Zoo Database Management System

Navaneeth Ashok - N01358627

Problem

The zoo as of now does not contain an automated system for scheduling various functionalities that are required for it's smooth operation. This lack of automation will hamper the efficiency of the system. In order to maximise the customer retention and to gain maximum popularity, the zoo requires a database management system in the backend to help with it's daily operations.

Solutions

Enclosure Timings

- Every animal follows a sleep schedule, and it's important to make sure that the animals are properly relaxed and are not disturbed by the visitors. To ensure this, we'll generate an enclosure timing schedule which will make sure the enclosures are not disturbed during the sleep time of the animals.

- **Feature Enhancements with an MVC**
  - **An automated webpage in front of every enclosure, or on the pathway to different enclosures to show the status of the enclosure**
    - **Enclosure is open for visitors now**
    - **Enclosure will be open in X hours and Y minutes.**

Solutions

Automated Feeding Timings

- The automated feeding schedule is based on the data that is present in the diet table and the employee table. The system will generate a schedule based on the availability of the staff, checking which staff is present during the shift which overlaps with the animal's feeding time.

- **Possible Implementation**

  - ```sql
    select emp_fname, emp_lname, emp_id, shift_time_start, shift_time_end, animal_name_code, animal_type, feeding_time_start from employee e cross join animals a where date_add(shift_time_start, interval 2 hour) < feeding_time_start and date_sub(shift_time_end, interval 2 hour) > feeding_time_start
    ```
  - This will return the list of all the employees, who are present during the feeding time of every animal.
  - From this list, we'll randomly assign one employee to one animal
  - We'll hold this employee ID and animal ID in a string
  - Create a list or a string, concat this animal ID to the string
  - Next time the function runs (in a loop until the end using a cursor) it takes the second employee and assigns them an animal that is not in the list of animals created above.
  - This will prevent the same animal getting fed by different employees in a same day.

Solutions

Automated Feeding Timings

- The automated feeding schedule is based on the data that is present in the diet table and the employee table. The system will generate a schedule based on the availability of the staff, checking which staff is present during the shift which overlaps with the animal's feeding time.

- **Possible Implementation**

```sql
select emp_fname, emp_lname, emp_id, shift_time_start, shift_time_end,
animal_name_code, animal_type, feeding_time_start from (
    select emp_fname, emp_lname, emp_id, shift_time_start, shift_time_end,
    animal_name_code, animal_type, feeding_time_start
    row_number() over (partition by emp_id order by shift_time_start asc) rn
    from employee e cross join animals a where date_add(shift_time_start, interval 2
hour) < feeding_time_start and date_sub(shift_time_end, interval 2 hour) >
feeding_time_start
)
where rn = 1;
```

Solutions

Medical Check-up Schedule

- This is just a normal table for the management and staff to keep track of how many animals have undergone medical check-up

- The last column in this table has a Boolean value which can be toggled (true/false) by a medical staff after the employee completed the medical checkup of the animal allotted for them.

Referential Integrity

- To maintain referential integrity of the data, whenever we delete an animal, all the entries from the feeding schedule , medical check-up table are deleted.

- But, if we are deleting just the employee from the table, the feeding schedule entry with that employee_id will be just set to null.

- When an animal is removed from zoo, all the entries taking the data of that animal is deleted.

- When an employee is removed, his assignments are not deleted, it's just reassigned to Null, thus we are ensuring that none of the animal undergoes negligence from the pov of the system, when an employee is deleted.

- We can query these tables, and search for the NULL entries and re-assign task to another employee.

Thank You

Navaneeth Ashok 👤

+91 9742428869 📱

navaneeth619@gmail.com ✉

http://navaneeth-ashok.github.io/ 🔗