RDBMS EFREI M1 TD5

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1 Introduction

A company specialized in horse breeding based in Troyes has decided to automate its information system.

This company owns several stables in the region of Troyes, handled on a daily basis by managers.

These stables offer several services :

– Horse raising, sale of the horses bred in the stable, and rental of male partners for reproduction.
– Participation of horses in races and official horse shows.
– Temporary accommodation of horses, within the limit of available stalls, fixed by the manager.

The information system will allow :

– Handling of breeding
– Handling of horse accommodations.
– Administrative management of the horses that belong to the stable.
– The issuance of genealogical data sheets and / or curriculum honorum (list of awards) ;
– Monthly billing

2 Current situation

2.1 Billing

Monthly invoices concern successful breeding by a rented stallion, sales of horses and accommodations (An invoice per month per customer and by type of service).

– Accommodation billed by the week, depending on the class of horses (5 categories). A discount or a supplement for additional services can be applied by the manager.
– For breeding, the price is individually fixed for each stallion.
– Similarly the sell price is fixed individually for each horse.

Any bill that is not settled within one month gives rise to a reminder. A bill late by two months is forwarded to the legal department.

2.2 Breeding

The client makes a request that specifies the dates and place the breeding should take place, his administrative data, and the characteristics of his mare (female horse).

If at least one possible stallion exists (same race and already at least one descendant) :

– We register the client, the breeding request, and all the characteristics of the mare (pedigree and cursus honorum).
– We produce of maximum 5 likely candidates that we put on hold for the projected breeding date. Preference will be given to the stallion whose last breeding date is the least recent.

If the client answer is positive (and accompanied by a check covering at least 10% of the breeding cost, we free the candidates which have not been selected, and we produce a breeding document that mentions the money already paid. The client then has 15 days to confirm or the breeding is canceled.

If the breeding fails (no offspring) the client is refunded in totality.

2.3 Accommodation

The client makes a request specifying the dates desired and specifics of his horse (special diet, frequency of exercises ...). If a stall is available for those dates, accommodation is recorded and a price estimation based on the going rate established by the manager of the stable is sent to the client.

If the client response is positive it should be accompanied by a check for at least 10% of the cost. The client has 15 days to confirm or the accommodation is canceled.

We do not wish to store the horse specifics (cursus honorum, pedigree) of client horses accommodated in the stable.

2.4 Delivery of pedigree and cursus honorum

Any client wishing to buy a horse can ask for :
– The genealogic ascendancy tree of the horse over n generations.
– The cursus honorum of any ascendant of the horse.

2.5 Administrative management

The system must allow :
– Recording of a birth, sale or death, with corresponding update of available stalls.
– Recording of the results of a horse in a horse show.
– Recording of the results of a breeding.
– Update or modification of prices.
– Change of manager for a stable.
– Week by week knowledge of available stalls.
– Recording of client payments.
– Creation of a new stable

3 Data collected

The study of current operations of the company has allowed to determine the following (non-exhaustive) list of information to be stored in the system :
– Description of a horse :

– Pedigree number, name, race, sex, specific characteristics, birth date, date of death, color, eye color, sell price, breeding price.
– Description of a client :
– Client number, address, phone, name
– Description of a breeeding :
– Number, place and date
– Description of a horse show or race and results :
– code of the show, name of the show type (beauty, trot, galop...), code of the show type, place, ranking, date
– Description of a stable :
– Stable number, name, address, phone, name of manager, total capacity, available capacity week per week.
– Description of an accommodation :
– start and end date, specific characteristics, price category, base price, discount or supplement.

4 Questions

1. Elaborate a conceptual E/R schema, with comments and a dictionary of additional identified constraints that are not modeled yet.

2. Define the data dictionary.

3. Give the resulting logical/relational schema.

4. Give the table creation scripts for tables Horse and Breeding or their equivalent in your model.

5. Produce requests allowing to manage a breeding, from the client request, the search for candidates, etc... up to the delivery of a pedigree for the offspring.

6. Formulate requests allowing to establish monthly invoices.

7. Formulate requests allowing to track week per week the available stalls in a given stable.