mysql> UPDATE Zoo SET Contact\_No=FLOOR(RAND()\*(9876543210-6666666666+1))+6666666666 where ZooId IN(11,12,13);

Query OK, 3 rows affected (0.02 sec)

Rows matched: 3 Changed: 3 Warnings: 0

mysql> UPDATE Zoo SET Animal\_Population=FLOOR(RAND()\*(3333-500+1))+500 where ZooId IN(11,12,13);

Query OK, 3 rows affected (0.01 sec)

Rows matched: 3 Changed: 3 Warnings: 0

mysql> UPDATE Zoo SET Visitors\_per\_year=FLOOR(RAND()\*(2500000-90000+1))+90000 where ZooId IN(11,12,13);

Query OK, 3 rows affected (0.04 sec)

Rows matched: 3 Changed: 3 Warnings: 0

**mysql> #DATA IN ALL TABLES**

**mysql> #TABLE 1**

mysql> SELECT \* FROM **ZOO**;

+-------+-----------------------------------------+-------------+--------------+------------+-------------------+-------------------+

| ZooId | Name | State | City | Contact\_No | Animal\_Population | Visitors\_per\_Year |

+-------+-----------------------------------------+-------------+--------------+------------+-------------------+-------------------+

| 1 | Alipore Zoological Gardens | West Bengal | Kolkata | 3324791150 | 1266 | 3000000 |

| 2 | Amirthi Zoological Park | Tamil Nadu | Vellore | 9789323326 | 174 | 131619 |

| 3 | Arignar Anna Zoological Park | Tamil Nadu | Chennai | 4422751089 | 2644 | 2040000 |

| 4 | Assam State Zoo-cum-Botanical Garden | Assam | Guwahati | 7002716702 | 895 | 450000 |

| 5 | Bannerghatta National Park | Karnataka | Bengaluru | 8029776466 | 1300 | 1616130 |

| 7 | Birsa Deer Park | Jharkhand | Ranchi | 6512480948 | 1450 | 800000 |

| 8 | Bondla Wildlife Sanctuary | Goa | Ponda | 8923561278 | 3213 | 100000 |

| 9 | Pipli Mini Zoo | Haryana | Pipli | 4677569871 | 345 | 25000 |

| 10 | Chhatbir Zoo | Punjab | Zirakpur | 5312674284 | 1432 | 125000 |

| 11 | Chennai Snake Park Trust | Tamil Nadu | Chennai | 8877598493 | 888 | 975764 |

| 12 | Chinkara Breeding Centre Kairu, Bhiwani | Haryana | Bahal | 7318696946 | 2873 | 1318592 |

| 13 | Crocodile Breeding Centre, Kurukshetra | Haryana | Bhaur Saidan | 9713775775 | 2699 | 1165670 |

+-------+-----------------------------------------+-------------+--------------+------------+-------------------+-------------------+

12 rows in set (0.02 sec)

**mysql> #TABLE 2**

mysql> SELECT \* FROM **EMPLOYEE**;

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| ZooId | EmpID | Name | Designation | Hire\_Date | Salary | Status | DaysWorked | MonthsWorked |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| 1 | 1001 | Alex | Veterinarian | 2020-04-01 | 85000 | On Duty | 524 | 17 |

| 2 | 3242 | Aiden | Zookeeper | 2011-10-13 | 25000 | On Duty | 3617 | 119 |

| 3 | 3243 | Dan | Zookeeper | 2021-09-07 | 30000 | On Duty | 0 | 0 |

| 2 | 3435 | Rick | Development Director | 2015-09-01 | 95431 | On Duty | 2198 | NULL |

| 3 | 4387 | Ron | Aquarist | 2010-10-14 | 130000 | On Duty | 3981 | NULL |

| 1 | 4533 | Ray | Zookeeper | 2019-05-07 | 25000 | On Duty | 854 | NULL |

| 1 | 4643 | Josefine | Chief Operating Officer | 2004-06-04 | 35000 | On Duty | 6304 | NULL |

| 1 | 4862 | Norine | Curator of Exhibits | 2010-08-12 | NULL | On Duty | 4044 | NULL |

| 1 | 5446 | Stella | Conservation Biologist | 2016-03-09 | 250000 | Off Duty | 2008 | NULL |

| 3 | 5465 | Rebecca | Curator of Exhibits | 2021-09-07 | 45000 | On Duty | 0 | NULL |

| 1 | 5642 | Bianca | Aquarist | 2018-11-15 | 125000 | Off Duty | 1027 | NULL |

| 1 | 6432 | Val | Finance Manager | 2011-10-13 | NULL | On Duty | 3617 | NULL |

| 2 | 6512 | Mitchel | Veterinarian | 2009-10-27 | 85000 | On Duty | 4333 | NULL |

| 2 | 7956 | Sarah | Cheif Operating Officer | 2009-01-12 | 30000 | On Duty | 4621 | NULL |

| 2 | 8932 | Frank | Conservation Biologist | 2020-12-09 | 100000 | Off Duty | 272 | NULL |

| 2 | 8945 | Rex | Finance Manager | 2008-02-01 | 30000 | On Duty | 4967 | NULL |

| 1 | 8975 | Samual | Curator of Horticulture | 2010-07-01 | NULL | On Duty | 4086 | NULL |

| 2 | 8979 | Anna | Aquarist | 2010-03-08 | 45000 | On Duty | 4201 | NULL |

| 3 | 9743 | Maddison | Veterinarian | 2012-05-22 | 90000 | On Duty | 3395 | NULL |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

19 rows in set (0.00 sec)

**mysql> #TABLE 3**

mysql> SELECT \* FROM **VISITORS**;

+-------+----------+---------+------------+-----------+----------+-----------+

| ZooId | TicketNo | Name | VisitDate | EntryTime | ExitTime | TimeSpent |

+-------+----------+---------+------------+-----------+----------+-----------+

| 1 | 1001 | Chris | 2006-05-10 | 10:00:17 | 15:14:43 | 05:14:26 |

| 2 | 1005 | Cami | 2006-07-23 | 10:10:17 | 14:29:43 | 04:19:26 |

| 3 | 1006 | Janet | 2021-08-15 | 02:41:50 | 16:29:43 | 13:47:53 |

| 4 | 1007 | Zayn | 2021-08-15 | 09:53:17 | 17:28:29 | 07:35:12 |

| 1 | 1008 | Justina | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

| 1 | 1009 | Eustace | 2012-02-12 | 09:00:00 | 06:00:00 | 03:00:00 |

| 1 | 1010 | Delicia | 2015-05-23 | 09:00:00 | 06:00:00 | 03:00:00 |

| 1 | 1011 | Shelagh | 2019-03-20 | 09:00:00 | 06:00:00 | 03:00:00 |

| 1 | 1012 | Myrtle | 2018-12-10 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1013 | Harley | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1014 | Kevin | 2012-02-12 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1015 | Norton | 2015-05-23 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1016 | Dawson | 2019-03-20 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1017 | Charlie | 2018-12-10 | 09:00:00 | 06:00:00 | 03:00:00 |

+-------+----------+---------+------------+-----------+----------+-----------+

14 rows in set (0.00 sec)

**mysql> #TABLE 4**

mysql> SELECT \* FROM **FEED**;

+-------+---------------+----------------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+---------------+----------------+-----------+

| 1 | Panthera | leo | Carnivore |

| 1 | Panthera | pardus | Carnivore |

| 1 | Panthera | Tigris | Carnivore |

| 1 | Crocodylus | porosus | Carnivore |

| 1 | Canis | lupus | Carnivore |

| 1 | Hippopotamus | amphibius | Omnivore |

| 1 | Ceratotherium | simum | Omnivore |

| 1 | Ursus | arctos | Omnivore |

| 1 | Pan | trolodytes | Omnivore |

| 1 | Orycteropus | afer | Omnivore |

| 1 | Elephas | maximus | Herbivore |

| 1 | Giraffa | camelopardalis | Herbivore |

| 1 | Equus | quagga | Herbivore |

| 1 | Ailurus | fulgens | Herbivore |

| 1 | Hippotragus | niger | Herbivore |

+-------+---------------+----------------+-----------+

15 rows in set (0.00 sec)

**mysql> #WHERE CLAUSE AND AGGREGATE FUNCTIONS WITHOUT GROUP BY**

**mysql> SELECT Name,Salary FROM EMPLOYEE WHERE Salary>80000;**

+----------+--------+

| Name | Salary |

+----------+--------+

| Alex | 85000 |

| Rick | 95431 |

| Ron | 130000 |

| Stella | 250000 |

| Bianca | 125000 |

| Mitchel | 85000 |

| Frank | 100000 |

| Maddison | 90000 |

+----------+--------+

8 rows in set (0.01 sec)

**mysql> SELECT COUNT(DISTINCT Designation) FROM EMPLOYEE;**

+-----------------------------+

| COUNT(DISTINCT Designation) |

+-----------------------------+

| 10 |

+-----------------------------+

1 row in set (0.03 sec)

**mysql> SELECT AVG(Salary) FROM EMPLOYEE;**

+-------------+

| AVG(Salary) |

+-------------+

| 76589.4375 |

+-------------+

1 row in set (0.00 sec)

**mysql> SELECT MIN(Salary),NAME,DESIGNATION FROM EMPLOYEE;**

+-------------+------+--------------+

| MIN(Salary) | NAME | DESIGNATION |

+-------------+------+--------------+

| 25000 | Alex | Veterinarian |

+-------------+------+--------------+

1 row in set (0.00 sec)

**mysql> SELECT SUM(Salary) FROM EMPLOYEE;**

+-------------+

| SUM(Salary) |

+-------------+

| 1225431 |

+-------------+

1 row in set (0.00 sec)

**mysql> SELECT COUNT(salary), Designation FROM EMPLOYEE;**

+---------------+--------------+

| COUNT(salary) | Designation |

+---------------+--------------+

| 16 | Veterinarian |

+---------------+--------------+

1 row in set (0.03 sec)

**mysql> SELECT COUNT(salary), Designation FROM EMPLOYEE WHERE COUNT(Designation);**

ERROR 1111 (HY000): Invalid use of group function

**mysql> SELECT COUNT(salary), Designation FROM EMPLOYEE GROUP BY DESIGNATION;**

+---------------+-------------------------+

| COUNT(salary) | Designation |

+---------------+-------------------------+

| 3 | Veterinarian |

| 3 | Zookeeper |

| 1 | Development Director |

| 3 | Aquarist |

| 1 | Chief Operating Officer |

| 1 | Curator of Exhibits |

| 2 | Conservation Biologist |

| 1 | Finance Manager |

| 1 | Cheif Operating Officer |

| 0 | Curator of Horticulture |

+---------------+-------------------------+

10 rows in set (0.00 sec)

**mysql> #USE OF GROUP BY**

**mysql> #THE GROUP BY STATEMENT IN SQL IS USED TO ARRANGE IDENTICAL DATA INTO GROUPS WITH THE HELP OF SOME FUNCTIONS,ie,IF A PARTICULAR COLUMN HAS THE SAME VALUES IN DIFFERENT ROWS THEN IT WILL ARRANGE THESE ROWS IN A GROUP**

**mysql> #HERE WE CAN SEE THAT WHEN COUNT IS USED WITHOUT GROUP BY THE TOTAL COUNT IS GIVEN WITH THE FIRST ENTRY IN THE DESIGNATION COLUMN WHEREAS WE WANTED THE COUNT OF EMPLOYEES IN EACH DESIGNATION**

**mysql> #GROUP BY – WITH AND WITHOUT WHERE**

**mysql> #TABLE 1**

**mysql> SELECT ZooId,Name,State,Animal\_Population FROM Zoo WHERE Animal\_Population > 500 GROUP BY State;**

+-------+-----------------------------------------+-------------+-------------------+

| ZooId | Name | State | Animal\_Population |

+-------+-----------------------------------------+-------------+-------------------+

| 1 | Alipore Zoological Gardens | West Bengal | 1266 |

| 3 | Arignar Anna Zoological Park | Tamil Nadu | 2644 |

| 4 | Assam State Zoo-cum-Botanical Garden | Assam | 895 |

| 5 | Bannerghatta National Park | Karnataka | 1300 |

| 7 | Birsa Deer Park | Jharkhand | 1450 |

| 8 | Bondla Wildlife Sanctuary | Goa | 3213 |

| 10 | Chhatbir Zoo | Punjab | 1432 |

| 12 | Chinkara Breeding Centre Kairu, Bhiwani | Haryana | 2873 |

+-------+-----------------------------------------+-------------+-------------------+

8 rows in set (0.00 sec)

**mysql> SELECT ZooId,Name,State,Animal\_Population FROM Zoo GROUP BY State;**

+-------+--------------------------------------+-------------+-------------------+

| ZooId | Name | State | Animal\_Population |

+-------+--------------------------------------+-------------+-------------------+

| 1 | Alipore Zoological Gardens | West Bengal | 1266 |

| 2 | Amirthi Zoological Park | Tamil Nadu | 174 |

| 4 | Assam State Zoo-cum-Botanical Garden | Assam | 895 |

| 5 | Bannerghatta National Park | Karnataka | 1300 |

| 7 | Birsa Deer Park | Jharkhand | 1450 |

| 8 | Bondla Wildlife Sanctuary | Goa | 3213 |

| 9 | Pipli Mini Zoo | Haryana | 345 |

| 10 | Chhatbir Zoo | Punjab | 1432 |

+-------+--------------------------------------+-------------+-------------------+

8 rows in set (0.00 sec)

**mysql> #TABLE 2**

**mysql> SELECT \* FROM Employee WHERE DaysWorked>1500 GROUP BY Designation ;**

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| ZooId | EmpID | Name | Designation | Hire\_Date | Salary | Status | DaysWorked | MonthsWorked |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| 2 | 3242 | Aiden | Zookeeper | 2011-10-13 | 25000 | On Duty | 3617 | 119 |

| 2 | 3435 | Rick | Development Director | 2015-09-01 | 95431 | On Duty | 2198 | NULL |

| 3 | 4387 | Ron | Aquarist | 2010-10-14 | 130000 | On Duty | 3981 | NULL |

| 1 | 4643 | Josefine | Chief Operating Officer | 2004-06-04 | 35000 | On Duty | 6304 | NULL |

| 1 | 4862 | Norine | Curator of Exhibits | 2010-08-12 | NULL | On Duty | 4044 | NULL |

| 1 | 5446 | Stella | Conservation Biologist | 2016-03-09 | 250000 | Off Duty | 2008 | NULL |

| 1 | 6432 | Val | Finance Manager | 2011-10-13 | NULL | On Duty | 3617 | NULL |

| 2 | 6512 | Mitchel | Veterinarian | 2009-10-27 | 85000 | On Duty | 4333 | NULL |

| 2 | 7956 | Sarah | Cheif Operating Officer | 2009-01-12 | 30000 | On Duty | 4621 | NULL |

| 1 | 8975 | Samual | Curator of Horticulture | 2010-07-01 | NULL | On Duty | 4086 | NULL |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

10 rows in set (0.03 sec)

**mysql> SELECT \* FROM Employee GROUP BY Designation ;**

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| ZooId | EmpID | Name | Designation | Hire\_Date | Salary | Status | DaysWorked | MonthsWorked |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

| 1 | 1001 | Alex | Veterinarian | 2020-04-01 | 85000 | On Duty | 524 | 17 |

| 2 | 3242 | Aiden | Zookeeper | 2011-10-13 | 25000 | On Duty | 3617 | 119 |

| 2 | 3435 | Rick | Development Director | 2015-09-01 | 95431 | On Duty | 2198 | NULL |

| 3 | 4387 | Ron | Aquarist | 2010-10-14 | 130000 | On Duty | 3981 | NULL |

| 1 | 4643 | Josefine | Chief Operating Officer | 2004-06-04 | 35000 | On Duty | 6304 | NULL |

| 1 | 4862 | Norine | Curator of Exhibits | 2010-08-12 | NULL | On Duty | 4044 | NULL |

| 1 | 5446 | Stella | Conservation Biologist | 2016-03-09 | 250000 | Off Duty | 2008 | NULL |

| 1 | 6432 | Val | Finance Manager | 2011-10-13 | NULL | On Duty | 3617 | NULL |

| 2 | 7956 | Sarah | Cheif Operating Officer | 2009-01-12 | 30000 | On Duty | 4621 | NULL |

| 1 | 8975 | Samual | Curator of Horticulture | 2010-07-01 | NULL | On Duty | 4086 | NULL |

+-------+-------+----------+-------------------------+------------+--------+----------+------------+--------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT \* FROM Visitors WHERE ExitTime<CURTIME() GROUP BY ZooID;**

+-------+----------+---------+------------+-----------+----------+-----------+

| ZooId | TicketNo | Name | VisitDate | EntryTime | ExitTime | TimeSpent |

+-------+----------+---------+------------+-----------+----------+-----------+

| 1 | 1008 | Justina | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1013 | Harley | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

+-------+----------+---------+------------+-----------+----------+-----------+

2 rows in set (0.01 sec)

**mysql> SELECT \* FROM Visitors WHERE ExitTime='06:00:00' GROUP BY ZooID;**

+-------+----------+---------+------------+-----------+----------+-----------+

| ZooId | TicketNo | Name | VisitDate | EntryTime | ExitTime | TimeSpent |

+-------+----------+---------+------------+-----------+----------+-----------+

| 1 | 1008 | Justina | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

| 2 | 1013 | Harley | 2010-10-14 | 09:00:00 | 06:00:00 | 03:00:00 |

+-------+----------+---------+------------+-----------+----------+-----------+

2 rows in set (0.00 sec)

**mysql> SELECT \* FROM Visitors GROUP BY ZooID;**

+-------+----------+-------+------------+-----------+----------+-----------+

| ZooId | TicketNo | Name | VisitDate | EntryTime | ExitTime | TimeSpent |

+-------+----------+-------+------------+-----------+----------+-----------+

| 1 | 1001 | Chris | 2006-05-10 | 10:00:17 | 15:14:43 | 05:14:26 |

| 2 | 1005 | Cami | 2006-07-23 | 10:10:17 | 14:29:43 | 04:19:26 |

| 3 | 1006 | Janet | 2021-08-15 | 02:41:50 | 16:29:43 | 13:47:53 |

| 4 | 1007 | Zayn | 2021-08-15 | 09:53:17 | 17:28:29 | 07:35:12 |

+-------+----------+-------+------------+-----------+----------+-----------+

4 rows in set (0.00 sec)

**mysql> #TABLE 4**

**mysql> SELECT \* FROM Feed WHERE Species LIKE '\_\_\_\_\_' GROUP BY Food\_Type;**

+-------+---------------+---------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+---------------+---------+-----------+

| 1 | Canis | lupus | Carnivore |

| 1 | Ceratotherium | simum | Omnivore |

| 1 | Hippotragus | niger | Herbivore |

+-------+---------------+---------+-----------+

3 rows in set (0.00 sec)

**mysql> SELECT \* FROM Feed GROUP BY Food\_Type;**

+-------+--------------+-----------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+--------------+-----------+-----------+

| 1 | Panthera | leo | Carnivore |

| 1 | Hippopotamus | amphibius | Omnivore |

| 1 | Elephas | maximus | Herbivore |

+-------+--------------+-----------+-----------+

3 rows in set (0.00 sec)

**mysql> #AGGREGATE FUNCTIONS WITH GROUP BY**

**mysql> #COUNT**

**mysql> #TABLE 1**

**mysql> SELECT STATE,COUNT(ZOOID) FROM ZOO GROUP BY STATE;**

+-------------+--------------+

| STATE | COUNT(ZOOID) |

+-------------+--------------+

| West Bengal | 1 |

| Tamil Nadu | 3 |

| Assam | 1 |

| Karnataka | 1 |

| Jharkhand | 1 |

| Goa | 1 |

| Haryana | 3 |

| Punjab | 1 |

+-------------+--------------+

8 rows in set (0.04 sec)

**mysql> #TABLE 2**

**mysql> SELECT DESIGNATION,COUNT(NAME) FROM EMPLOYEE GROUP BY DESIGNATION;**

+-------------------------+-------------+

| DESIGNATION | COUNT(NAME) |

+-------------------------+-------------+

| Veterinarian | 3 |

| Zookeeper | 3 |

| Development Director | 1 |

| Aquarist | 3 |

| Chief Operating Officer | 1 |

| Curator of Exhibits | 2 |

| Conservation Biologist | 2 |

| Finance Manager | 2 |

| Cheif Operating Officer | 1 |

| Curator of Horticulture | 1 |

+-------------------------+-------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZOOID,COUNT(NAME) FROM VISITORS GROUP BY ZOOID;**

+-------+-------------+

| ZOOID | COUNT(NAME) |

+-------+-------------+

| 1 | 6 |

| 2 | 6 |

| 3 | 1 |

| 4 | 1 |

+-------+-------------+

4 rows in set (0.03 sec)

**mysql> #TABLE 4**

**mysql> SELECT FOOD\_TYPE,COUNT(Genus) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+--------------+

| FOOD\_TYPE | COUNT(Genus) |

+-----------+--------------+

| Carnivore | 5 |

| Omnivore | 5 |

| Herbivore | 5 |

+-----------+--------------+

3 rows in set (0.00 sec)

**mysql> #SUM**

**mysql> #TABLE 1**

**mysql> SELECT STATE,SUM(Animal\_Population) FROM ZOO GROUP BY STATE;**

+-------------+------------------------+

| STATE | SUM(Animal\_Population) |

+-------------+------------------------+

| West Bengal | 1266 |

| Tamil Nadu | 3706 |

| Assam | 895 |

| Karnataka | 1300 |

| Jharkhand | 1450 |

| Goa | 3213 |

| Haryana | 5917 |

| Punjab | 1432 |

+-------------+------------------------+

8 rows in set (0.04 sec)

**mysql> #TABLE 2**

**mysql> SELECT DESIGNATION,SUM(SALARY) as Total\_Salary FROM EMPLOYEE GROUP BY DESIGNATION;**

+-------------------------+--------------+

| DESIGNATION | Total\_Salary |

+-------------------------+--------------+

| Veterinarian | 260000 |

| Zookeeper | 80000 |

| Development Director | 95431 |

| Aquarist | 300000 |

| Chief Operating Officer | 35000 |

| Curator of Exhibits | 45000 |

| Conservation Biologist | 350000 |

| Finance Manager | 30000 |

| Cheif Operating Officer | 30000 |

| Curator of Horticulture | NULL |

+-------------------------+--------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZOOID,SUM(TimeSpent) FROM VISITORS GROUP BY ZOOID;**

+-------+----------------+

| ZOOID | SUM(TimeSpent) |

+-------+----------------+

| 1 | 201426 |

| 2 | 191926 |

| 3 | 134753 |

| 4 | 73512 |

+-------+----------------+

4 rows in set (0.00 sec)

**mysql> SELECT ZOOID,TIME\_FORMAT(SUM(TimeSpent),"%h:%i") AS Total\_Time FROM VISITORS GROUP BY ZOOID;**

+-------+------------+

| ZOOID | Total\_Time |

+-------+------------+

| 1 | 08:14 |

| 2 | 07:19 |

| 3 | 01:47 |

| 4 | 07:35 |

+-------+------------+

4 rows in set (0.00 sec)

**mysql> #TABLE 4**

**mysql> SELECT FOOD\_TYPE,SUM(Genus) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+------------+

| FOOD\_TYPE | SUM(Genus) |

+-----------+------------+

| Carnivore | 0 |

| Omnivore | 0 |

| Herbivore | 0 |

+-----------+------------+

3 rows in set, 15 warnings (0.03 sec)

**mysql> SELECT FOOD\_TYPE,SUM(ASCII(Genus)) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+-------------------+

| FOOD\_TYPE | SUM(ASCII(Genus)) |

+-----------+-------------------+

| Carnivore | 374 |

| Omnivore | 383 |

| Herbivore | 346 |

+-----------+-------------------+

3 rows in set (0.00 sec)

**mysql> #AVG**

**mysql> #TABLE 1**

**mysql> SELECT STATE,AVG(Animal\_Population) FROM ZOO GROUP BY STATE;**

+-------------+------------------------+

| STATE | AVG(Animal\_Population) |

+-------------+------------------------+

| West Bengal | 1266.0000 |

| Tamil Nadu | 1235.3333 |

| Assam | 895.0000 |

| Karnataka | 1300.0000 |

| Jharkhand | 1450.0000 |

| Goa | 3213.0000 |

| Haryana | 1972.3333 |

| Punjab | 1432.0000 |

+-------------+------------------------+

8 rows in set (0.00 sec)

**mysql> SELECT STATE,ROUND(AVG(Animal\_Population)) FROM ZOO GROUP BY STATE;**

+-------------+-------------------------------+

| STATE | ROUND(AVG(Animal\_Population)) |

+-------------+-------------------------------+

| West Bengal | 1266 |

| Tamil Nadu | 1235 |

| Assam | 895 |

| Karnataka | 1300 |

| Jharkhand | 1450 |

| Goa | 3213 |

| Haryana | 1972 |

| Punjab | 1432 |

+-------------+-------------------------------+

8 rows in set (0.00 sec)

**mysql> #TABLE 2**

**mysql> SELECT DESIGNATION,FORMAT(AVG(SALARY),2) as Avg\_Salary FROM EMPLOYEE GROUP BY DESIGNATION;**

+-------------------------+--------------+

| DESIGNATION | Avg\_Salary |

+-------------------------+--------------+

| Veterinarian | 86,666.67 |

| Zookeeper | 26,666.67 |

| Development Director | 95,431.00 |

| Aquarist | 100,000.00 |

| Chief Operating Officer | 35,000.00 |

| Curator of Exhibits | 45,000.00 |

| Conservation Biologist | 175,000.00 |

| Finance Manager | 30,000.00 |

| Cheif Operating Officer | 30,000.00 |

| Curator of Horticulture | NULL |

+-------------------------+--------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZOOID,TIME\_FORMAT(AVG(TimeSpent),"%h:%i") AS Avg\_Time FROM VISITORS GROUP BY ZOOID;**

+-------+----------+

| ZOOID | Avg\_Time |

+-------+----------+

| 1 | NULL |

| 2 | NULL |

| 3 | 01:47 |

| 4 | 07:35 |

+-------+----------+

4 rows in set, 2 warnings (0.00 sec)

**mysql> SELECT ZOOID,AVG(TimeSpent) AS Avg\_Time FROM VISITORS GROUP BY ZOOID**

**-> ;**

+-------+-------------+

| ZOOID | Avg\_Time |

+-------+-------------+

| 1 | 33571.0000 |

| 2 | 31987.6667 |

| 3 | 134753.0000 |

| 4 | 73512.0000 |

+-------+-------------+

4 rows in set (0.01 sec)

**mysql> #TABLE 4**

**mysql> SELECT FOOD\_TYPE,AVG(ASCII(Genus)) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+-------------------+

| FOOD\_TYPE | AVG(ASCII(Genus)) |

+-----------+-------------------+

| Carnivore | 74.8000 |

| Omnivore | 76.6000 |

| Herbivore | 69.2000 |

+-----------+-------------------+

3 rows in set (0.00 sec)

**mysql> #MAX**

**mysql> #TABLE 1**

**mysql> SELECT STATE,MAX(Animal\_Population) FROM ZOO GROUP BY STATE;**

+-------------+------------------------+

| STATE | MAX(Animal\_Population) |

+-------------+------------------------+

| West Bengal | 1266 |

| Tamil Nadu | 2644 |

| Assam | 895 |

| Karnataka | 1300 |

| Jharkhand | 1450 |

| Goa | 3213 |

| Haryana | 2873 |

| Punjab | 1432 |

+-------------+------------------------+

8 rows in set (0.00 sec)

**mysql> #TABLE 2**

**mysql> SELECT DESIGNATION,MAX(SALARY) as Max\_Salary FROM EMPLOYEE GROUP BY DESIGNATION;**

+-------------------------+--------------+

| DESIGNATION | Max\_Salary |

+-------------------------+--------------+

| Veterinarian | 90000 |

| Zookeeper | 30000 |

| Development Director | 95431 |

| Aquarist | 130000 |

| Chief Operating Officer | 35000 |

| Curator of Exhibits | 45000 |

| Conservation Biologist | 250000 |

| Finance Manager | 30000 |

| Cheif Operating Officer | 30000 |

| Curator of Horticulture | NULL |

+-------------------------+--------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZOOID,MAX(TimeSpent) FROM VISITORS GROUP BY ZOOID;**

+-------+----------------+

| ZOOID | MAX(TimeSpent) |

+-------+----------------+

| 1 | 05:14:26 |

| 2 | 04:19:26 |

| 3 | 13:47:53 |

| 4 | 07:35:12 |

+-------+----------------+

4 rows in set (0.02 sec)

**mysql> #TABLE 4**

**mysql> SELECT FOOD\_TYPE,MAX(ASCII(Genus)) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+-------------------+

| FOOD\_TYPE | MAX(ASCII(Genus)) |

+-----------+-------------------+

| Carnivore | 80 |

| Omnivore | 85 |

| Herbivore | 72 |

+-----------+-------------------+

3 rows in set (0.00 sec)

**mysql> #MIN**

**mysql> #TABLE 1**

**mysql> SELECT STATE,MIN(Animal\_Population) FROM ZOO GROUP BY STATE;**

+-------------+------------------------+

| STATE | MIN(Animal\_Population) |

+-------------+------------------------+

| West Bengal | 1266 |

| Tamil Nadu | 174 |

| Assam | 895 |

| Karnataka | 1300 |

| Jharkhand | 1450 |

| Goa | 3213 |

| Haryana | 345 |

| Punjab | 1432 |

+-------------+------------------------+

8 rows in set (0.03 sec)

**mysql> #TABLE 2**

**mysql> SELECT DESIGNATION,MIN(SALARY) as Min\_Salary FROM EMPLOYEE GROUP BY DESIGNATION;**

+-------------------------+--------------+

| DESIGNATION | Min\_Salary |

+-------------------------+--------------+

| Veterinarian | 85000 |

| Zookeeper | 25000 |

| Development Director | 95431 |

| Aquarist | 45000 |

| Chief Operating Officer | 35000 |

| Curator of Exhibits | 45000 |

| Conservation Biologist | 100000 |

| Finance Manager | 30000 |

| Cheif Operating Officer | 30000 |

| Curator of Horticulture | NULL |

+-------------------------+--------------+

10 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZOOID,MIN(TimeSpent) FROM VISITORS GROUP BY ZOOID;**

+-------+----------------+

| ZOOID | MIN(TimeSpent) |

+-------+----------------+

| 1 | 03:00:00 |

| 2 | 03:00:00 |

| 3 | 13:47:53 |

| 4 | 07:35:12 |

+-------+----------------+

4 rows in set (0.00 sec)

**mysql> #TABLE 4**

**mysql> SELECT FOOD\_TYPE,MIN(ASCII(Genus)) FROM FEED GROUP BY FOOD\_TYPE;**

+-----------+-------------------+

| FOOD\_TYPE | MIN(ASCII(Genus)) |

+-----------+-------------------+

| Carnivore | 67 |

| Omnivore | 67 |

| Herbivore | 65 |

+-----------+-------------------+

3 rows in set (0.00 sec)

**mysql> #USE OF HAVING CLAUSE**

**mysql> #WHERE CLAUSE IS USED TO FILTER THE RECORDS FROM THE TABLE BASED ON THE SPECIFIED CONDITION. HAVING CLAUSE IS USED TO FILTER RECORDS FROM THE GROUPS BASED ON THE SPECIFIED CONDITION.**

**mysql> #HAVING WITH AND WITHOUT ORDER BY**

**mysql> #TABLE 1**

**mysql> SELECT State,SUM(Animal\_population) FROM Zoo GROUP BY State HAVING SUM(Animal\_Population)>3000;**

+------------+------------------------+

| State | SUM(Animal\_population) |

+------------+------------------------+

| Tamil Nadu | 3706 |

| Goa | 3213 |

| Haryana | 5917 |

+------------+------------------------+

3 rows in set (0.02 sec)

**mysql> SELECT State,SUM(Animal\_population) FROM Zoo GROUP BY State HAVING SUM(Animal\_Population)>3000 ORDER BY SUM(Animal\_Population);**

+------------+------------------------+

| State | SUM(Animal\_population) |

+------------+------------------------+

| Goa | 3213 |

| Tamil Nadu | 3706 |

| Haryana | 5917 |

+------------+------------------------+

3 rows in set (0.04 sec)

**mysql> SELECT State,SUM(Animal\_population) FROM Zoo GROUP BY State HAVING SUM(Animal\_Population)>3000 ORDER BY SUM(Animal\_Population) DESC;**

+------------+------------------------+

| State | SUM(Animal\_population) |

+------------+------------------------+

| Haryana | 5917 |

| Tamil Nadu | 3706 |

| Goa | 3213 |

+------------+------------------------+

3 rows in set (0.00 sec)

**mysql> #TABLE 2**

**mysql> SELECT Designation,SUM(Salary) FROM Employee GROUP BY Designation HAVING SUM(Salary)>80000;**

+------------------------+-------------+

| Designation | SUM(Salary) |

+------------------------+-------------+

| Veterinarian | 260000 |

| Development Director | 95431 |

| Aquarist | 300000 |

| Conservation Biologist | 350000 |

+------------------------+-------------+

4 rows in set (0.00 sec)

**mysql> SELECT Designation,SUM(Salary) FROM Employee GROUP BY Designation HAVING SUM(Salary)>80000 ORDER BY SUM(Salary);**

+------------------------+-------------+

| Designation | SUM(Salary) |

+------------------------+-------------+

| Development Director | 95431 |

| Veterinarian | 260000 |

| Aquarist | 300000 |

| Conservation Biologist | 350000 |

+------------------------+-------------+

4 rows in set (0.00 sec)

**mysql> SELECT Designation,SUM(Salary) FROM Employee GROUP BY Designation HAVING SUM(Salary)>80000 ORDER BY SUM(Salary) DESC;**

+------------------------+-------------+

| Designation | SUM(Salary) |

+------------------------+-------------+

| Conservation Biologist | 350000 |

| Aquarist | 300000 |

| Veterinarian | 260000 |

| Development Director | 95431 |

+------------------------+-------------+

4 rows in set (0.00 sec)

**mysql> #TABLE 3**

**mysql> SELECT ZooId,SUM(TimeSpent) FROM Visitors GROUP BY ZooId HAVING SUM(TimeSpent)>190000;**

+-------+----------------+

| ZooId | SUM(TimeSpent) |

+-------+----------------+

| 1 | 201426 |

| 2 | 191926 |

+-------+----------------+

2 rows in set (0.00 sec)

**mysql> SELECT ZooId,FORMAT(SUM(TimeSpent),"%h:%i") FROM Visitors GROUP BY ZooId HAVING SUM(TimeSpent)>190000;**

+-------+--------------------------------+

| ZooId | FORMAT(SUM(TimeSpent),"%h:%i") |

+-------+--------------------------------+

| 1 | 201,426 |

| 2 | 191,926 |

+-------+--------------------------------+

2 rows in set, 2 warnings (0.03 sec)

**mysql> SELECT ZooId,SUM(TimeSpent) FROM Visitors GROUP BY ZooId HAVING SUM(TimeSpent)>120000 ;**

+-------+----------------+

| ZooId | SUM(TimeSpent) |

+-------+----------------+

| 1 | 201426 |

| 2 | 191926 |

| 3 | 134753 |

+-------+----------------+

3 rows in set (0.00 sec)

**mysql> SELECT ZooId,SUM(TimeSpent) FROM Visitors GROUP BY ZooId HAVING SUM(TimeSpent)>120000 ORDER BY SUM(TimeSpent);**

+-------+----------------+

| ZooId | SUM(TimeSpent) |

+-------+----------------+

| 3 | 134753 |

| 2 | 191926 |

| 1 | 201426 |

+-------+----------------+

3 rows in set (0.00 sec)

**mysql> SELECT ZooId,SUM(TimeSpent) FROM Visitors GROUP BY ZooId HAVING SUM(TimeSpent)>120000 ORDER BY SUM(TimeSpent) DESC;**

+-------+----------------+

| ZooId | SUM(TimeSpent) |

+-------+----------------+

| 1 | 201426 |

| 2 | 191926 |

| 3 | 134753 |

+-------+----------------+

3 rows in set (0.00 sec)

**mysql> #TABLE 4**

mysql> SELECT \* FROM Feed GROUP BY Food\_Type;

+-------+--------------+-----------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+--------------+-----------+-----------+

| 1 | Panthera | leo | Carnivore |

| 1 | Hippopotamus | amphibius | Omnivore |

| 1 | Elephas | maximus | Herbivore |

+-------+--------------+-----------+-----------+

3 rows in set (0.00 sec)

**mysql> SELECT \* FROM Feed GROUP BY Food\_Type HAVING Species LIKE '\_\_\_\_%';**

+-------+--------------+-----------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+--------------+-----------+-----------+

| 1 | Hippopotamus | amphibius | Omnivore |

| 1 | Elephas | maximus | Herbivore |

+-------+--------------+-----------+-----------+

2 rows in set (0.00 sec)

**mysql> SELECT \* FROM Feed GROUP BY Food\_Type HAVING Species LIKE '\_\_\_\_%' ORDER BY GENUS;**

+-------+--------------+-----------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+--------------+-----------+-----------+

| 1 | Elephas | maximus | Herbivore |

| 1 | Hippopotamus | amphibius | Omnivore |

+-------+--------------+-----------+-----------+

2 rows in set (0.05 sec)

**mysql> SELECT \* FROM Feed GROUP BY Food\_Type HAVING Species LIKE '\_\_\_\_%' ORDER BY GENUS DESC;**

+-------+--------------+-----------+-----------+

| ZooId | Genus | Species | Food\_type |

+-------+--------------+-----------+-----------+

| 1 | Hippopotamus | amphibius | Omnivore |

| 1 | Elephas | maximus | Herbivore |

+-------+--------------+-----------+-----------+

2 rows in set (0.00 sec)

mysql> NOTEE;