Assessed Lab 1: Entity Relationship Modelling

Introduction

You have been asked to design a database for a horse racing enterprise. The following information has been gathered about the operation of the enterprise.

A horse has a registration number, name, type (quarter horse or thoroughbred), gender, and trainer. The heritage of every horse must also be maintained, if the information is available. For example, the mother (dam) and father (sire) should be recorded. It is also necessary to identify the offspring of a given horse.

Information about people involved in the horse racing business should be maintained. An identifier, name, address, and phone number should be maintained about every person. If a person is a horse trainer, the salary of the trainer should be indicated, along with the horses trained by the trainer. If a person is a jockey, a record of their weight at different times must be maintained, along with the date of recording. The numbers of wins and runs so far for each jockey need to be recorded. It is possible for a person to be both a trainer and a jockey. Name and contact information can also be maintained about people other than trainers and jockeys.

MaStable is one of the companies that breeds, trains and sells/buys horses. Each company is identified by an identifier, a name, phone number and a contact person. Each company employs many horse trainers, although each horse trainer can only work for one company.

A horse can have more than one owner. An owner can own more than one horse. An owner can either be a contact person of MaStable or a person. Information is always recorded about the most recent date and purchase price of a horse by its current owner(s). Each owner must also record their percentage ownership of a horse. For example, a horse could be owned by three owners, where one owner has a 50% share and the others two owners each have a 25% share.

A racetrack has a track identifier and a track name. Every racetrack has a race schedule indicating the date of each race day and the list of races for each race day. A race day typically has ten scheduled races, where each race has a race number (from 1 to 10) and a purse. The purse is the amount of money awarded to the winner of the race.

Every race has several entries. Each entry indicates the horse, jockey, and gate position of the horse at the start of the race. After the race, the entry records the finishing position of the horse (first, second, third, etc.). Every horse and every jockey must be able to produce a history of the races in which they have participated.

Assignment

1) Analyse these data requirements and produce an appropriate database design using the Enhanced Entity Relationship (EER) model. A good design will minimise duplication of attributes and show only essential relationships.

2) Document your design using Visual Paradigm. Produce an EER diagram showing entities, attributes and named relationships in a form ready for implementation using a relational database. Print a copy of the Visual Paradigm diagram showing all attributes including foreign keys. The relationships should show their cardinality and whether they are optional or mandatory. Describe any significant assumptions you make concerning the data requirements.

3) Discuss what enhanced features of EER you have used for the design, if any.

4) Briefly discuss any constraints that may be required to maintain the model.

The deliverables of this assignment comprise the Visual Paradigm printed output (only one diagram) together with the answers to the above questions. The answers to the questions should not exceed 2 sides of A4. Diagrams and answers should be securely bound as a single document, and should show your name, degree course and year.

Plagiarism and collusion will be penalised and may lead to disciplinary procedures. The assignment is individual and should show your own work.