

DBMS Project Report

PES University

Database Management Systems

UE20CS301

Submitted By

PES1UG20CS721

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Zoo/Wildlife Sanctuary Management System

Summary :

The project is a small scale depiction of an actual database of a zoo or wildlife Sanctuary. The aim of the project was to build a system that efficiently records all the aspects of a zoo and efficiently stores them. It consists of entities – animals , food , adoption, souvenir, staff, tourist etc and relationships – buys , visits, adopts . It also consists of operations relating the tables and the values of the tuples.

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Data Model	3
FD and Normalization	4
DDL	5
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Execution plan and performance	8



Introduction

The following project consists of 11 tables primarily:

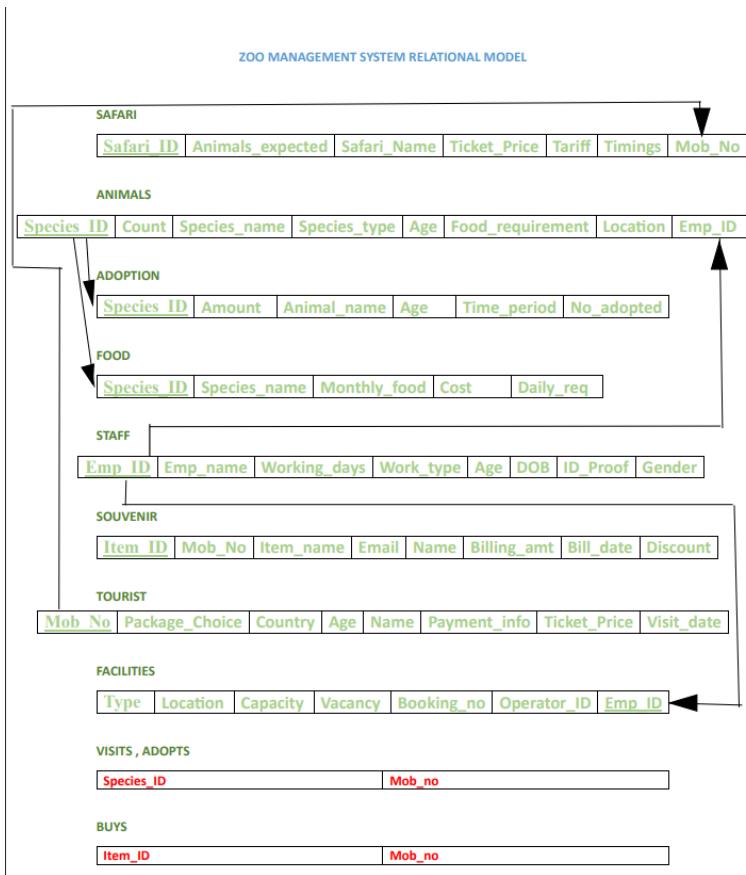
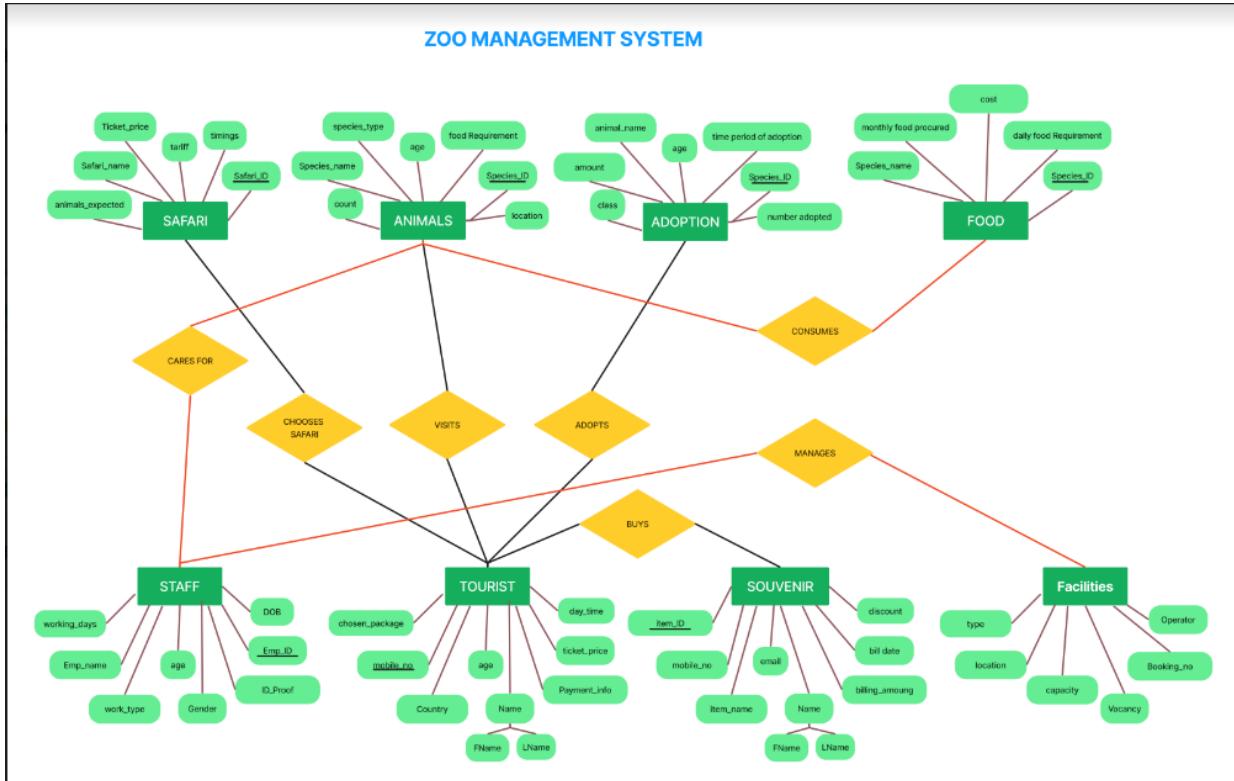
1. Adoption – consists of records of the animals adopted, the class they belong to (Diamond > 3Lakh, Gold up to 2 Lakhs , Silver up to 1 lakh), their age , number of animals adopted, the name of the adopter, the money paid for adoption and the time period (years) of adoption.
2. Animals – consists of the names of animals , their age, a specific species ID allotted to them , the gender of the animals and the ID of their Caretaker.
3. Food – consists of the food requirement of all species, the daily and monthly food requirement of each animal .
4. Safari – consists of the safaris available in the zoo – tiger , lion , carnivore and herbivore safari . It also holds the timings of the safari(hours), the animals expected to be seen in the safari , the ticket price(including tariff) and the tariff split up.
5. Facilities – holds the facilities available in the zoo premises like Battery operated car services, AC vehicles for safari , Parking for 2 and 4 wheelers , restaurants etc.
6. Staff – holds the records containing the details of the employees of the zoo , their unique ID , names , number of working days, their work type and their age and date of birth.
7. Tourist – Holds the records of people who visit the zoo . It contains their mobile number unique to each tourist, their name, the safari that they have chosen, the price of their ticket and the mode of payment .
8. Souvenir – Holds the records of a souvenir shop present in the zoo premises. Has the items , each distinguished by a unique ID, their names , the mobile number , email and name of the customer that purchased it , the total bill amount and the bill date.
9. Buys – holds the records of the item ID of the item bought and the mobile number of the buyer
10. Visit_Adopts – Holds the records of the animal adopted with its adopter or the details of the animals visited and the visitor.

It also consists of the following relations:

1. CARES FOR – maps each caretaker in Staff to the Animal (1,N)
2. CHOOSES SAFARI –maps each tourist with the safari chosen (1,N)
3. VISITS – maps tourists to the animals visited (N,N)
4. ADOPTS – maps tourists to the animals adopted by them (N,N)
5. BUYS – maps each tourist to the item they bought in the souvenir shop (N,N)
6. MANAGES – maps each employee to the facility that they manage or operate (1,1)



Data Model



FD and Normalization

All the tables created are fully functionally dependant . The determinant in all the tables created is a Primary Key and Foreign Key which are a candidate key. The dependents are mostly non-prime attributes . Hence they are fully functionally dependent .

The tables are in 3 NF – this is because there are no multi-valued attributes, every non-prime attribute is full functional on only the primary key and the third most important being there is no transitive dependency in any of the tables created.

Example : ANIMALS ENTITY

Species_ID	Count	Species_name	Species_type	Age	Food_requirement	Location	Emp_ID

Example : FOOD ENTITY

Species_ID	Species_name	Monthly_food	Cost	Daily_req

Example : STAFF ENTITY

Emp_ID	Emp_name	Working_days	Work_type	Age	DOB	ID_Proof	Gender

Example : SAFARI ENTITY

Safari_ID	Animals_expected	Safari_Name	Ticket_Price	Tariff	Timings	Mob_No

Example : TOURIST ENTITY

Mob_No	Package_Choice	Country	Age	Name	Payment_Info	Ticket_Price	Visit_date

DDL

This screenshot shows the MySQL Workbench interface with the following details:

- Title Bar:** Local instance MySQL80 ×
- Toolbar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Navigator:** SCHEMAS (zoo_database selected), Tables (adoption, animals, buys, facilities, food, food_req, safari, souvenir, staff, tourist, visit_adopts).
- SQL Editor:** PES1UG20CS721_mod* (zoo_db_create, zoo_db_ddl). The editor contains the following DDL code:

```
1 * use zoo_database;
2 * CREATE TABLE Tourist ( Mob_No varchar(10) NOT NULL,
3 *                         Package_Choice varchar(255),
4 *                         Country_Varchar(255) NOT NULL,
5 *                         Tourist_Name varchar(255),
6 *                         Age int,
7 *                         Ticket_Price int,
8 *                         Payment_Info varchar(10),
9 *                         Visit_date,
10 *                        primary key(Mob_No));
11 * CREATE TABLE Staff ( Emp_ID int NOT NULL,
12 *                       Emp_Name varchar(255) NOT NULL,
13 *                       Work_Days int,
14 *                       Work_Type varchar(255),
15 *                       Age int,
16 *                       DOB date,
17 *                       Gender varchar(10),
18 *                        primary key(Emp_ID));
19 * CREATE TABLE Safari ( Safari_ID varchar(5) NOT NULL,
20 *                        Safari_name varchar(255) NOT NULL,
21 *                        Animals_expected varchar(255) ,
22 *                        Ticket_Price int,
23 *                        Safari_hrs float,
24 *                        Tariff float,
25 *                        Mob_No varchar(10),
26 *                        foreign key(Mob_No) references Tourist(Mob_No),
27 *                        primary key(Safari_ID));
28 * CREATE TABLE Animals ( Species_ID varchar(5) NOT NULL,
29 *                        Species_name varchar(255) NOT NULL,
30 *                        Location varchar(255),
31 *                        Animal_Gender varchar(2),
32 *                        Age int,
33 *                        Food_Requirement_KG int,
34 *                        Emp_ID int NOT NULL,
35 *                        foreign key(Emp_ID) references Staff(Emp_ID),
36 *                        primary key(Species_ID));
37 * CREATE TABLE Adoption ( Species_ID varchar(5) NOT NULL,
38 *                        Species_name varchar(255),
39 *                        Animal_name varchar(255) NOT NULL,
40 *                        Class varchar(255) ,
41 *                        Adopter_Name varchar(255),
42 *                        Age int NOT NULL,
43 *                        Amount int NOT NULL,
44 *                        No_Adopted int,
45 *                        Time_Period varchar(20),
46 *                        primary key(Species_ID));
47 * CREATE TABLE Food ( Species_ID varchar(5) NOT NULL,
48 *                      Species_name varchar(255) NOT NULL,
49 *                      Cost int,
50 *                      Monthly_food_produced int,
51 *                      Daily_req int,
52 *                      foreign key(Species_ID) references ANIMALS(Species_ID));
53 * CREATE TABLE Souvenir ( Item_ID int NOT NULL,
54 *                        Item_Name varchar(255) NOT NULL,
```

- Right Panel:** SQLAdditions toolbar, status message: "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help."
- System Bar:** Desktop, Sneha-DBMS, 25°C Mostly sunny, 12:37, 18-11-2022.

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- Title Bar:** Local instance MySQL80 ×
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- Navigator:** SCHEMAS (zoo_database selected), Tables (adoption, animals, buys, facilities, food, food_req, safari, souvenir, staff, tourist, visit_adopts).
- SQL Editor:** PES1UG20CS721_mod* (zoo_db_create, zoo_db_ddl). The editor contains the following DDL code:

```
28 * CREATE TABLE Animals ( Species_ID varchar(5) NOT NULL,
29 *                        Species_name varchar(255) NOT NULL,
30 *                        Location varchar(255),
31 *                        Animal_Gender varchar(2),
32 *                        Age int,
33 *                        Food_Requirement_KG int,
34 *                        Emp_ID int NOT NULL,
35 *                        foreign key(Emp_ID) references Staff(Emp_ID),
36 *                        primary key(Species_ID));
37 * CREATE TABLE Adoption ( Species_ID varchar(5) NOT NULL,
38 *                        Species_name varchar(255),
39 *                        Animal_name varchar(255) NOT NULL,
40 *                        Class varchar(255) ,
41 *                        Adopter_Name varchar(255),
42 *                        Age int NOT NULL,
43 *                        Amount int NOT NULL,
44 *                        No_Adopted int,
45 *                        Time_Period varchar(20),
46 *                        primary key(Species_ID));
47 * CREATE TABLE Food ( Species_ID varchar(5) NOT NULL,
48 *                      Species_name varchar(255) NOT NULL,
49 *                      Cost int,
50 *                      Monthly_food_produced int,
51 *                      Daily_req int,
52 *                      foreign key(Species_ID) references ANIMALS(Species_ID));
53 * CREATE TABLE Souvenir ( Item_ID int NOT NULL,
54 *                        Item_Name varchar(255) NOT NULL,
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- System Bar:** Desktop, Sneha-DBMS, 25°C Mostly sunny, 12:37, 18-11-2022.

MySQL Workbench

Local instance MySQL80

Schemas: PESTUG20CS721_mod*, zoo_db_ddl, zoo_db_dml

Table: adoption

```

CREATE TABLE Souvenir (Item_ID int NOT NULL,
    Item_Name varchar(255) NOT NULL,
    Mob_No varchar(10),
    Email varchar(255),
    Cust_name varchar(255),
    Bill_amt int,
    Bill_Date date,
    Discount int,
    primary key(Item_ID));

CREATE TABLE Facilities (
    Faci_Name varchar(255),
    Location varchar(100),
    Capacity int,
    Operator_ID int NOT NULL,
    foreign key(Operator_ID) references Staff(Emp_ID));

CREATE TABLE VISIT_ADOPTS(
    Species_ID varchar(5),
    Mob_No varchar(10),
    Visit varchar(2),
    Adopts varchar(2),
    foreign key(Species_ID) references ANIMALS(Species_ID),
    foreign key(Mob_No) references TOURIST(Mob_No));

CREATE TABLE BUYS(
    Item_ID int,
    Mob_No varchar(10),
    foreign key(Item_ID) references SOUVENIR(Item_ID),
    foreign key(Mob_No) references TOURIST(Mob_No));

```

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	Amount	No_Adopted	Time_Period

Object Info Session

Result Grid

Action Output

Context Help Snippets

Desktop Snea-DBMS 25°C Mostly sunny 12:38 18-11-2022

MySQL Workbench

Local instance MySQL80

Schemas: PESTUG20CS721_mod*, zoo_db_ddl

Table: adoption

```

USE zoo_database;

INSERT INTO ADOPTION Values
("E1078","Asian Elephant","Suvarna","Diamond Class","Sneha Saravanan",5,300000,1,"2019-2020"),
("W012","White Tiger","Sher","Diamond Class","Saravanan L",1,800000,1,"2016-2018"),
("I1065","Indian Leopard","Rambu","Gold Class","Dhruv S",3,100000,1,"2022-2023"),
("B004","Black Buck","Becky","Silver Class","Salman Khan",2,75000,1,"1995-2000"),
("Z003","Zebra","Zethur","Diamond Class","Sangeetha",8,150000,1,"2015-2016");

SELECT * from adoption;

```

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	Amount	No_Adopted	Time_Period
B004	Black Buck	Becky	Silver Class	Salman Khan	2	75000	1	1995-2000
B078	Asian Elephant	Suvarna	Diamond Class	Sneha Saravanan	5	300000	1	2019-2020
I005	Indian Leopard	Rambu	Gold Class	Dhruv S	3	100000	1	2022-2023
W012	White Tiger	Sher	Diamond Class	Saravanan L	1	800000	1	2016-2018
Z003	Zebra	Zethur	Diamond Class	Sangeetha	8	150000	1	2015-2016

adoption.30 x

Action Output

Result Grid

Filter Rows

Edit

Export/Import

Wrap Cell Contents

Message

Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('zoo_database'.Food', CON... 0.000 sec

1 row(s) affected

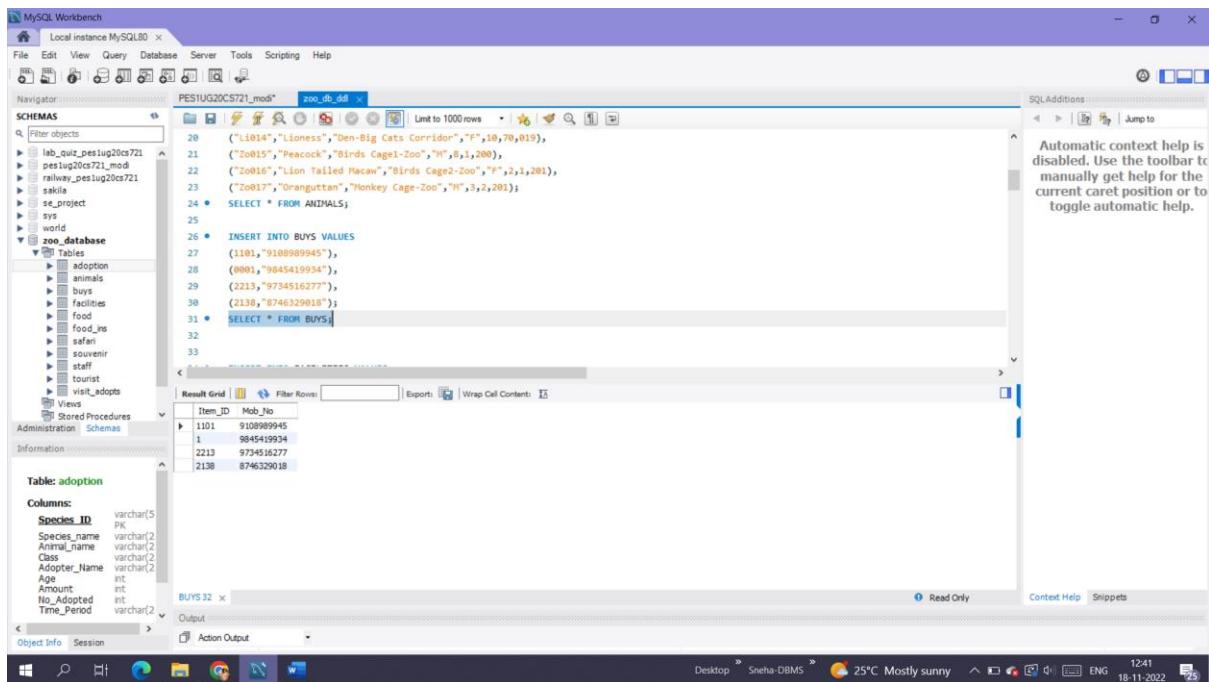
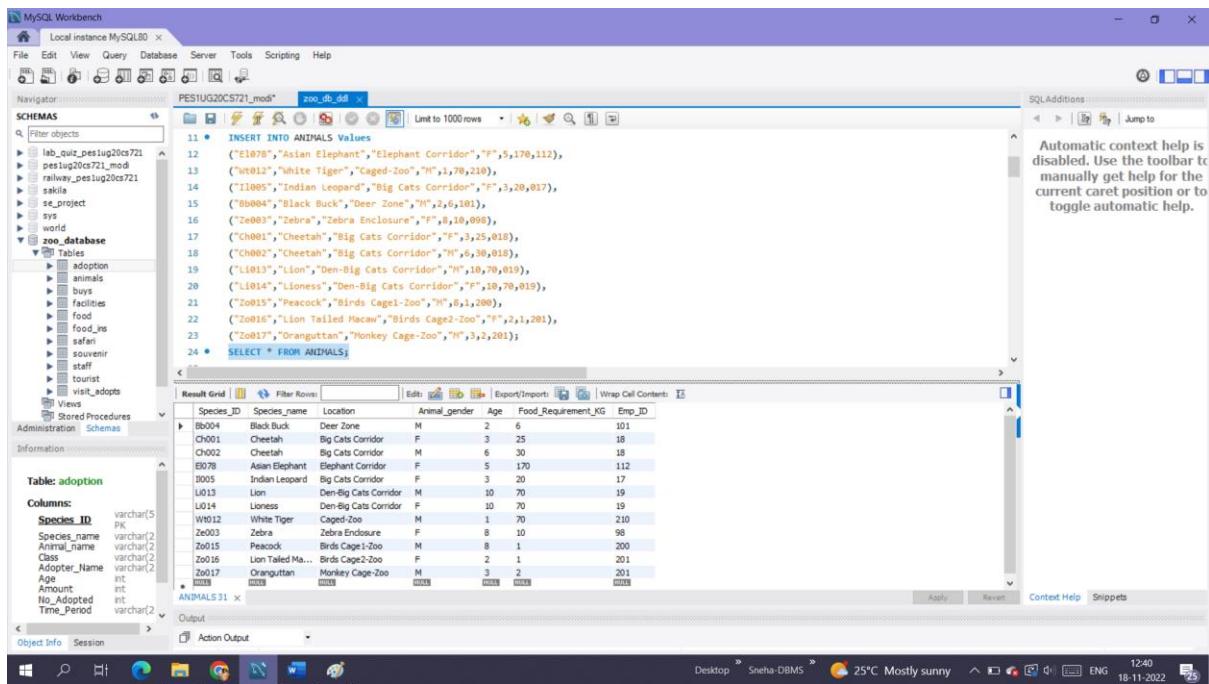
1 row(s) returned

0 row(s) affected

0.000 sec / 0.000 sec

0.014 sec

Desktop Snea-DBMS 25°C Mostly sunny 12:39 18-11-2022



MySQL Workbench

Local instance MySQL80

Schemas: PES1UG20CS721_mod*, zoo_db_08

```

32
33 • INSERT INTO FACILITIES VALUES
34     ("Buggy Service","Zoo Premises",12,087),
35     ("Safari A/C Vehicle","Safari Tours",60,135),
36     ("Parking","Entrance",150,997),
37     ("Restaurant","Near Parking",200,990);
38 • SELECT * from facilities;
39
40
41 • INSERT INTO FOOD VALUES
42     ("E1078","Asian Elephant",100000,5100,170),
43     ("W4812","White Tiger",200000,2100,70),
44     ("I1085","Indian Leopard",80000,600,20),
45
46

```

Result Grid | Filter Rows | Export: | Wrap Cell Content: |

Fac_Name	Location	Capacity	Operator_ID
Buggy Service	Zoo Premises	12	87
Safari A/C Vehicle	Safari Tours	60	135
Parking	Entrance	150	997
Restaurant	Near Parking	200	990

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	No_Amount	No_Adopted	Time_Period
------------	--------------	-------------	-------	--------------	-----	-----------	------------	-------------

Facilities 33 x

Action Output

#	Time	Action	Message	Duration / Fetch
127	12:39:28	INSERT INTO ADOPTION Values ("B078","Asian Elephant","Suvama","Diamond Class","Sneha Saravanan",100000,5100,170)	Error Code: 1062 Duplicate entry 'B078' for key 'adoption.PRIMARY'	0.000 sec
128	12:39:42	SELECT * FROM ADOPTION LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
129	12:40:10	SELECT * FROM ANIMALS LIMIT 0, 1000	12 row(s) returned	0.015 sec / 0.000 sec
130	12:41:37	SELECT * FROM BUYS LIMIT 0, 1000	4 row(s) returned	0.000 sec / 0.000 sec
131	12:41:50	SELECT * FROM FACILITIES LIMIT 0, 1000	4 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

Read Only Context Help Snippets

Desktop Snea-DBMS 25°C Mostly sunny ENG 1242 18-11-2022

MySQL Workbench

Local instance MySQL80

Schemas: PES1UG20CS721_mod*, zoo_db_08

```

41 • INSERT INTO FOOD VALUES
42     ("E1078","Asian Elephant",100000,5100,170),
43     ("W4812","White Tiger",200000,2100,70),
44     ("I1085","Indian Leopard",80000,600,20),
45     ("B0004","Black Buck",10000,100,5),
46     ("Z0009","Zebra",10000,100,10),
47     ("C0001","Cheetah",125000,700,25),
48     ("C0001","Cheetah",150000,900,30),
49     ("L1013","Lion",500000,210,70),
50     ("L1013","Lioness",500000,210,70),
51     ("D0015","Peacock",3000,30,1),
52     ("Z0016","Lion Tailed Macaw",9000,30,1),
53     ("Z0017","Orangutan",6000,60,2);
54 • SELECT * FROM FOOD;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Species_ID	Species_name	Cost	Monthly_food_produced	Daily_Req
E078	Asian Elephant	100000	5100	170
W0012	White Tiger	200000	2100	70
I0005	Indian Leopard	80000	600	20
B0004	Black Buck	10000	100	5
Z0009	Zebra	75000	300	10
C0001	Cheetah	125000	750	25
C0001	Cheetah	150000	900	30
L0013	Lion	500000	210	70
L0013	Lioness	500000	210	70
Z0015	Peacock	3000	30	1
Z0016	Lion Tailed Ma...	5000	30	1
Z0017	Orangutan	6000	60	2
P0018	African Elephant	200000	120	100

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	No_Amount	No_Adopted	Time_Period
------------	--------------	-------------	-------	--------------	-----	-----------	------------	-------------

Food 34 x

Action Output

#	Time	Action	Message	Duration / Fetch
131	12:41:50	SELECT * FROM facilities LIMIT 0, 1000	4 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

Read Only Context Help Snippets

Desktop Snea-DBMS 25°C Mostly sunny ENG 1242 18-11-2022

MySQL Workbench

Local instance MySQL80 ×

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

zoos_db_08

54 • SELECT * FROM FOOD;

55

56

57 • INSERT INTO Safari VALUES

(“SAF01”, “Lion Safari”, “Lion, Lioness”, 200, 1, 0.25, “9108989945”),
 (“SAF02”, “Tiger Safari”, “Tiger”, 180, 1, 0.20, “9845419934”),
 (“SAF03”, “Carnivore Safari”, “Tiger, Cheetah, Leopard, Black Panther, Lion”, 360, 3, 0.25, “9734516277”),
 (“SAF04”, “Herbivore Safari”, “Bear, Deer, Black Buck, Sambar deer, Zebra”, 300, 3, 0.25, “8746329018”);

58 • SELECT * FROM SAFARI;

60

61

62 • SELECT * FROM Souvenir VALUES

(1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0),
 (0001, “Bathroom Towels”, “8364738290”, “vikramsan03@yahoo.com”, “Vikram”, 320, ‘2019-09-09’, 30),
 (2213, “Key Chains”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 160, ‘2022-10-01’, 20),
 (2138, “Peacock Feather”, “9127846975”, “saranlaks24@gmail.com”, “Saran”, 500, ‘2021-09-26’, 40),
 (1213, “Binocular”, “9139097765”, “sneha002@gmail.com”, “Sneha”, 2700, ‘2022-04-28’, 300),
 (5340, “Fridge Magnet”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 160, ‘2022-10-01’, 20),
 (4496, “Recycled Paper”, “2637980012”, “dhruvsa10@gmail.com”, “Dhruv”, 270, ‘2021-08-17’, 25),
 (5340, “Fridge Magnet”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 360, ‘2022-10-01’, 40),
 (1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0)

63

64

65 • INSERT INTO Souvenir VALUES

(1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0),
 (0001, “Bathroom Towels”, “8364738290”, “vikramsan03@yahoo.com”, “Vikram”, 320, ‘2019-09-09’, 30),
 (2213, “Key Chains”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 160, ‘2022-10-01’, 20),
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 (4496, “Recycled Paper”, “2637980012”, “dhruvsa10@gmail.com”, “Dhruv”, 270, ‘2021-08-17’, 25),
 (5340, “Fridge Magnet”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 360, ‘2022-10-01’, 40),
 (1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0)

66

67

68

69

70

71

72

73 • SELECT * from souvenir;

74

Result Grid | Filter Rows | Edit: | Export/Import | Wrap Cell Contents |

SAFARI 35 ×

Output

Action Output

Time Action

132 12:42:20 SELECT * FROM FOOD LIMIT 0, 1000

Message 13 row(s) returned Duration / Fetch 0.000 sec / 0.000 sec

Desktop Snea DBMS 25°C Mostly sunny 12:43 18-11-2022 25

MySQL Workbench

Local instance MySQL80 ×

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

zoos_db_08

65 • INSERT INTO Souvenir VALUES

(1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0),
 (0001, “Bathroom Towels”, “8364738290”, “vikramsan03@yahoo.com”, “Vikram”, 320, ‘2019-09-09’, 30),
 (2213, “Key Chains”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 160, ‘2022-10-01’, 20),
 (2138, “Peacock Feather”, “9127846975”, “saranlaks24@gmail.com”, “Saran”, 500, ‘2021-09-26’, 40),
 (1213, “Binocular”, “9139097765”, “sneha002@gmail.com”, “Sneha”, 2700, ‘2022-04-28’, 300),
 (5340, “Fridge Magnet”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 160, ‘2022-10-01’, 20),
 (4496, “Recycled Paper”, “2637980012”, “dhruvsa10@gmail.com”, “Dhruv”, 270, ‘2021-08-17’, 25),
 (5340, “Fridge Magnet”, “9283746517”, “tarunset10@gmail.com”, “Tarun”, 360, ‘2022-10-01’, 40),
 (1101, “Jungle Theme Coffee Mug”, “9198097763”, “sneha002@gmail.com”, “Sneha”, 500, ‘2022-04-28’, 0)

66

67

68

69

70

71

72

73 • SELECT * from souvenir;

74

Result Grid | Filter Rows | Edit: | Export/Import | Wrap Cell Contents |

souvenir 36 ×

Output

Action Output

Time Action

133 12:42:58 SELECT * FROM SAFARI LIMIT 0, 1000

Message 2 row(s) returned Duration / Fetch 0.000 sec / 0.000 sec

Desktop Snea DBMS 25°C Mostly sunny 12:43 18-11-2022 25

MySQL Workbench

Local instance MySQL80

Schemas: PESTUG20CS721_mod*, zoo_db_d8

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	Amount	No_Adopted	Time_Period

Result Grid

Emp_ID	Emp_Name	Work_Days	Work_Type	Age	DOB	Gender
17	Naveen	3	Indian Leopard Care Taker	37	1985-01-03	M
18	Rangamma	4	Cheetah Care Taker	39	1983-12-23	M
19	Rahman	3	Lion Care Taker	33	1990-01-01	M
20	Lokesh	6	Baby Giraffe	26	1993-11-11	M
21	Madappa	5	Zebra Care Taker	45	1977-04-06	M
22	Rishya	4	Black Buck Care Taker	29	1993-09-07	F
112	Madan	5	elephant Care Taker	42	1980-12-10	M
135	Ramesh	4	Safari A/C Vehicle Driver	50	1972-12-23	M
200	Lalitha	4	Peacock Care Taker	24	1998-02-23	F
201	Kamesh	5	Orangutan Care Taker	29	1993-05-11	M
210	Seema	4	White Tiger Care Taker	32	1990-03-04	F
990	Manjunath	6	Restaurant Supervisor	36	1994-07-15	M
997	Srinivas	3	Parking Incharge	49	1973-04-28	M

Output

Action Output

Object Info Session

File Edit View Query Database Server Tools Scripting Help

Desktop Snea-DBMS 25°C Mostly sunny 12:43 18-11-2022

MySQL Workbench

Local instance MySQL80

Schemas: PESTUG20CS721_mod*, zoo_db_d8

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Table: adoption

Columns:

Species_ID	Species_name	Animal_name	Class	Adopter_Name	Age	Amount	No_Adopted	Time_Period

Result Grid

Mob_No	Package_Choice	Country	Tourist_Name	Age	Ticket_Price	Payment_Info	Visit_date
8746329018	Herbivore Safari	IN	Sangeetha	45	300	UPI	2017-01-05
910898945	Lion Safari	IN	Sneha	22	200	Deb/Credit	2022-01-03
9734516277	Carnivore Safari	US	Dhruv	15	400	Cash	2021-12-31
9734516277	"Carnivore Safari"	US	Dhruv	15	400	"Cash"	"2021-12-31"
8746329818	"Herbivore Safari"	IN	Sangeetha	45	300	"UPI"	"2017-01-05"

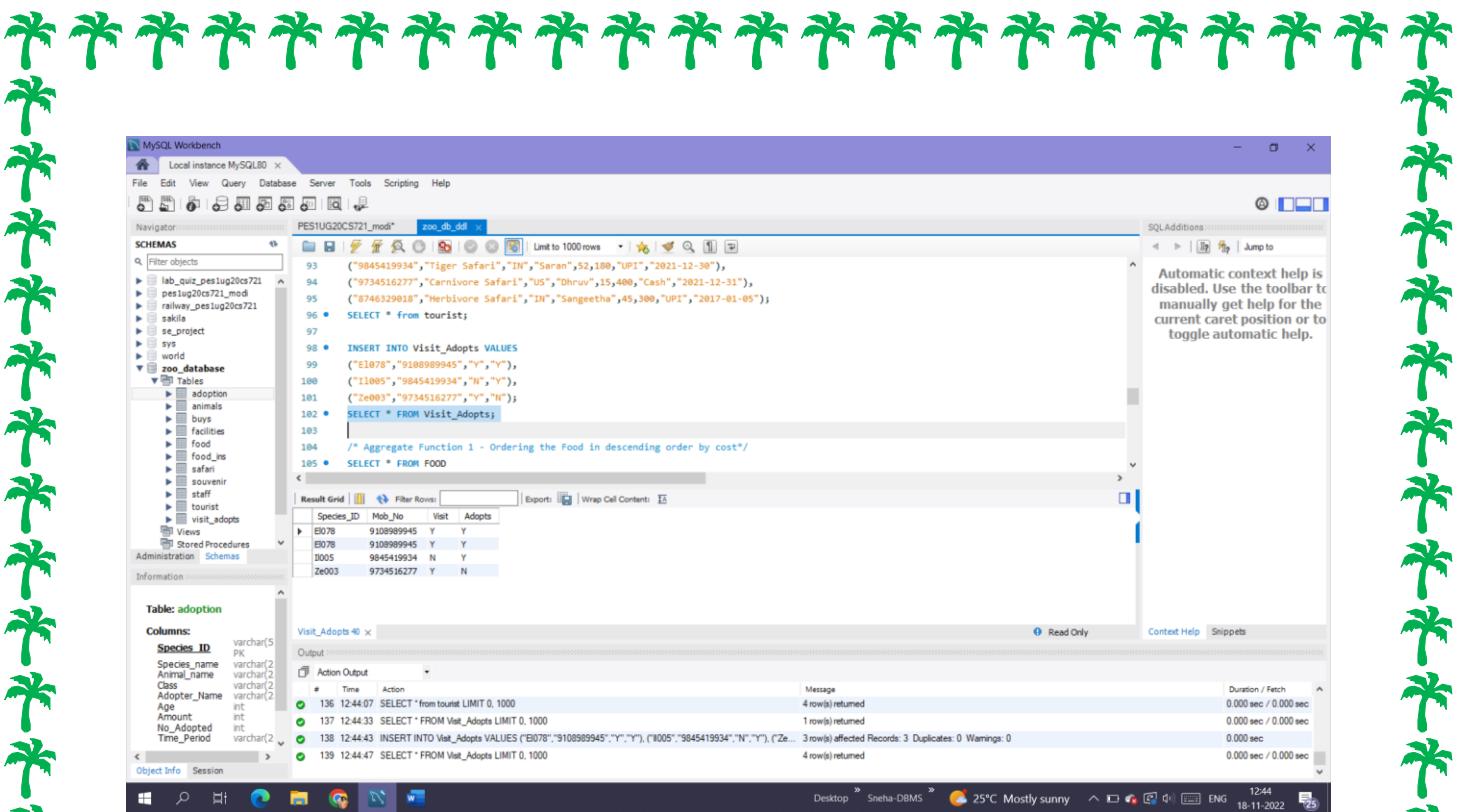
Output

Action Output

Object Info Session

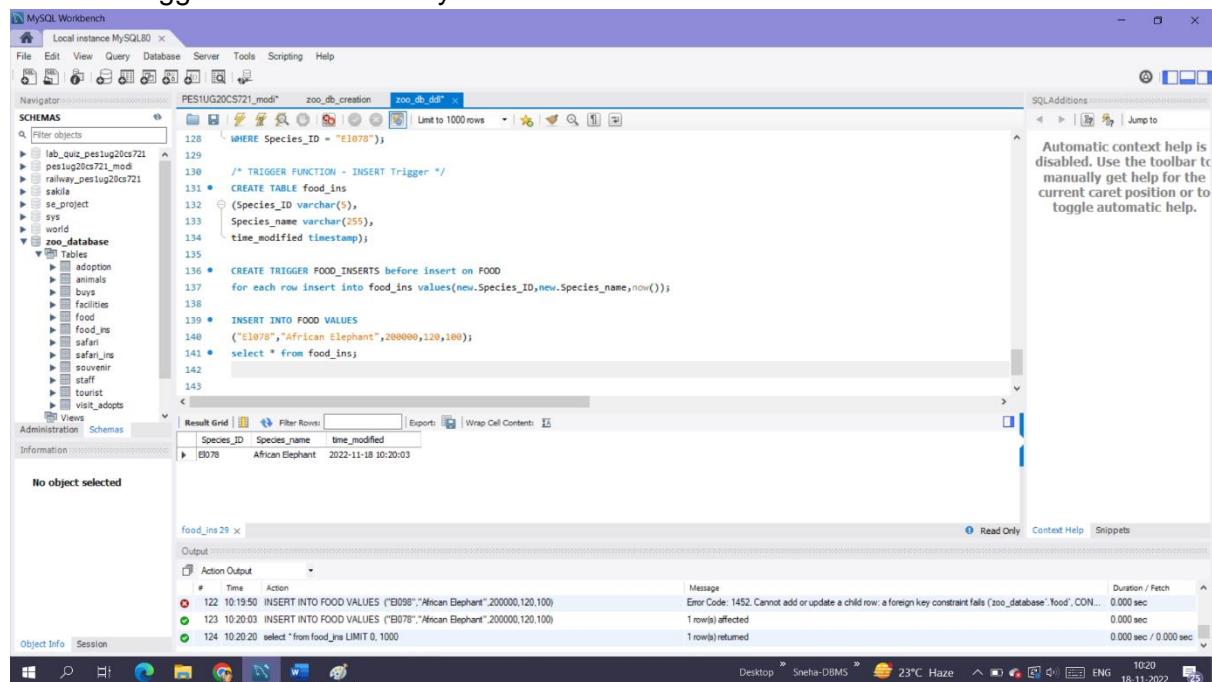
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Triggers

An insert trigger for the food entity.



SQL Queries – Aggregate

1. Order the tuples in FOOD table in descending order of the monthly food cost.

The screenshot shows the MySQL Workbench interface with two panes. The left pane displays the database schema for 'zoo_db_creation' with tables like lab_quiz, pes1ug20cs721, and food. The right pane shows the results of the following SQL query:

```
101 /* Aggregate Functions - Ordering the Food in descending order by cost*/
102 • SELECT * FROM Visit_Adopts;
103
104 /* Aggregate Functions - Ordering the Food in descending order by cost*/
105 • SELECT * FROM FOOD
106 GROUP BY Species_ID
107 ORDER BY (Cost)DESC;
```

The result grid shows the following data:

Species_ID	Species_name	Cost	Monthly_food_procured	Daily_req
U013	Lion	500000	210	70
WB012	White Tiger	200000	2100	70
CH001	Cheetah	125000	750	25
BD078	African Elephant	1000000	1200	170
DD005	Indian Leopard	80000	60	20
Ze003	Zebra	75000	300	10
Bk004	Black Buck	10000	180	6
Zo017	Orangutan	6000	60	2
Zo016	Lion Tailed Macaw	5000	30	1
Zo015	Peacock	3000	30	1

2. Select the details of the staff that are aged more than 30 years from the STAFF

The screenshot shows the MySQL Workbench interface with two panes. The left pane displays the database schema for 'zoo_db_creation' with tables like lab_quiz, pes1ug20cs721, and staff. The right pane shows the results of the following SQL query:

```
104 /* Aggregate Function 1 - Ordering the Food in descending order by cost*/
105 • SELECT * FROM FOOD
106 GROUP BY Species_ID
107 ORDER BY (Cost)DESC;
108
109 /* Aggregate Function 2 - Displaying Animals Of Age > 4*/
110 • SELECT * FROM STAFF
111 WHERE STAFF.Age > 30;
112
113 /* Left Outer Join - Between Adoption and Animals*/
114 • SELECT * FROM ADOPTION
```

The result grid shows the following data:

Emp_ID	Emp_Name	Work_Days	Work_Type	Age	DOB	Gender
17	Naveen	3	Indian Leopard Care Taker	37	1985-01-03	M
18	Ranganne	4	Cheetah Care Taker	39	1983-12-23	M
19	Rahman	3	Lion Care Taker	33	1991-12-03	M
98	Madappa	5	Zebra Care Taker	45	1977-04-06	M
14	Shiva	5	Elephant Care Taker	46	1976-05-15	M
235	Ramesh	4	Safari A/C Vehicle Driver	50	1972-12-23	M
210	Seema	4	White Tiger Care Taker	32	1990-03-04	F
990	Manjunath	6	Restaurant Supervisor	36	1994-07-15	M
997	Srinivas	3	Parking Incharge	49	1973-04-28	M

SQL Queries – JOIN

1. Left Outer Join between Animals and Adoption

The screenshot shows the MySQL Workbench interface with the following details:

- Navigator:** Shows the schema `zoo_database` with tables `adoption`, `animals`, `buys`, `facilities`, `food`, `safari`, `souvenir`, `staff`, `tourist`, and `visit_adopts`.
- SQL Editor:** Displays the SQL query:

```
112
113  /* Left Outer Join - Between Adoption and Animals*/
114  • SELECT * FROM ADOPTION
115  LEFT JOIN ANIMALS
116  ON ADOPTION.Species_ID = ANIMALS.Species_ID;
```
- Result Grid:** Shows the results of the query, listing various animals and their adoption details.
- Action Output:** Displays the execution history of the query.

2. Right outer Join between Souvenir and Buys

The screenshot shows the MySQL Workbench interface with the following details:

- Navigator:** Shows the schema `zoo_database` with tables `adoption`, `animals`, `buys`, `facilities`, `food`, `safari`, `souvenir`, `staff`, `tourist`, and `visit_adopts`.
- SQL Editor:** Displays the SQL query:

```
114  • SELECT * FROM ADOPTION
115  LEFT JOIN ANIMALS
116  ON ADOPTION.Species_ID = ANIMALS.Species_ID;
117
118  /* Right Outer Join - Between Souvenir and Buys Table*/
119  • SELECT * FROM SOUVENIR
120  RIGHT JOIN BUYS
121  ON SOUVENIR.Item_ID = BUYS.Item_ID;
122
123  /* Nested Query - selecting the location of elephant using adoption table and animals table */
124  • SELECT Location
```
- Result Grid:** Shows the results of the query, listing items bought from the souvenir shop.
- Action Output:** Displays the execution history of the query.

SQL Queries – Nested Query

Fetching the Location of the Animal being adopted .

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Navigator:** Local instance MySQL8.0, Schemas (zoo_database selected), Tables (adoption, animals, buys, facilities, food, safari, souvenir, staff, ticket, visit_adopts).
- SQL Editor:** PES1UG20CS721_mod*, zoo_db_creation, zoo_db_ddl*. The code is:

```
116  ON ADOPTION.Species_ID = ANIMALS.Species_ID;
117
118  /* Nested Query - selecting the location of elephant using adoption table and animals table */
119  •  SELECT Location
120    FROM ANIMALS
121   WHERE Species_ID IN (SELECT Species_ID
122     FROM ADOPTION
123    WHERE Species_ID = "E1070");
124
125
126
```
- Result Grid:** Shows the output of the query: Location (Elephant Corridor).
- Information:** Table_animals (Columns: Species_ID, Species_name, Location, Animal_gender, Age, Food_Requirement_KG, Emp_ID).
- Output:** Action Output table showing the execution log:

#	Time	Action	Message	Duration / Fetch
87	09:35:10	SELECT * FROM ANIMALS WHERE ANIMALS.Age > 4 LIMIT 0, 1000	6 row(s) returned	0.016 sec / 0.000 sec
88	09:41:59	SELECT * FROM ADOPTION LEFT JOIN ANIMALS ON ADOPTION.Species_ID = ANIMALS.Species_ID Li...	5 row(s) returned	0.000 sec / 0.000 sec
89	09:45:39	SELECT Location FROM ANIMALS WHERE Species_ID IN (SELECT Species_ID FROM ADOPTION WHE...	1 row(s) returned	0.000 sec / 0.000 sec

Execution Plan before and after

This screenshot shows the MySQL Workbench interface with the 'zoo_db_creation' database selected. In the SQL Editor tab, the following query is displayed:

```
214 (68,3),  
215 (69,2),  
216 (70,4);  
217  
218 • SELECT * FROM EXEC_FOOD  
219 GROUP BY food_id  
220 ORDER BY(animal_age)DESC;  
221
```

The 'Visual Explain' tool is used to analyze the execution plan. The plan shows a 'Full Index Scan' on the 'EXEC_FOOD' table, followed by a 'GROUP' operation and an 'ORDER' operation on a 'tmp table, filesort'. The total query cost is 7.26.

In the 'Output' pane, the results of the query execution are shown, including the insertion of values into the table and the execution of the EXPLAIN command.

After Indexing

This screenshot shows the MySQL Workbench interface with the 'zoo_db_creation' database selected. The same query is run:

```
214 (68,3),  
215 (69,2),  
216 (70,4);  
217  
218 • SELECT * FROM EXEC_FOOD  
219 GROUP BY food_id  
220 ORDER BY(animal_age)DESC;  
221
```

The 'Visual Explain' tool shows a 'Full Index Scan' on the 'EXEC_FOOD' table, followed by a 'GROUP' operation and an 'ORDER' operation on a 'tmp table, filesort'. The total query cost is 6.98.

In the 'Output' pane, the results show the application of the index and the execution of the EXPLAIN command.