Data Manipulation Language (DCL) Commands:

Show all records of Sailors

Show all records of Boats

Show all records of Reserves

Find the names and ages of all sailors.

Find all sailors with a rating above 8.

Find sailors name with a rating above 7 & age above 25.

Display all the names & colors of the boats.

Find all the boats with Red color.

Find the names of sailors who have reserved boat number 103.

Find the names of sailors ' who have reserved Red boat.

Find the colors of boats reserved by Lubber.

Find names of the sailors who have reserved at least one boat.

Find names of the sailors who have reserved two different boats.

AGGREGATE Functions :- In addition to simply retrieving data, we often want to perform some computation or summarization. We now consider a powerful class of constructs for computing aggregate values such as MIN and SUM. These features represent a significant extension of relational algebra. SQL supports five aggregate operations, which can be applied on any column, say A, of a relation:

1. COUNT (A) :- The number of values in the A column.

Or COUNT (DISTINCT A): The number of unique values in the A column.

Ex:- 1) To count number SIDs of sailors in Sailors table

2) To count numbers of boats booked in Reserves table.

3) To count number of Boats in Boats table.

2. SUM (A) :- The sum of all values in the A column.

Or SUM (DISTINCT A): The sum of all unique values in the A column.

Ex:- 1) To find sum of rating from Sailors

2) To find sum of distinct age of Sailors (Duplicate ages are eliminated).

3. AVG (A) :- The average of all values in the A column.

Or AVG (DISTINCT A): The average of all unique values in the A column. Ex:-

2) To find average of distinct age of Sailors (Duplicate ages are eliminated).

4. MAX (A) :- The maximum value in the A column.

Ex:- To find age of Oldest Sailor.

5. MIN (A) :- The minimum value in the A column. Ex:- To find age of Youngest Sailor.

Note that it does not make sense to specify DISTINCT in conjunction with MIN or MAX (although SQL does not preclude this).

1) Find the average age of sailors with a rating of 10.

2) Count the number of different sailor names.

3) Find the name and age of the oldest sailor.

4) Count the number of Sailors.

5) Find the names of sailors who are older than the oldest sailor with a rating of 10.

ORDER BY Clause :- The ORDER BY keyword is used to sort the result-set by a specified column. The ORDER BY keyword sorts the records in ascending order

by default (we can even use ASC keyword). If we want to sort the records in a descending order, we can use the DESC keyword. The general syntax is

SELECT ATT_LIST FROM TABLE_LIST ORDER BY ATT_NAMES [ASC | DESC];

Ex:- 1) Display all the sailors according to their ages

2) Display all the sailors according to their ratings (topper first).

3) Displays all the sailors according to rating, if rating is same then sort according to age.

4) Displays all the sailors according to rating (Lower Rating First), if rating is same then sort according to age (Younger First). Query :

Output :

GROUP BY and HAVING Clauses :- Thus far, we have applied aggregate operations to all (qualifying) rows in a relation. Often we want to apply aggregate operations to each of a number of groups of rows in a relation, where the number of groups depends on the relation instance. For this purpose we can use Group by clause.

GROUP BY:- Group by is used to make each a number of groups of rows in a relation, where the number of groups depends on the relation instances. The general syntax is

SELECT [DISTINCT] ATT_LIST FROM TABLE_LIST WHERE CONDITION GROUP BY GROUPING_LIST;

Ex:- Find the age of the youngest sailor for each rating level.

HAVING :- The extension of GROUP BY is HAVING clause which can be used to specify the qualification over group. The general syntax is

SELECT [DISTINCT] ATT_LIST FROM TABLE_LIST WHERE CONDITION GROUP BY GROUPING_LIST HAVING GROUP_CONDITIION;

Write following queries in SQL.

1) For each red boat; find the number of reservations for this boat.

2) Find the average age of sailors for each rating level that has at least two sailors.

3) Find those ratings for which the average age of sailors is the minimum overall ratings.