

# Structured Query Language (SQL)

Attribute (or)  
Field

<i>sid</i>	<i>sname</i>	<i>rating</i>	<i>age</i>
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

Record (or)  
Tuple

Fig: Sailors table

- The SQL language has Three parts
  - Data Definition Language (DDL)
  - Data Manipulation Language (DML)
  - Data Control Language(DCL)

### **Data Definition Language (DDL):**

- DDL supports the creation, deletion, and modification of definitions for tables and views and indexes
- Integrity constraints can be defined on tables, either when the table is created or later

## **Data Manipulation Language (DML):**

- DML allows users to insert, delete, and modify records

## **Data Control Language (DCL):**

- DCL controls a database, including administrative privileges and saving data

## **Data type**

- Specifies the kind of data that a field stores

## **Character data type**

### **VARCHAR2**

- Stores variable-length character data up to a maximum of 4,000 characters
- Values in different records can have a different number of characters

## Number data type

- Stores negative, positive, fixed and floating point numbers with precision up to 38 decimal places

**Syntax:** Fieldname NUMBER[(precision , scale)]

**Integer:** Fieldname NUMBER (precision)

**Fixed Point:** Fieldname NUMBER[(precision , scale)]

## Date data type

### Date

- Dates from December 31,4712 BC to December 31,4712 AD

- Default format DD-MON-YY
- Default time format HH:MI:SS AM

Syntax:    Fieldname DATE

## DDL Commands

- CREATE
- ALTER
- DROP
- TRUNCATE

## **CREATE command**

- Used to create table

### **Syntax:**

```
CREATE TABLE table-name (Fieldname1 data_type ,  
Fieldname2 data_type , .... ..)
```

### **Example**

```
CREATE TABLE Sailors (sid NUMBER(2), sname  
VARCHAR2(20), rating NUMBER(2))
```

## **ALTER command**

### **Adding a new field in to the existing relation**



- All rows in the relation(table) are assigned 'null' as the value for the new attributes

**Syntax:** ALTER TABLE tablename  
ADD (fieldname Field\_datatype)

**Example:** ALTER TABLE Sailors  
ADD (age NUMBER(2))

## **Modifying an existing field**

**Syntax:** ALTER TABLE tablename  
MODIFY (fieldname new\_field\_datatype)

**Example**

ALTER TABLE Sailors MODIFY (age NUMBER(3,1))

## **Deleting an existing field**

**Syntax:** ALTER TABLE tablename  
DROP COLUMN Fieldname

**Example:** ALTER TABLE Sailors DROP COLUMN age

## **DROP command**

- Used to delete an existing table

**Syntax:** DROP TABLE tablename

**Example:** DROP TABLE Sailors

## **TRUNCATE command**

- TRUNCATE Removes all rows from a table without backup

**Syntax:** TRUNCATE table tablename

**Example:** TRUNCATE table Sailors

## **DML Commands**

- INSERT
- DELETE
- UPDATE
- SELECT

### **INSERT command**

#### **Inserting record into a table**

**Syntax:**        INSERT        INTO        table-name        VALUES  
(field1,field2,...)

#### **Example:**

INSERT INTO Sailors values (22,'Dustin',7,45.0)

#### **Inserting a record that has some null attributes**

- Requires identifying the fields that actually get data

**Syntax:** INSERT INTO table-name (field1,field4) VALUES  
(value1,value2)

## **Inserting records from another table**

**Syntax:** INSERT INTO table\_name1 SELECT \* FROM table\_name2

## **UPDATE command**

**For modifying attribute values of (some) tuples in a table**

**Syntax:** UPDATE tablename SET column1=value1,..., columnn=valuen WHERE condition

**Example:** UPDATE Sailors SET age=34.5 WHERE sid=22

## **DELETE command**

**Removing specified rows from a table**

**Syntax:** DELETE FROM tablename WHERE condition

**Example:** DELETE FROM Sailors WHERE sid=22

## Removing all rows from a table

Syntax: DELETE FROM tablename

Example: DELETE FROM Sailors

<i>bid</i>	<i>bname</i>	<i>color</i>
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

Fig 4.2 Boats table

<i>sid</i>	<i>bid</i>	<i>day</i>
22	101	10/10/98
22	102	10/10/98
22	103	10/8/98
22	104	10/7/98
31	102	11/10/98
31	103	11/6/98
31	104	11/12/98
64	101	9/5/98
64	102	9/8/98
74	103	9/8/98

Fig 4.3 Reserves table