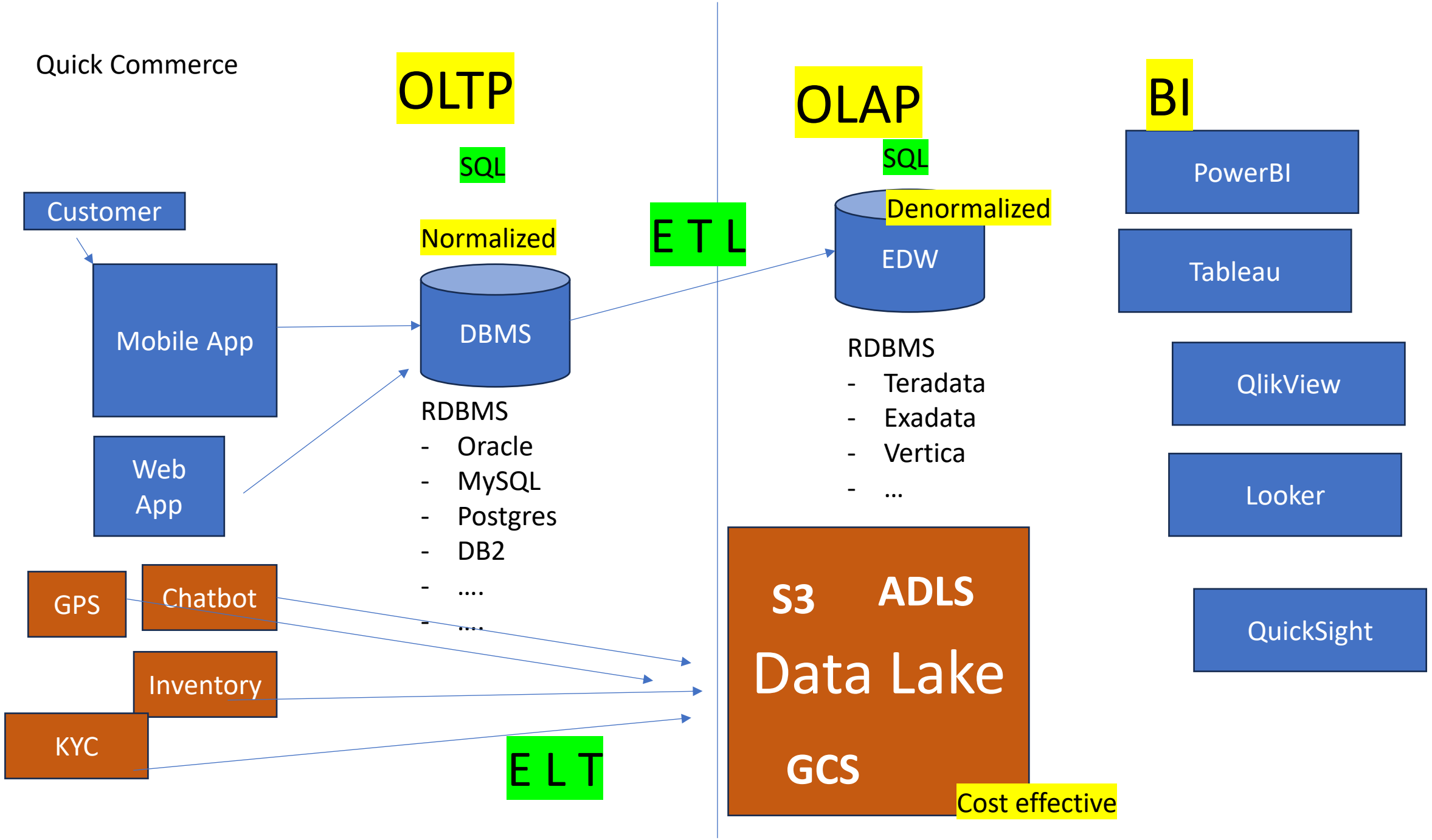
Working with sample dataset

- sample_data.csv

- Field Names
  - order_id
  - order_date
  - order_customer_id
  - order_status

Quick Commerce




Quick Commerce
OLTP
SQL
Normalized
Customer
Mobile App
Web App
DBMS
RDBMS
- Oracle
- MySQL
- Postgres
- DB2
- ....
- ....
E T L
OLAP
SQL
Denormalized
EDW
RDBMS
- Teradata
- Exadata
- Vertica
- ...
BI
PowerBI
Tableau
QlikView
Looker
QuickSight
GPS
Chatbot
Inventory
KYC
E L T
S3
ADLS
Data Lake
GCS
Cost effective