

Experiment-7: To Implement the concept of Grouping

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Subject Name:- DATABASE MANAGEMENT SYSTEM LAB

Subject Code: 21O-20CSP-233_20BIT-1_A

1. Aim/Overview of the practical:

To Implement the concept of Grouping.

2. Task to be done:

Implementation of grouping commands of SQL with proper Input queries syntax and the output.

3. Theme/Interests definition(For creative domain):-

1. Creating copy existing tables of employees for this experiment as bemp

Aggregate functions in database management system take single or multiple rows from the table as input and return a value according to the query raised by the user.

All the aggregate functions are used in Select statement.

The basic aggregate functions are:

Ø COUNT() Ø SUM() Ø AVG() Ø MIN() Ø MAX()

Order by and Group by are some of the commands which are used along with the aggregate functions to produce output of desire taking the rows as input.

1. COUNT ():

Command: - count

Purpose: - This aggregate function is used to return the count or the total values of a given column.

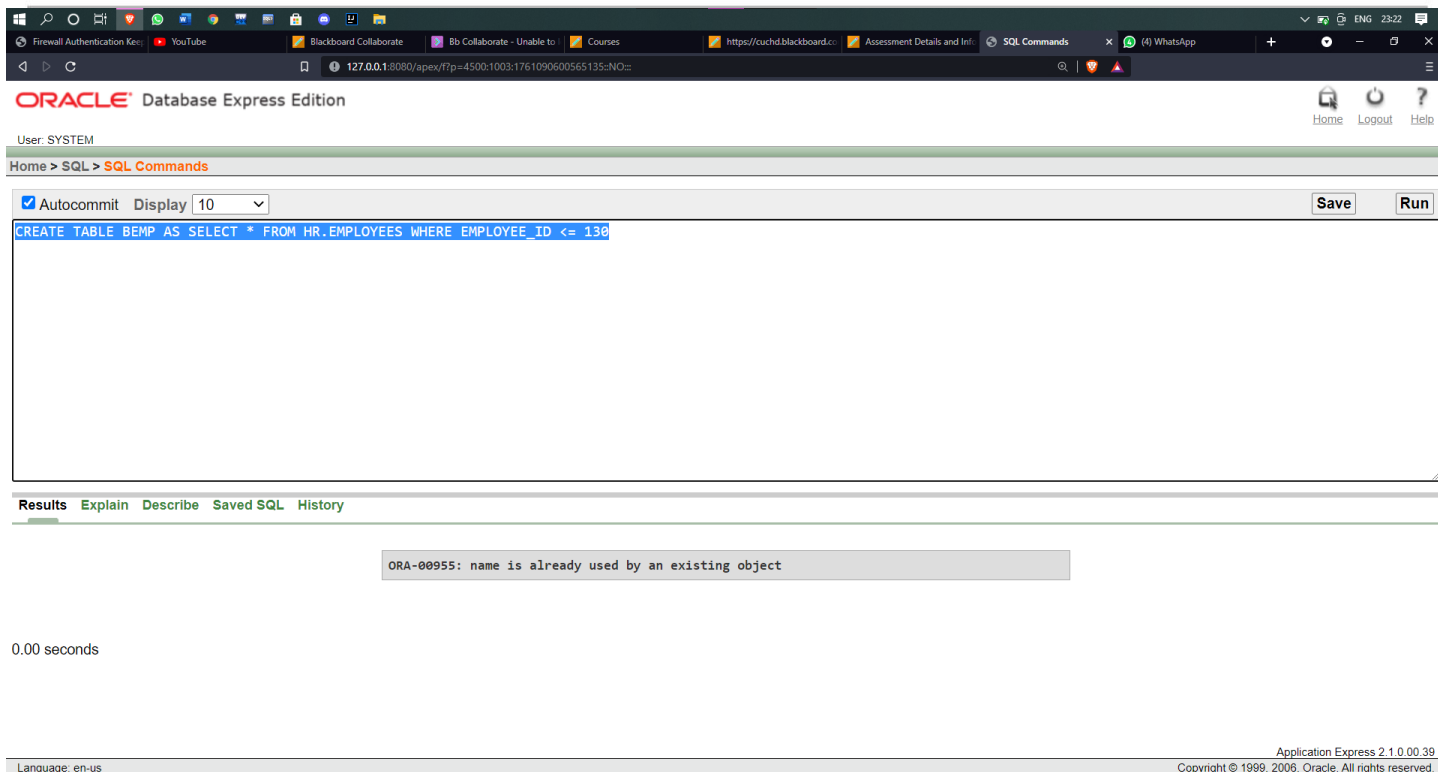
Syntax: -

Select Count() from <table_name>: Returns total number of records*

Select Count(<column name>) from <table name>: Returns number of Non Null values in the column

Select Count(Distinct <column name>) from <table name>: Returns number of distinct Non Null values in the column

Output: -



The screenshot shows the Oracle Database Express Edition SQL Command window. The user is SYSTEM. The command entered is: `CREATE TABLE BEMP AS SELECT * FROM HR.EMPLOYEES WHERE EMPLOYEE_ID <= 130`. The command is highlighted in blue. Below the command window, the error message is displayed: `ORA-00955: name is already used by an existing object`. The status bar at the bottom indicates the language is en-us and the application is Express 2.1.0.00.39.

2. SUM ():

Command: - sum

Purpose: - This aggregate function is used to return the sum of all the values of a given column.

Syntax: -

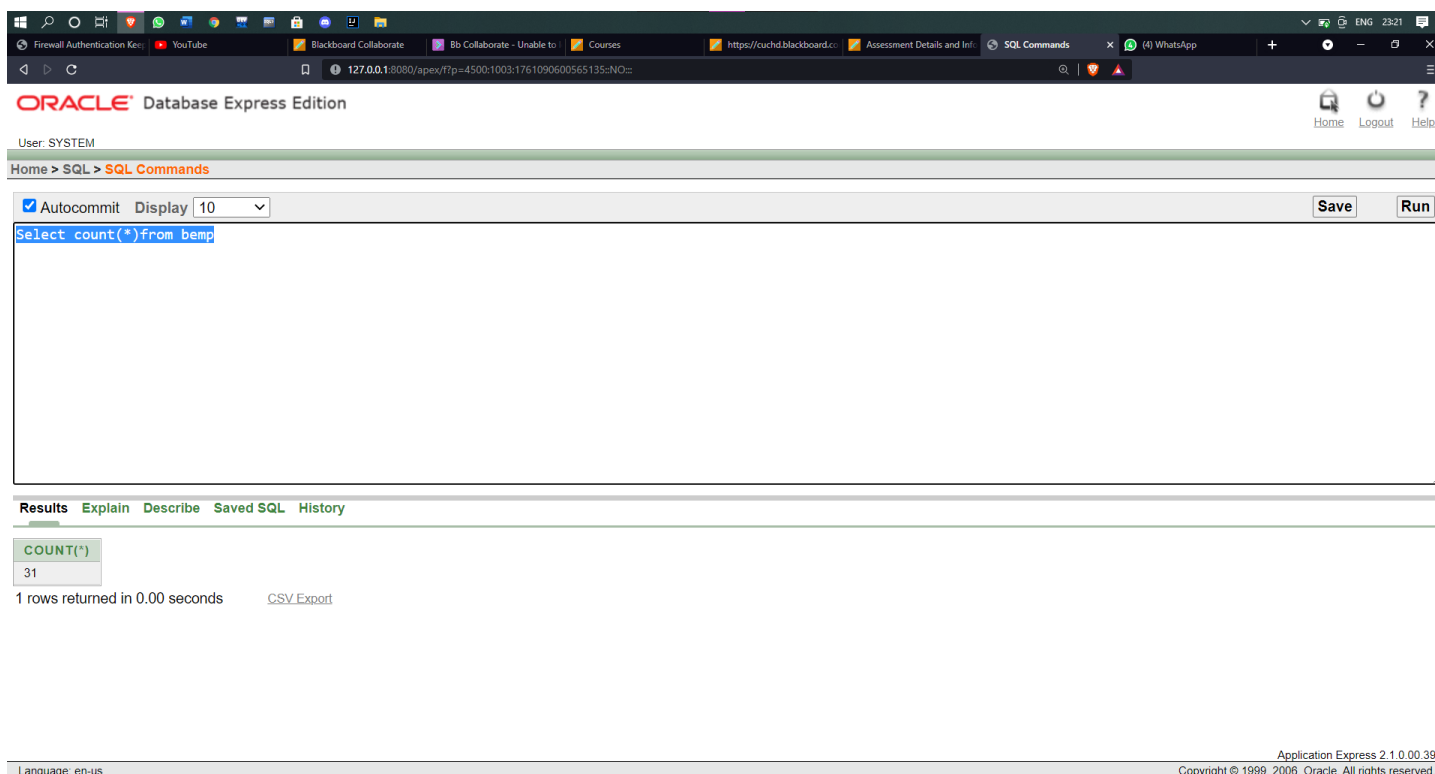
1. Sum all Non Null values of Column-

Select sum(<column name>) from <table name>

2. Sum of all distinct Non-Null values.

Select sum(Distinct <column name>) from <table name>

Output



The screenshot shows the Oracle Database Express Edition web interface. The browser address bar displays the URL `https://cuchd.blackboard.co/assessment/details/inf/`. The page title is "ORACLE Database Express Edition". The user is logged in as "SYSTEM". The "SQL Commands" tab is active, showing a query editor with the text `Select count(*) from bemp`. The "Autocommit" checkbox is checked, and the "Display" dropdown is set to "10". The "Save" and "Run" buttons are visible. Below the query editor, the "Results" tab is selected, showing a table with one row and one column labeled "COUNT(*)", containing the value "31". The footer indicates "1 rows returned in 0.00 seconds" and provides a "CSV Export" link. The bottom of the page shows the language set to "en-us" and the application version "Application Express 2.1.0.00.39".

3. MIN ():

Command: min

Purpose: - This aggregate function is used to return the minimum element present in the given column.

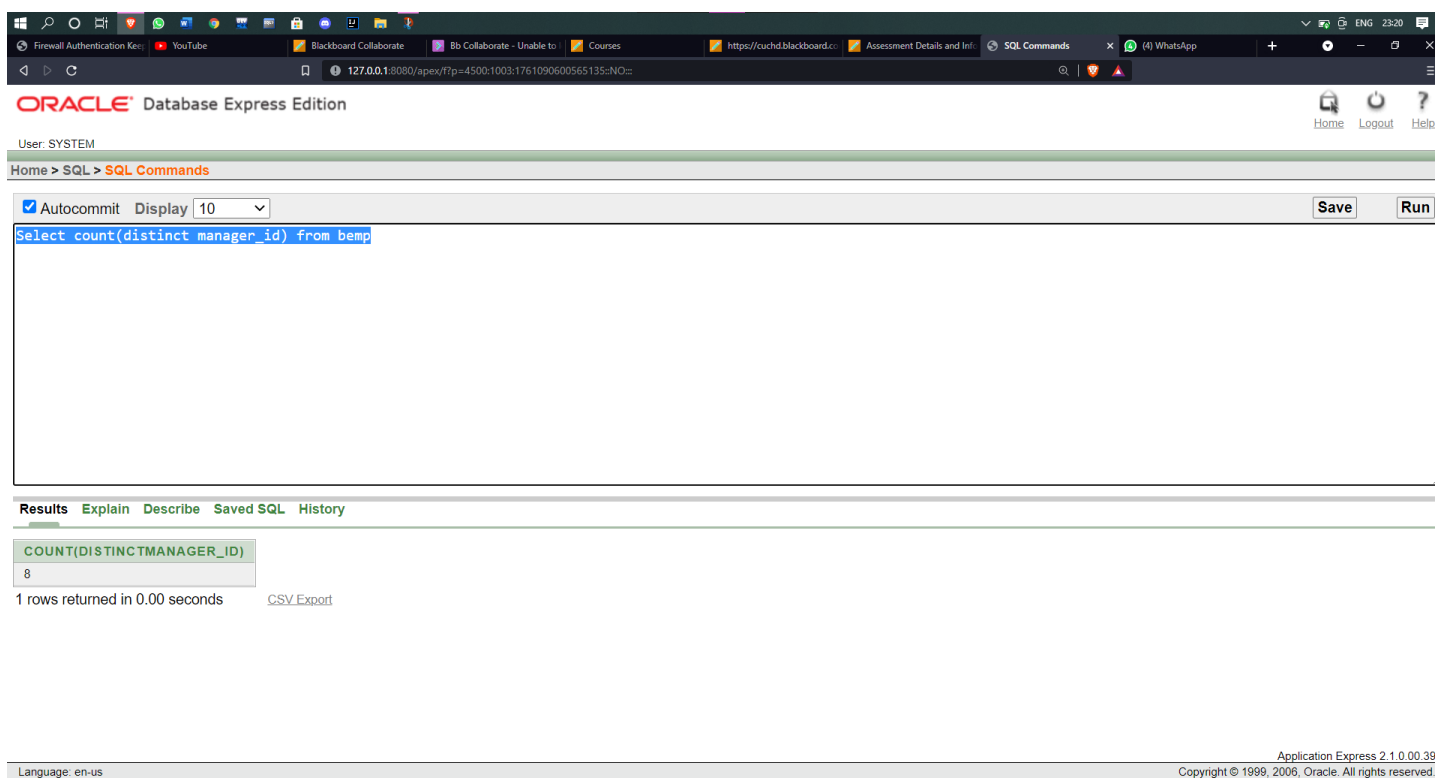
Syntax: -

1. Minimum value in the column except NULL

Select min(<column name>) from <table name>

Select min(HIRE_DATE) from BEM

OUTPUT



The screenshot shows the Oracle Database Express Edition SQL Command window. The command entered is `Select count(distinct manager_id) from bemp`. The results show a single row with the value 8. The window also displays the user as SYSTEM and the current time as 23:20.

Oracle Database Express Edition

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

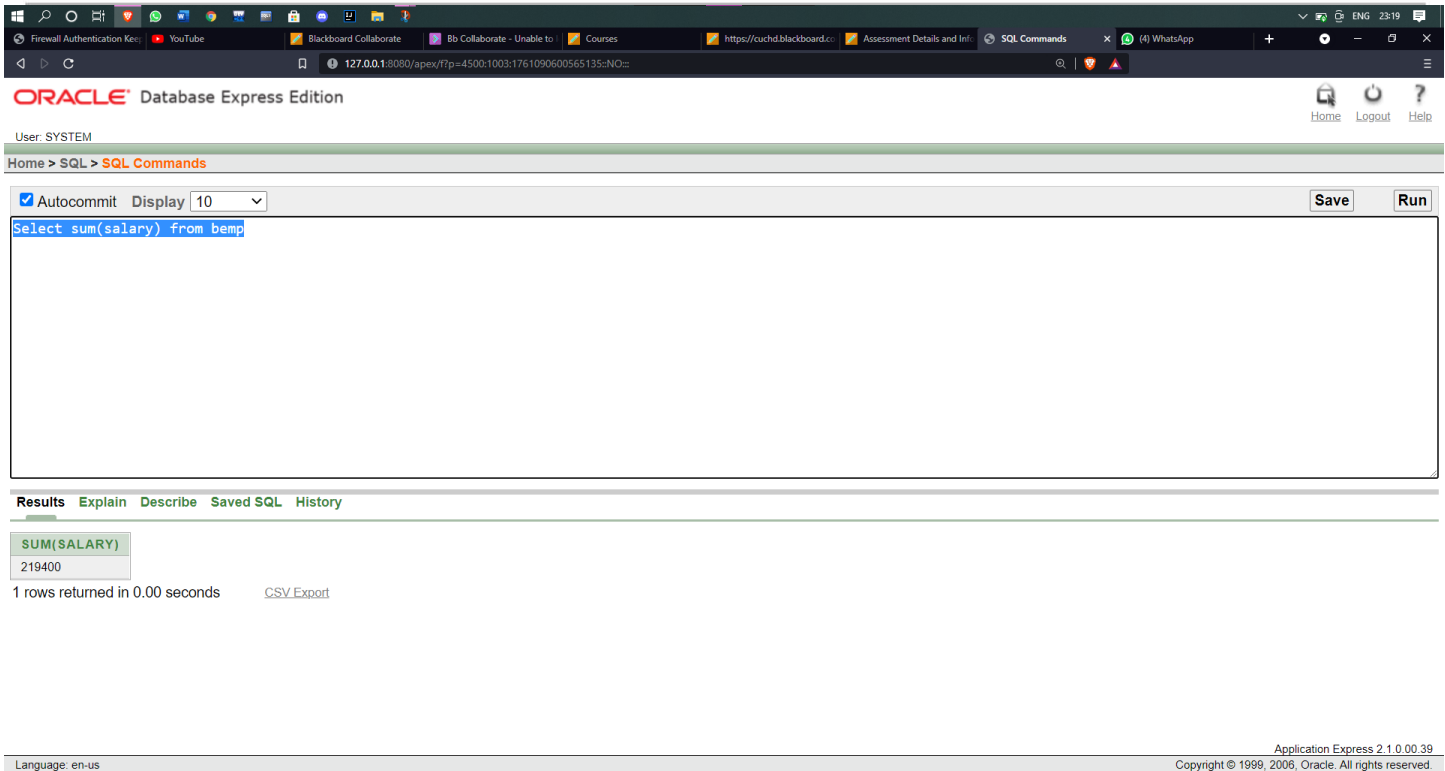
Select count(distinct manager_id) from bemp

Results Explain Describe Saved SQL History

COUNT(DISTINCTMANAGER_ID)
8

1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.



The screenshot shows the Oracle Database Express Edition web interface. The user is logged in as SYSTEM. The SQL Command window contains the query: `Select sum(salary) from bemp`. The Results window shows a single row with the value 219400 for the SUM(SALARY) column. The interface includes a top navigation bar with links for Home, Logout, and Help. The bottom status bar indicates the language is en-us and the application is Express 2.1.0.00.39.

4. MAX():

Command: - max

Purpose: - This aggregate function is used to return the maximum element present in the given column.

Syntax: -

1. Maximum value in the column except NULL

Select max(<column name>) from <table name>;



OUTPUT:-

Browser tabs: Firewall Authentication Key, YouTube, Blackboard Collaborate, Bb Collaborate - Unable to, Courses, https://cuchd.blackboard.co, Assessment Details and Inf, SQL Commands, (4) WhatsApp

Address bar: 127.0.0.1:8080/apex/f?p=4500:1003:1761090600565135::NO::

ORACLE Database Express Edition

User: SYSTEM

Home > SQL > **SQL Commands**

☒ Autocommit Display 10 Save Run

Select min(salary) from bemp

Results Explain Describe Saved SQL History

MIN(SALARY)
2300

1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us Application Express 2.1 0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved



Oracle Database Express Edition interface showing a SQL query execution result.

User: SYSTEM

Home > SQL > SQL Commands

Autocommit: ☒ Display: 10

Save Run

Select min(hire_date) from bemp

Results Explain Describe Saved SQL History

MIN(HIRE_DATE)
17-JUN-87

1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39
Copyright © 1999, 2006, Oracle. All rights reserved.

5. AVERAGE():

Command: - average

Purpose: - This aggregate function is used to return the average value or the arithmetic mean of all the values in the given column.

Syntax: -

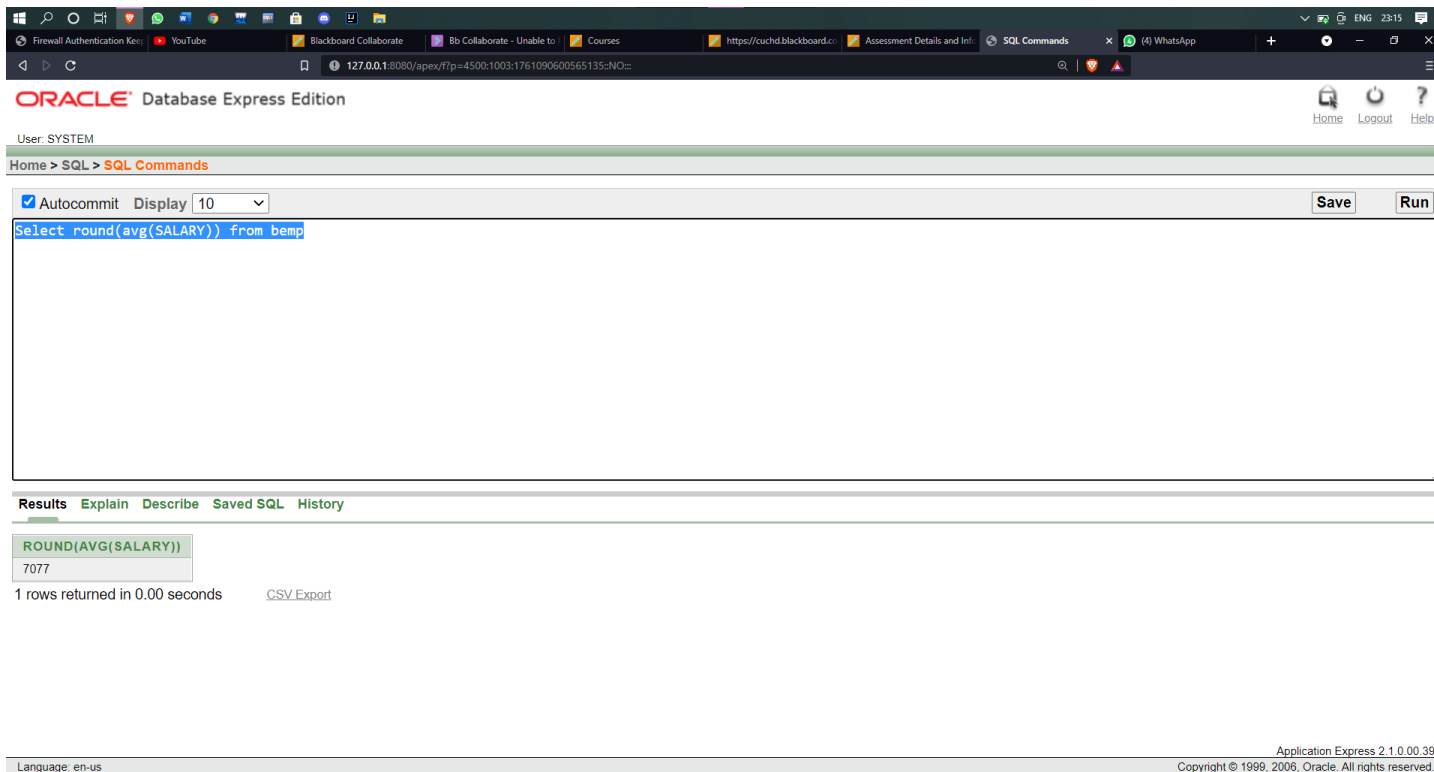
1. Average value of all in the column

Select avg(<column name>) from <table name>

2. Average value of all distinct values in the column

Select avg(distinct <column name>) from <table name>

Output:-



The screenshot shows the Oracle Database Express Edition interface. The SQL Command window contains the query: `Select round(avg(SALARY)) from emp`. The query has been executed, and the results are displayed in a table with one row: `ROUND(AVG(SALARY))` with the value `7077`. The status bar indicates "1 rows returned in 0.00 seconds".

ORACLE Database Express Edition

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

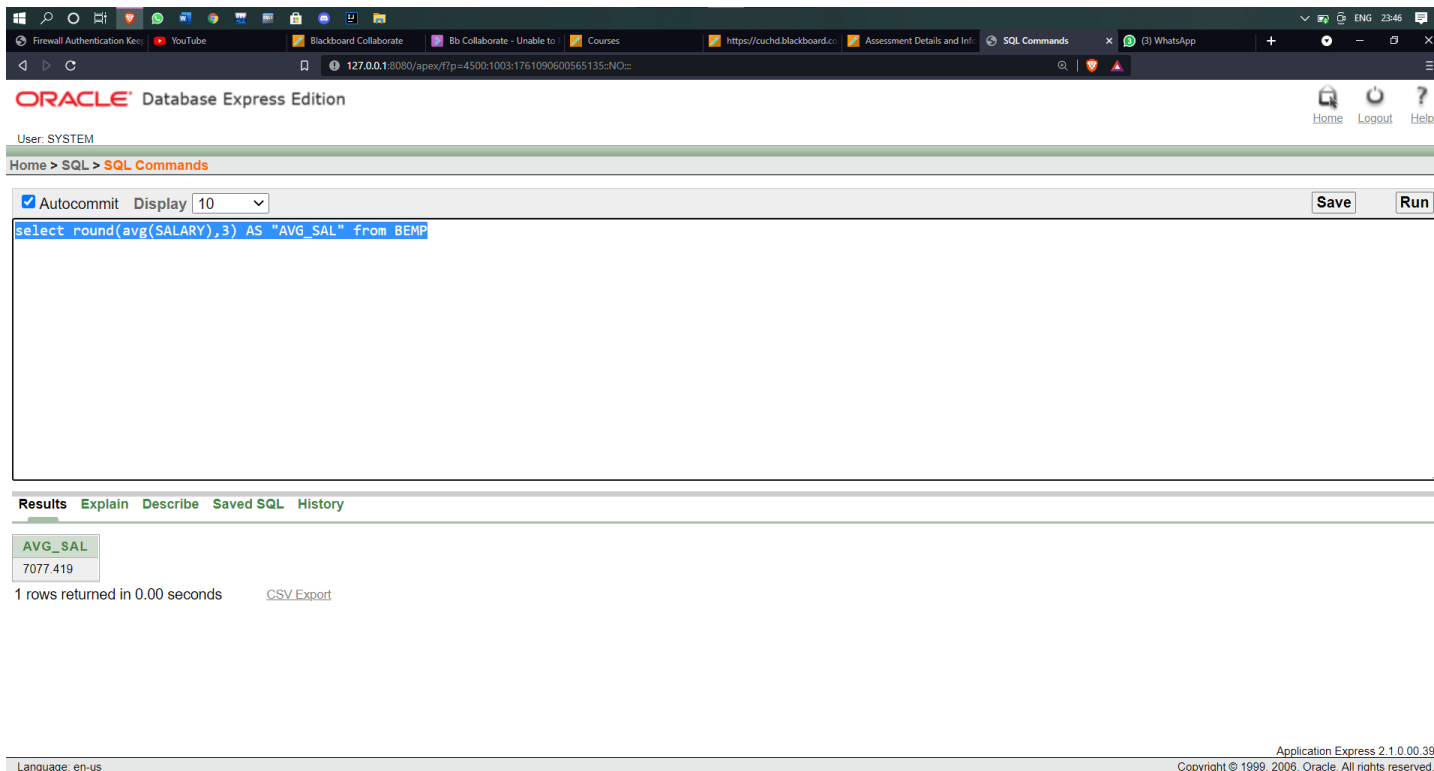
Select round(avg(SALARY)) from emp

Results Explain Describe Saved SQL History

ROUND(AVG(SALARY))
7077

1 rows returned in 0.00 seconds CSV Export

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.



The screenshot shows the Oracle Database Express Edition web interface. The browser address bar displays the URL: `https://cuchd.blackboard.co/assessment/details/info/127.0.0.1:8080/apex/f?p=4500:1003:1761090600565135::NO::`. The interface includes a top navigation bar with 'Home', 'Logout', and 'Help' links. Below the navigation bar, the 'SQL Commands' tab is active, showing a text area with the SQL query: `select round(avg(SALARY),3) AS "AVG_SAL" from BEMP`. The 'Autocommit' checkbox is checked, and the 'Display' dropdown is set to '10'. The 'Save' and 'Run' buttons are visible. Below the text area, the 'Results' tab is selected, displaying a table with one row: `AVG_SAL` with the value `7077.419`. The status bar at the bottom indicates '1 rows returned in 0.00 seconds' and provides a 'CSV Export' link. The footer shows 'Language: en-us' and 'Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.'

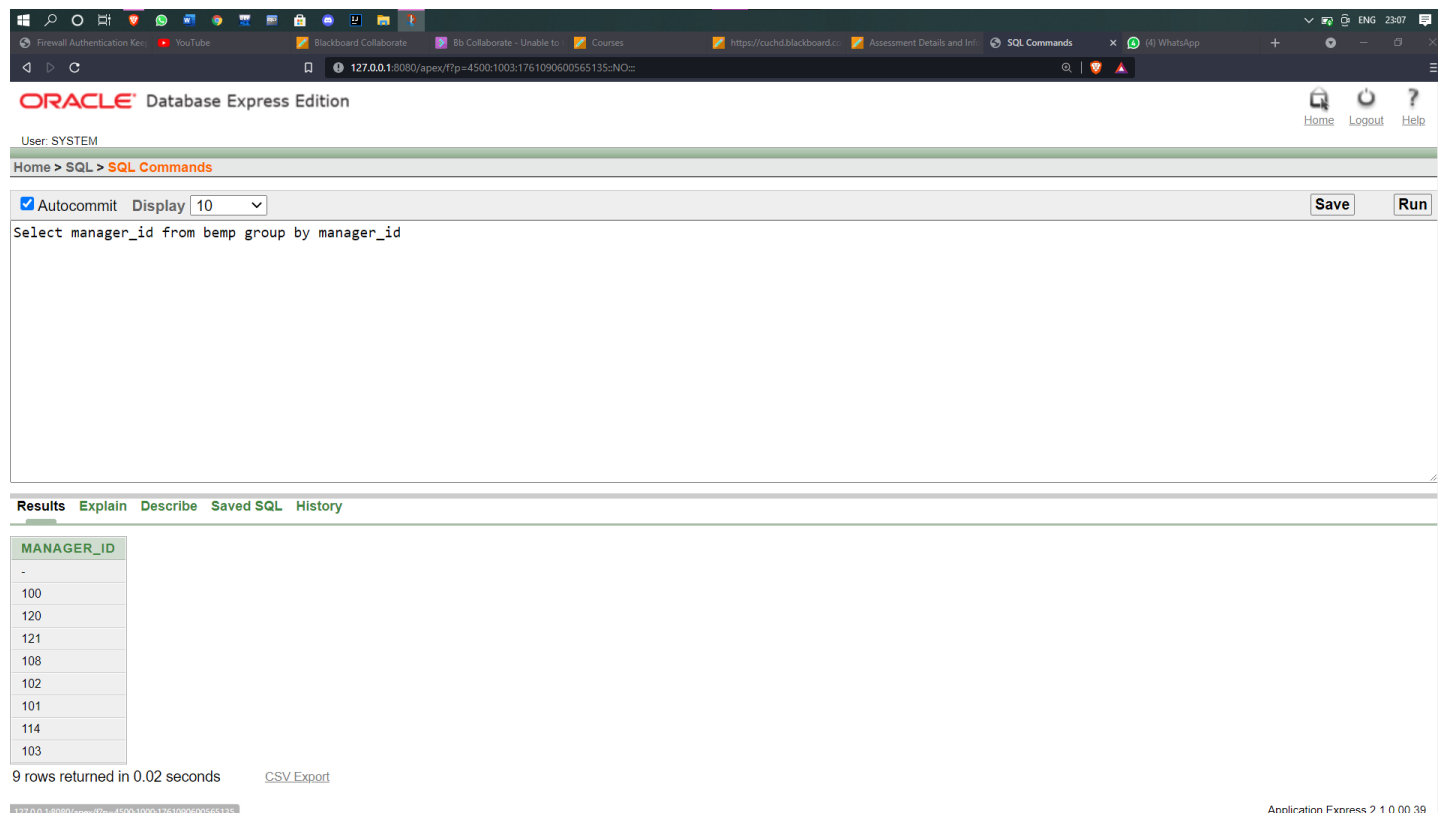
1. GROUP BY:

Command: - group by

Purpose: - The function is used to arrange identical data into groups with the help of some aggregate functions. i.e if a particular column has same values in different rows then it will arrange these rows in a group.

Syntax: - *Select <column1>,function name(<column name>) from <table name> where condition group by <column name>*

OUTPUT–



The screenshot shows the Oracle Database Express Edition interface. The SQL Command window contains the following query:

```
Select manager_id from emp group by manager_id
```

The query has been executed, and the results are displayed in a table with the following data:

MANAGER_ID
100
120
121
108
102
101
114
103

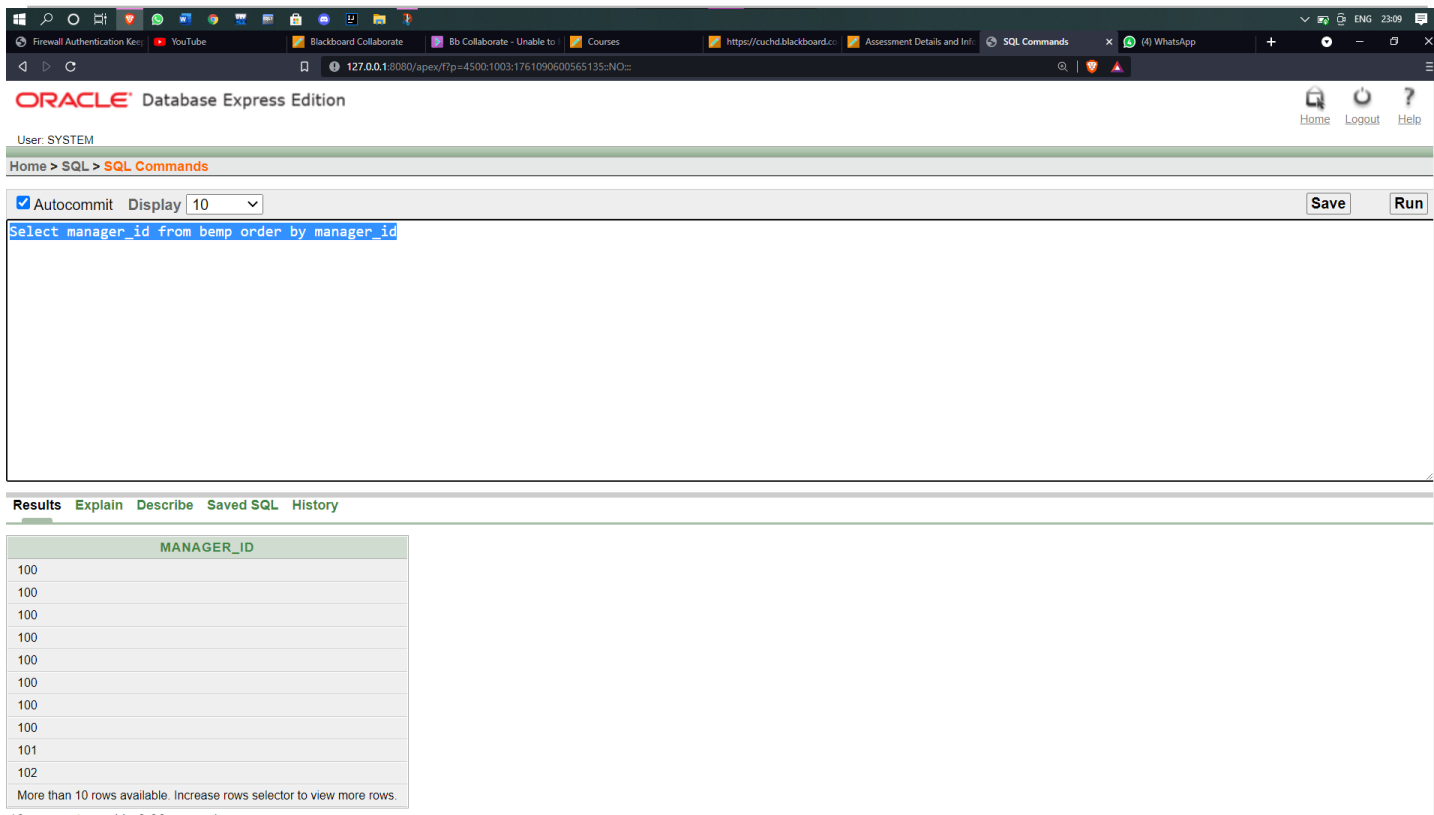
9 rows returned in 0.02 seconds

7. ORDER BY

Purpose: - The ORDER BY statement is used to sort the fetched data in either ascending or descending according to one or more columns.

Syntax: - *Select <column1>,function name(<column name>) from <table name> where condition group by <column name> order by <column name>*

Output –



The screenshot shows the Oracle Database Express Edition interface. The SQL Command window contains the query: `Select manager_id from emp order by manager_id`. The Results tab is active, displaying a table with the column `MANAGER_ID`. The results show values 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 101, and 102. A message at the bottom indicates "More than 10 rows available. Increase rows selector to view more rows."

MANAGER_ID
100
100
100
100
100
100
100
100
100
100
101
102

5. Result/Output/Writing Summary:

We observed the different syntax of implementing the concept of grouping.

Learning outcomes (What I have learnt):

1. After completing this experiment we get to know SQL commands and its implementation on objects like group by and their different types like count, sum, max, min and average.
2. Learned about how to perform group by and order by within one query.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			